DETERMINANTS OF BANK LIQUIDITY IN NIGERIA

BY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF BANKING AND FINANCE FACULTY OF MANAGEMENT SCIENCES UNIVERSITY OF BENIN, BENIN CITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF SCIENCE (B.SC.) DEGREE IN BANKING AND FINANCE

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DECLARATION

I, **Edima Usen Johnson** of the department of Banking and Finance, Faculty of Management Sciences, University of Benin, Benin City, do hereby declare that this project is entirely my own work and composition. All references made to works of other persons have been duly acknowledged.

_____ _____

EDIMA USEN JOHNSON **Date**

CERTIFICATION

We the undersigned, certify that this research work was carried out and submitted by **Edima Usen Johnson**, in the department of Banking and finance, University of Benin, Benin city.

Dr. M. Uhunmwangho **(Project Supervisor)**	**Date**
Dr. J. Obayagbona **(Project coordinator)**	**Date**
Dr. O. G. Omorokunwa **(Head of Department)**	**Date**

DEDICATION

This research work is dedicated to the Almighty God and to my parents, Mr and Mrs Usen Johnson.

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First and foremost, my special appreciation goes to the Lord Almighty, who saw me through the stress and hurdles of this great institution.

I wish to also express my profound gratitude to my parents, Mr and Mrs Usen Johnson for their assistance both financially, spiritually and morally throughout my stay in school.

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ABSTRACT

This study examined the determinants of bank liquidity in Nigeria. The indicators investigated are non-performing loan, net interest margin, cash reserve ratio, monetary policy rate and capital adequacy ratio. Thirteen (13) banks listed in the Nigerian Exchange limited were investigated. Data for the study were collected from annual report of the listed banks, the Central Bank of Nigerian statistical bulletin for the period 2010 to 2021. The difference generalised method of moment was applied on dynamic model to ascertain the effects of the indicators on bank liquidity. The E-view 9.0 computer software was used for the analysis. This study found that cash reserve ratio, monetary policy rate and capital adequacy ratio are significant determinants of bank liquidity in Nigeria, and recommends bank managers should pay devoted attention to monetary policy regulatory instruments especially cash reserve ratio and monetary policy rate because of their effect on bank liquidity. Also, that bank managers should ensure they have adequate capital because high capital is a potential booster of bank liquidity.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Banks are crucial to the economic growth of any nation because they efficiently mobilize idle capital and offer a wide range of emerging banking services. Banks face numerous risks from short credits as they carry out their role as financial intermediaries, and these risks could have an impact on their liquidity position.

According to Bank for International Settlements (2008), a bank's liquidity refers to its capacity to increase its liquid assets and pay off debts as they become due without unacceptably high losses. Another indicator of bank liquidity is the amount of cash and other resources they have on hand to make quick payments on debts and fulfill other urgent commercial and financial obligations (Financial Reporting Standard, 2019).

The ability of a bank to hold cash to pay for maturing obligations is referred to as liquidity. Banks are expected to provide sufficient liquidity while also granting credits in order to maximize their profit (Vodova, 2011). Researchers are reexamining the topic of liquidity risk as a result of the 2008 global financial crisis, which has been blamed for being one of the primary causes of the observed financial contagion and the credit crunch. Most studies have concluded that controlling the level of liquidity in the banking industry will ensure a high level of financial stability and provide a framework for identifying and reducing liquidity risk.

The Basel Committee on Banking Supervision (2004) highlighted the liquidity issue as one of the major issues facing banks. Customers will trust a bank with good liquidity, which will encourage its commercial activities like capital raising, lending, and other activities (Gambacovta and Mistrulli, 2004). In contrast, a bank with a liquidity issue faces low capital base and low assets (Diamond and Rajan, 2001).

According to Blundell-Wignall and Atkinson (2010), the banking industry must be in charge of managing liquidity as long as it is solvent and complies with capital adequacy standards. They suggest that, in a crisis, bank liquidity is a significant factor that may cause financial distress.

According to Ferrouhi and Lehadiri (2014), the 2008 financial crisis highlighted the necessity of establishing a high level of liquidity to handle challenging circumstances. According to Umar and Sun (2015), the 2008 financial crisis demonstrated that the economy suffers when banks are not performing well. They come to the conclusion that bank liquidity is crucial for the efficient operation of the economy.

The factors affecting bank liquidity have since been the subject of numerous other studies conducted over time and in numerous countries (Munteanu, I. 2012; Ben Moussa, 2015; Chageiza, W. 2014; El Khoury, R. 2015; El-Chaarani, H. 2019; Nguyen & Vo, 2021; Tibebu, K. 2019; Umar & sun, 2016, Vodova, P. 2011). They believed that managing and mitigating the problem of liquidity risk in the banking industry required a thorough understanding of the various factors affecting this problem. The cash reserve ratio, net interest margin, non-performing loans, monetary policy rate, and capital

adequacy ratio are the factors that this study looks at as determining factors of liquidity. The reserve requirement, also known as the cash reserve ratio, specifies the minimum percentage of customer deposits and notes that each commercial bank must hold as reserves rather than lend out (Peydr'o, 2010; Gray, 2011). (Maccarthy J. 2016). These required reserves are typically cash stored in a bank vault (vault cash) or deposits made with a central bank. The required reserve ratio is occasionally used as a monetary policy tool to affect the country's borrowing and interest rates by changing the amount of funds available for banks to make loans with (Ronitaille, 2011), as cited in Maccarthy J. 2016. According to clear tax, the higher the CRR, the lower the banks' liquidity, and vice versa. When the central bank wants to inject funds into the system, it lowers the CRR, which increases the banks' loanable funds. In turn, banks sanction a large number of loans to businesses and industry for various investment purposes. It also expands the overall money supply in the economy. This ultimately boosts the economy's growth rate.

Investopedia describes Net Interest Margin (NIM) as a measurement of the difference between interest received and interest paid that has been adjusted for the total amount of interest-generating assets held by the bank. A measure of a bank's success and expansion is its NIM. It shows how much the bank is making in interest on loans compared to how much it is spending on interest on deposits. The probability of the net interest margin declining is increased if the demand for savings outpaces that for loans. The inverse holds true if there is a greater demand for loans than for savings. In accordance with their respective business models, banks' net interest margins differ.

A nonperforming loan (NPL) is regarded as being in default or on the verge of default, according to Investopedia. If a debtor for a commercial loan has not made any interest or principal payments within 90 days or is 90 days past due, the loan is deemed to be nonperforming. Consumer loans that are 180 days past due are considered NPLs. The liquidity is significantly impacted when a loan stops performing. The planned cash buckets are directly impacted because of the non-receipt of the installment. Banks rely on these loan payments to fund additional investments, cover expenses, and make timely debt repayments. The bank will have less liquidity when the rate of non-performing loans is high and more liquidity when the rate is low.

A central bank or other regulatory bodies may implement monetary policy, a type of macroeconomic strategy, to modify the amount of money in an economy. The supply of bank loans is influenced by monetary policy, which also has an impact on bank deposits and, ultimately, bank liquidity. Traditionally, a central bank's primary tool for guiding the economy in the desired direction has been monetary policy. Inflation control, cost and accessibility of credit, and maintaining the balance of payments' equilibrium all depend on it. Bank liabilities and assets (loans) are both impacted by monetary policy (deposits). The crucial point is that, in addition to changing the supply of deposits, monetary policy also changes the supply of bank loans. As an illustration, an expansionary monetary policy that raises bank reserves and bank deposits raises the amount of bank loans that are readily available. Whereas a lot of borrowers rely on bank

loans to fund their operations, this rise in bank loans will result in an increase in investment (and also consumer) spending, which will ultimately increase total output.

The capital adequacy ratio (CAR) calculates a bank's available capital as a proportion of its risk-weighted credit exposures. The capital adequacy ratio (CRAR), also referred to as capital-to-risk weighted assets ratio (CRAR), is used to safeguard depositors and advance the sustainability and effectiveness of financial systems globally. In order to ensure that banks have adequate protection against losses before they become insolvent and lose depositor money, minimum capital adequacy ratios (CARs) are crucial. By reducing the likelihood of bank insolvency, capital adequacy ratios ensure the effectiveness and stability of a country's financial system. A bank with a high capital adequacy ratio is typically regarded as secure and likely to fulfill its financial obligations. Depositors can only lose their savings if a bank experiences a loss that exceeds the capital it has on hand because depositor funds are prioritized over the bank's capital during the winding-up process. Therefore, the degree of protection of depositors' assets increases with the bank's capital adequacy ratio.

The most recent global financial crisis has demonstrated that banks, as key players in the financial industry, need to modify their profitability goals to obtain protection from liquidity risk. Unregulated financial innovations, improper management incentives, and a disregard for systemic risk have contributed to an ongoing global crisis. The general lack of liquidity has exposed latent vulnerabilities, and we are in the midst of a historical period of change in the world's financial system. As it is acknowledged, many

financial institutions have encountered difficulties or defaulted even when they were profitable, as was the case with Lehman Brothers in 2008 due to the improper management of liquidity. This research paper is the first step in achieving the fundamental goal of optimizing the liquidity-profitability relationship. To better understand the concept and to position the liquidity risk in relation to other financial risks, it is necessary to identify the factors that determine bank liquidity in these circumstances (Munteanu, I. 2022).

1.2 STATEMENT OF THE RESEARCH PROBLEM

Bank management in Nigeria faced severe liquidity management challenges during the dark days (distress era) of the banking business between the 1980s and the early 2000s due to a lack of adequate and appropriate reforms, particularly in the area of capitalization. Commercial banks in Nigeria have experienced stability since the re-capitalization phase in 2005, when banks were mandated to increase their capital base from N2 billion to a mammoth N25 billion (Agbada and Osuji, 2013), as cited in (Efanga, U., Onoh, U., Opara, C., Ihemeje, C. and Egwu, E., 2020). Liquidity management is a delicate and difficult task for any manager. Maintaining adequate and moderate liquidity may be difficult for management because the manager must choose between storing liquidity in the bank vault in anticipation of meeting maturing bank obligations (cash withdrawal by customers) or providing credit facilities to investors (extending credit facilities to borrowers).

The management must strike a balance between the amount of liquidity that should be distributed for on-lending to investors and the amount that should be kept in the banking vault in case customers arrive to withdraw money. This study, which looks into the factors affecting bank liquidity in Nigeria, was done in response to the management challenges previously mentioned.

1.3 RESEARCH QUESTIONS

The following research questions are put forward to guide the researchers;

1. What is the effect of cash reserve ratio on bank liquidity in Nigeria?
2. What is the effect of net interest margin on the liquidity of Nigerian banks?
3. To what extent does non-performing loan affect the liquidity of Nigerian banks?
4. Does monetary policy rate has influence on bank liquidity?
5. How does capital adequacy ratio affect the Liquidity of Nigerian banks?

1.4 OBJECTIVES OF THE STUDY

The broad objective of the study is to investigate the determinants of bank liquidity in Nigeria. The specific objectives of the study are:

1. To assess the impact of cash reserve ratio on the liquidity of Nigerian banks.
2. To investigate the effect of net interest margin on the liquidity of Nigerian banks.
3. To examine the effect of non-performing loan on the liquidity of Nigerian banks.
4. To examine the influence of monetary policy rate on bank liquidity in Nigeria.
5. To investigate the effect of capital adequacy ratio on the Liquidity of Nigerian banks.

1.5 HYPOTHESIS OF THE STUDY

The hypothesis of this study states a null form as follows:

H_{01}: Cash reserve ratio has no significant impact on the liquidity of Nigerian banks.

H_{02}: Net interest margin does not have significant effect on the liquidity of Nigerian banks.

H_{03}: There is no significant relationship between non-performing loan and the liquidity of Nigerian banks.

H_{04}: Monetary policy rate has no significant influence on bank liquidity in Nigeria.

H05: There is no significant relationship between capital adequacy ratio and the liquidity of Nigerian banks.

1.6 SCOPE OF THE STUDY

The study examines the factors affecting liquidity in Nigerian banks. Data collection efforts will be made in regards to the liquidity rate, interest rates, lending rates levied by deposit money banks, etc. These information shall be solely about and derived from the Nigerian economy. The study's time frame is from 2010 to 2021.

The factors affecting liquidity in Nigerian deposit money banks will be examined using data from journals, published and unpublished financial and banking studies, and—most importantly—from the use of library books. However, references may go beyond the boundaries of the aforementioned scope, particularly during the literature review to provide a more comprehensive look at the subject under study.

1.7 SIGNIFICANCE OF THE STUDY

The purpose of this study is to analyze the effects of bank liquidity in Nigeria. Policymakers, banks, the government and its agencies, as well as general business owners and individuals, will find the study to be of great value. Students studying banking and finance as well as other researchers with an interest in liquidity and the factors influencing it in Nigerian banks will find the study to be of great value.

The study's conclusions will be extremely beneficial to various groups in a variety of ways, including the following:

1. The Government/policy makers: The results of this study serve as a mirror, shed light on a previously unstudied aspect, and assist regulatory agencies in reducing liquidity risk by gaining an understanding of the factors influencing it.
2. Lecturers/students: This research project will serve as a resource for lecturers and students in this field.
3. Banks: This study aims to help the banking sector, especially deposit money banks, by providing credit facilities and minimizing bad debts.
4. Researchers: The study serves as a reference material for further research in this field.

1.8 LIMITATION OF THE STUDY

As with all studies, this one has some restrictions. The measurement methods and time period used in this study, which may be too short in duration, are a significant limitation. The investigation's outcome, though, won't be impacted, in our opinion.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

This chapter will thoroughly examine a range of academic sources as well as the viewpoints of various published materials, including authors with knowledge of liquidity, determinants, profitability, and connected aspects of the research's primary topic. A review of relevant literature that expresses opinions about the effect of liquidity on Nigerian commercial banks or other literature-related publications that allude to liquidity in Nigerian commercial banks

In this section, the theories of many academics will be reviewed to gain a better understanding of what liquidity means, what it stands for, and the role it plays in the financial world as well as commercial banks. Other important elements, such as the conceptual review and the theoretical and empirical reviews, will also be investigated when looking at the relevant data.

2. 2 CONCEPTUAL REVIEW

2. 2.1 BANK LIQUIDITY

A company's ability to pay off upcoming financial obligations is referred to as liquidity. Additionally, it is described as the swift and economical exchange of one asset for another. According to Acharya and Naqvi (2012), it refers to the speed and certainty with which an asset can be quickly converted into cash at any time, at the asset owner's

discretion. Liquidity is the ability to convert an asset into cash with the least amount of cost or loss, according to Anyanwu (1993), a claim that is supported by research. This makes it abundantly clear that marketability, stability, and conservatism are the three characteristics that define liquidity. Marketability determines how easily and quickly an asset can be redeemed before maturity, as well as how easily it can be traded for another asset and shifted from one place to another.

Stability implies the maintenance of value. As a result, the price volatility of liquid assets is fixed and relatively low (in comparison to real assets). Additionally, conservatism establishes an asset holder's ability to sell the asset with little impact on the price (Efanga, U., Onoh, U., Opara, C., Ihemeje, C. & Egwu, E. 2020).

A fundamental concern in banking is liquidity, which is of the utmost importance (Caruana and Kodres, 2008). Since liquidity must be available in sufficient quantities at all times, it has a significant impact on a bank's viability and efficiency. In order to avoid being labeled illiquid, banks must fulfill their contractual obligations and complete payments on time (Crocket, 2008).

In the past, banks primarily served as points of contact for various social groups in need of funding and as financial intermediaries. Thus, banks are required to maintain sufficient liquidity in order to effectively carry out their daily obligations, such as satisfying depositor demand or withdrawals, paying wholesale commitments, and providing funds when borrowers draw on committed credit facilities (FSC, 2010).

While serving to safeguard customers from liquidity issues, this function exposes banks to risk that, in the worst case or scenario, could result in bank runs regardless of the bank's soundness (ECB, 2002). According to the Central Bank, a bank's liquidity issue could potentially spread to other banks, leading to a true bank panic.

Due to its many facets and definitions, the term "liquidity" is characterized by ambiguity; consequently, it requires additional and precise definitions to be used productively and with intention (Goodhart, 2008). According to financial literature, it is simpler to define than to identify liquidity in the real world. The concept of liquidity in economics literature refers to an economic agent's capacity to convert his or her current wealth into assets or other items like goods and services. This definition of liquidity emphasizes two crucial points. While the second issue relates liquidity to the ability to realize these flows, the first one describes liquidity as a flow concept (ECB, 2002). The financial entity or firm would become insolvent if this weren't accomplished.

According to the Basel Committee on Banking Supervision (2006), liquidity is a reservoir of funds that management can easily access to meet funding requirements and business opportunities.

Cash constraints experienced by several financial sector providers demonstrate the importance of liquidity concerns. Even if a financial firm is completely solvent, it can be liquidated if it is unable to generate adequate liquidity funds. For example, the Federal Reserve ordered the closure of the Southeast Bank of Miami, which had up to $10 billion in assets in the 1990s, because it could not generate just enough liquidity to repay the

Fed's loans. Furthermore, the competency of liquidity managers is a key indicator of management's overall effectiveness in achieving any institution's goals.

According to modern financial intermediation theory, creating liquid loans with liquid demand deposits is a critical role of banks in the economy (Diamond & Dybvig, 1983). On its balance sheet, a bank generates liquidity by converting less liquid assets into more liquid liabilities.

This demonstrates that banks may be capable of producing significant liquidity OBS that is not included in the annual report (via lending obligations and other direct assertions on liquidity resources) (Kashyap, Rajan, & Stein, 2002). The commercial bank converts short-term, liquid liabilities (short-term deposits from customers, clients, users, and firms) directly to long-term, illiquid assets (Kashyap, Rajan, & Stein, 2002) It enables prospective customers to balance their spending and investing habits. Banks effectively protect their customers from liquidity concerns by serving this strategic economic purpose.

Banks, on the other hand, expose themselves to liquidity risk by providing liquidity to citizens if the borrowers fail to repay the loan. This shift has the effect of increasing society's overall well-being. Commercial bank illiquidity is a problem that both strong and weak institutions experience. A run on the bank happens when large cash withdrawals by customers take place. It is possible for the liquidity issue that caused a quick run at one bank to spread to other institutions. A catastrophic bank panic can result from liquidity problems that quickly spread throughout the financial sector. Evidently,

the lack of complete information and the idea of handling it at come first, come served in the reimbursement of deposits at par are factors that contribute to bank runs and panics. Deposit insurance, reserve requirements, and availability of the apex bank's liquidity ought to be put into place to stop potential bank runs (Diamond & Dybvig, 1983).

The commercial banks' status as liquid suppliers serves as an example of the potential drivers behind the overlap between their lending and deposit-taking activities. In restricted banking practice, keep in mind that lending and deposit taking are handled by separate financial institutions. This isn't the case anymore, though. These days, the same functional area—liquidity provision—is highlighted in a bank's balance sheet information on both its assets and liabilities. Giving credit to people who really need it without endangering the lending institution's liquidity at that specific moment is known as liquidity provision. In order to share any dead-weight costs related to holding them, this suggests that banks maintain substantial amounts of liquid assets (Thakor & Ramakrishnan, 1984). Because early loan liquidation could result in depositors suffering significant losses and, as a direct result, a bank run, various authorities support the belief or claim that the demand deposit encourages banks to provide resources (liquidity) to borrowers (Thakor & Ramakrishnan, 1984).

Additionally, the ability of a commercial bank to support asset growth (advances) and fulfill commitments by obligation (depositor claims) when they become due for supply is referred to as liquidity. This definition highlights the randomized nature of liquidity (Kashyap, Rajan, & Stein, 2002). This feature is crucial in cases where credit

lines (LOC) are unexpectedly used, such as early interest payments made through selling, credit risk protection, unplanned bank withdrawals, or early loan redemption. In a perfect world, banks would be able to assess how sensitive they are to a specific liquidity risk by weighing the likelihood of various likely outcomes and developing the best course of action.

A leveraged organization that appears unable or unwilling to trade its asset holdings in a smart way needs financial liquidity. Similar to this, a business that is unable to raise the needed capital or funds may decide to sell off or pledge an illiquid asset, which would be extremely problematic. Factually, because they interact as well, funds and asset liquidity often complement one another. Even so, markets might suffer during tumultuous times if disruptions affect the financing (liability) spread to lending. Firms that wish to finance their operations through loans or those that are known for having a weak cash position run the risk of engaging in distressed selling.

There, the market's liquidity is declining. In order to meet a specific maturity mismatch criterion, this banking firms should be able to determine the maturity profile of their assets and liquid assets to retain, i.e. they develop a strategy.

Commercial banks must therefore manage financing liquidity risk by estimating the likelihood that new liabilities will be created quickly enough to replace them. Liquidity management is, in fact, a cost-benefit analysis. If the banks do not manage asset liquidity risk, they will not be able to pay short-term obligations (Thakor & Ramakrishnan, 1984) Unexpectedly, well-managed commercial bank executives prefer to think about regular

and stressful periods separately because, depending on the current situation, the likelihood of changes in the marketability of different asset classes and the maturity arrangement of liabilities may vary.

This is because a banking institution will always have the ability to finance its operations as long as it is willing to make payments at market rates or sell pledged assets instead of doing so. Similarly to this, the banking company might keep assets that are extremely liquid to ensure liquidity, even though these assets will only yield modest returns (Bindseil, Weller, & Würtz, 2003).

2.2.2 SOURCES OF BANK LIQUIDITY

According to Efanga, U., Onoh, U., Opara, C., Ihemeje, C. & Egwu (2020), liquidity includes cash in the bank's vault, balances held with the Central Bank of Nigeria (CBN), balances held with other banks in Nigeria, balances held with offices and branches outside Nigeria, money available for withdrawal in Nigeria, placement with discount houses, interbank placement, treasury bills, treasury certificates, investments in (2010).

Nzotta (2004) asserted that sources of bank liquidity could be divided into two categories: stored liquidity and purchased liquidity. Nzotta pointed out that a bank does not impose any particular theory on how it manages its liquidity. He identified two main sources as:

1. Stored Liquidity: This includes money that is owed to other banks, money that is in the CBN's cash account, call money funds, short-term government securities, commercial papers, acceptances, negotiable certificates of deposits, and more.

2. Purchased Liquidity: These forms of liquidity include borrowing from the Central Bank of Nigeria through discounts or advances, call money held for other banks, certificates of deposit, bankers unit funds, other liabilities like pension funds, sizable time deposits of the government, and investment funds, as well as other liabilities like pension funds.

2.2.3 LIQUIDITY MEASUREMENT IN COMMERCIAL BANKS IN NIGERIA

.Liquidity in commercial banks is measured using several ratios. Four of these ratios, namely the cash reserve ratio, net interest margin, non-performing loans, and economic growth, will receive careful attention for this study.

The amount of cash that banks must keep on hand without being permitted to invest it or loan it out for interest is known as the Cash Reserve Ratio (CRR). This percentage, also known as the reserve ratio, enables commercial banks to determine the number of cash reserves they must maintain with their respective central banks. When a central bank wants to reduce the amount of money that can be borrowed or invested, it increases this portion of its cash reserves. On the other hand, if it wants to promote lending and investment in the market, it lowers the cash reserve ratio (wallstreetmojo).

Another metric for liquidity is the cash reserve ratio. Ibe (2013) concluded that because the cash ratio can be effectively monitored by the regulating authorities, it is particularly effective for sterilizing excess liquidity in the banking system. As opposed to loans and advances, which are the least liquid of a bank's assets, cash ratio directly links liquid assets to deposits. According to Emefiele (2015), the Cash Reserve Ratio (CRR),

Liquidity Ratio (LR), and Loan-to-Deposit Ratio are the three primary indicators of liquidity in Nigeria as stated in the CBN statistical Bulletin under the Financial Sector data set (Efanga, U., Onoh, U., Opara, C., Ihemeje, C. & Egwu, E. 2020).

A measure used to compare a financial firm's net interest income is called net interest margin. It comes from credit products like loans and mortgages and the interest that is charged to people who have savings accounts and deposit certificates (CDs). The banking industry acts as an intermediary between borrowers and lenders, lowering transaction costs and ultimately promoting economic growth (Leland & Pyle, 1977; Diamond, 1984). The NIM of conventional banks is influenced by various types of factors in various ways. Credit risk and rate of interest risk were found by Angbazo (1997) to be the main determinants of NIM for commercial banks. Conventional banks play a significant role in the expansion of an economy. Conventional banks' primary responsibility is to accept excess public funding in the form of current, savings, or fixed deposit accounts and to lend to the public as needed (Chirwa, 2001). Banks perform an intermediation function at a lower interest margin in order to stimulate economic growth. Along with their capital markets, conventional banks are crucial to the economic development of developing nations (Martinez, et al 2004). According to Maudos and Guevara, lower bank margin will lead to a lower social cost for financial intermediation (2004). The competitive banking system's higher efficiency was reflected in lower net interest margins (Rudra & Ghost, 2004). A rise in bank margin will impede the nation's

financial intermediation growth, while a decline in deposits will discourage saving and other financial activities.

Faff, Hodgson, and Kreimmer (2005) examined monthly data from commercial banks in Australia and discovered that deregulation has an impact on how the banks operate (Ghulam, A., Bhati, Zahid, B., Zaighaim, A., Hassan, H., Hammad, H. M. (2018). Loans that are still unpaid are referred to as non-performing loans (NPLs). According to the IMF, a loan is deemed non-performing if the principal and interest are not generated for a minimum of 90 days. Growing non-performing loans pose a threat to banks' ability to perform financially because they lower both their pro-t and their capacity for intermediation. Bank failure is the immediate result of a high number of non-performing loans (NPLs) in the banking system, claims Bhattarai (2017). Given that the banking sector is an economic pillar, any shock to the sector would undoubtedly have an impact on the financial system as well as the economy as a whole (Nwosu, C. P., Okedigba, D. O., and Anih, D. O. (2020). Given their impact on bank earnings and liquidity, strong loan portfolios are crucial for the development of lending institutions. Because of this, interest on loans makes a sizable contribution to commercial banks' interest income and helps them manage their liquidity better. However, NonPerforming Loans (NPLs), which are typically the result of borrowers defaulting, undercut the effort to increase revenue and contribute to the bad loan threat (Samuel Gameli Gadzo, 2018).

In order to achieve certain macroeconomic policy objectives and to thwart any unfavorable economic trends, the Central Bank must take measures to regulate and

control the volume, cost, availability, and direction of money and credit in an economy. This is known as monetary policy.

The United States Federal Reserve Board (2006) defines monetary policy as the process by which the Government, Monetary Authority or Central Bank of a country controls the supply of money, availability of money, and cost of money or interest rate in order to achieve a set of goals aimed at the expansion and stability of the economy. In order to accomplish specific macroeconomic goals, monetary policy is a collection of actions intended to control and regulate the volume of money and credit. According to the CBN Annual Report (2004), which was cited by Jegede, C. A. (2014), monetary policy is a measure implemented by the monetary authority on monetary targeting and the mopping up of excess liquidity, with the goal of ensuring a non-inflationary macroeconomic environment. Similar to this, the CBN Annual Report (2009), as cited by Jegede, C. A. (2014), describes it as specific action taken by the Central Bank to regulate the value, supply, and cost of money in the economy with a view to achieving the Government's macroeconomic goals.

In a nutshell, the goals of monetary policy are primarily to control inflation, preserve a sound balance of payments position to protect the value of the national currency abroad, and encourage an adequate and sustainable rate of economic growth and development. According to Miccolis (2002), cited by Daniel N.N., "Capital adequacy is the determination of the minimum capital amount required to satisfy a specified economic capital constraint" (2015). As a percentage of risk-weighted assets, this is

typically expressed as a capital adequacy ratio of equity that must be held. On the assets side of a company's balance sheet, the equity-to-debt ratio is governed by capital requirements. They should not be confused with reserve requirements, which control, in particular, the liabilities side of a bank's balance sheet, the percentage of assets that must be held in cash or highly liquid assets, or any other reserve requirements (Bindseil, 2004).

Due to the fragility and susceptibility of deposits to bank runs, bank capital helps to create liquidity for the bank. Financial distress is less likely when banks have more capital. Based on the capital adequacy ratio, capital adequacy is assessed (CAR). According to Dang, the CAR ratio demonstrates the bank's internal capacity to withstand losses during a crisis (2011). Since banks use a lot of leverage, they have numerous risks that need to be carefully managed. Without effective risk management, it could very easily go bankrupt (Aburime, 2005), according to a source cited by Daniel, N. N. (2015).

On the one hand, capital adequacy is viewed as a tool to promote the best risk sharing between bank owners and depositors by restricting excessive risk-taking by bank owners with limited liability. Contrarily, capital adequacy regulation is frequently seen as a safeguard against insolvency crises, containing the costs of financial distress by lowering the likelihood of bank insolvency (Caggiano and Calice, 2011).

2.2.4 IMPORTANCE OF BANK LIQUIDITY

According to Nzotta (2004), who was cited in Efanga, U., Onoh, C., Opara, Ihemeje, and Egwu's (2020) work, the banking system's functions of liquidity include the following:

1. Profitable operations are necessary, especially to maintain depositor confidence. Liquidity also helps to meet short-term obligations, keep the bank's doors open, and prevent bank runs.

2. Additionally, liquidity is essential for risk management. With enough liquidity, the various risks that come with banking can be better managed.

3. Public confidence in the solvency of the banks within the banking system is influenced by liquidity.

4. Maintaining sufficient liquidity can help prevent panicked sales of financial securities made in an effort to raise money in times of need or an emergency.

2.3 THEORETICAL REVIEW

2.3.1 LIQUIDITY THEORIES

There are two main difficulties that banks must overcome in terms of liquidity. The responsibility for creating liquidity and managing risk falls to banks. The creation of liquidity is advantageous to both depositors and businesses, particularly when other forms of funding are difficult to obtain. The process of ensuring a bank's own liquidity so that it can carry out its duties continues to be known as liquidity risk management. In particular during times of economic hardship or downturn, the article by (Vossen, 2010; Vossen, 2010) focuses on the delicate balancing act between a bank's inherent liquidity and its function as a liquidity generator. This subject has drawn a lot of attention in the wake of the global financial crisis, which began in 2007 and is still hurting the economy today.

The fundamental objective of commercial banks is to successfully generate liquidity while maintaining their financial position. The prudent and effective management of liquidity and related assets ensured a commercial institution's sound financial position. There are various ways that commercial banks keep their liquidity, all of which must be declared or done as the central bank directs. As for how liquidity is assessed and regulated in banks, as well as how commercial banks may handle liquid storage, surplus, and shortage, there are a variety of liquidity theories for asset management.

2.3.2 COMMERCIAL LOAN THEORY OR REAL BILL DOCTRINE

According to the commercial loan theory, which (Chinweoda, Onuora, Ikechukwu, Ikechukwu, & Ngozika, 2020) is also referred to as the real bills doctrine, a commercial bank must always make quick, self-liquidating loans to business clients. Self-liquidating loans are those that are used to finance the creation and development of products through the various economic phases, including manufacturing, storing, transporting semi-finished or finished products, and distribution of product. Theoretically, the central bank should lend to the commercial banks on the security of short-term, self-liquidating productive loans if they are made by commercial banks. Through this idea, each bank is guaranteed to have the appropriate amount of liquidity, as well as the appropriate amount of money for the entire economy. The central bank aimed to increase or decrease bank reserves by rediscounting authorized loans. As businesses grew and trade requirements increased, Commercial Banks were now able to accumulate more cumulative reserves by

further lowering the market value of the instrument or bills with the central banks. The number of bills rediscounted decreased along with trade requirements, the source of bank reserves, the amount of bank credit, and the amount of actual cash when business activities occupationally slowed down and decreased (Chinweoda, Onuora, Ikechukwu, Ikechukwu, & Ngozika, 2020). According to Adam Smith, bank liquidity is understood as follows: The most liquid types of loans a bank can issue are short-term loans, which are typically used to fund commercially viable items as they are being transported from maker to customer. Due to the impending sale of the funded items, these loans are self-liquidating. The borrower's repayment to the bank is funded by the transaction that is funded by the loan. These loans were described as "liquid" by Adam Smith because they had a liquid goal and were backed by liquid assets. Products are swiftly transferred from manufacturers to wholesalers to significant retail stores, where customers paying with cash make purchases.

2.3.3 THE SHIFTABILITY THEORY

It is referred to as the "shiftability" Theory and is the second most significant explanation of bank liquidity. The shiftability theory states that the ease with which a bank can transfer its assets to other buyers in exchange for cash at a reasonable rate may be used to assess its liquidity. The conventional theory of liquidity with short maturities was replaced by a new theory of liquidity with short maturities as the main theoretical basis for bank lending. Longer-term bank lending during the Great Depression was

undoubtedly influenced in some way by this significantly improved ability to transfer assets in an emergency.

Bank bond portfolios rarely show lending or the use of bank funds according to the traditional definition of liquidity, regardless of whether there is a market for the financial instruments or not. Instead of selling goods, as would be the case in a typical business transaction, the bank sells or transfers the bonds to another holder to liquidate certain bonds. The theory of transferability, which asserts that something can be moved from one location to another, "states that, based on past experience, bond securities are frequently unable to be liquidated at maturity; that, Although the bond instruments may be converted upon expiration, doing so is not desired; while when a single bank's obligations are required from, the only source of liquidity that could be relied upon in an emergency was its ability to move resources to another location, Mitchell (1923).

To be clear, the problem with liquidity in normal times is more about transferring financial instruments to deposit institutions in exchange for cash than it is about expiring advances, which makes it seem like a bigger problem. Banks only need to transfer obligations and instruments as long as the banking organization can rely on different banks to help it out in tough times and is not dependent on loans maturing. The best strategy, according to current thinking in banking circles, is to accumulate a sizeable amount of assets that can be transferred directly to financial institutions prior to their maturation if the need arises rather than relying on maturation borrowings to reach the required side by side of funds. According to Moulton (1939), liquidity and caution go

hand in hand. Moulton claims that the central banking system "is inherently apparent." In the event of a temporary liquidity crisis, commercial banks are anticipated to request temporary accommodation from the central bank. The shiftability hypothesis has advantages and disadvantages, though. The first flaw is that it is difficult to apply to these loans made by other commercial banks because unsecured commercial loans made by a bank cannot be sold in the money market or transferred to other commercial banks (Prochnow, 1949). It may be problematic for potential buyers of bank loans because they frequently lack first-hand knowledge of the value of the liabilities of numerous individual bank borrowers. While some studies, such as prime bankers' acceptances and commercial paper, may also trade, they typically make up a very small portion of all bank loans (Prochnow, 1949),

Furthermore, even though the sale of those instruments among banks cannot increase the liquidity of the banking system overall because a decline in pricing and a decline in commercial activity in terms of borrowing will go hand in hand with a decrease in the total amount of lending, banks' attempts to quickly and drastically reduce such debts put the firm under intolerable pressure, cause havoc, and ultimately lead to the collapse of the banking system as a whole. In general, businesses sometimes can't be suddenly cut off from the credit they've gotten used to without suffering catastrophic consequences for both borrowers and lenders (Durbar, 1922).

Bonds owned by banks, particularly marketable bonds, represent a specific application of shiftability theory and have a very significant potential for asset transfers from individual

financial firms to the Central Bank System (Morton, 1939). Therefore, it is important to stress that while the value of the conventional liquidity theory of finance has decreased, the significance of the shift ability theory has increased as a result of the evolution of the corporate form. This corporate structure has made it possible to issue corporate bonds that banks have purchased as well as to use corporate bonds and shares as collateral for bank loans (Morton, 1939).

As a result, the capital requirements of bank credits at either a temporary or long-term point continue to fund a portion of the long-standing requirements for companies. When the economy is doing well, a banking organization might have little trouble exchanging such assets and instruments, like its bonds, to other people or businesses. Due to this, it would seem to be very difficult for most businesses to concur at the same time to transfer a significant portion of their assets to other owners, especially during times when the economy is generally prosperous.

2.3.4 THE ANTICIPATED INCOME THEORY

On the basis of the US commercial banks' practice of offering term loans, H.V. Prochanow created the anticipated income theory in 1944. According to this theory, the bank plans the term loan's liquidation from the borrower's anticipated income regardless of the type and nature of the borrower's business. A term loan is one that lasts longer than a year but is less than five years. It is granted in opposition to the hypothecation of inventory, machinery, and even real estate. While granting this loan, the bank imposes

limitations on the borrower's financial activities. The bank considers the borrower's anticipated earnings in addition to the security when making a loan decision.

In this way, a bank loan is repaid in installments from the borrower's future income rather than all at once when it comes due. The anticipated theory of liquidity, according to Sobyibo (2014), focuses in particular on long-term advances. According to this theory, the bank plans the term loan's liquidation from the borrower's anticipated income regardless of the nature and character of the borrower's business. A term loan is one that lasts longer than a year but less than five years.

The repayment of these loans does not follow the traditional or commercial bank theories of liquidity, and the banks do not intend to sell the loans on the open market or through central banks. Both term loans and consumer loans must be repaid with the borrowers' anticipated income, so the same liquidity theory applies to both types of loans. If the businesses and industries that offer term loans are successful and have earnings available to them to repay their debts, citizens will have employment and enough income to pay back their borrowings. These loans' success and failure are very closely related to our economy.

It bears repeating that, when put to the test of being liquidated by the banking system as a whole, as opposed to just one bank, the old premise that financial firms' credits should be self-liquidating is unworkable. People who disagree with this idea claim that the aforementioned self-liquidating advances and borrowings cannot be repaid at a significant level without having a catastrophic effect on the company. In the same way, if

other banks are more interested in buying them than in switching them, individual banks may frequently switch modest amounts of specific assets without incurring significant losses. Without a central bank, it is extremely difficult to implement the theory when the banking system appears to be going through a period where liquidity preference is predominate throughout the entire banking system. According to conventional liquidity theory, the borrower cannot trade at the previous level after a bank loan is liquidated.

2.3.5 LIQUIDITY PREFERENCE THEORY

According to the liquidity preference hypothesis, which John Maynard Keynes put forth in 1936, the supply and demand for money are the main factors that determine the interest rate, with transactional, preventive, and speculative motivations serving as the main drivers. When money is distributed among participants in the economic process, each pool of money stored reflects the demand for money, proving that money is the most liquid of all assets, according to Weintraub (1958). The monetary theory, which affects interest rates, activity levels, and price levels, explains why and how people hold on to money rather than goods or other assets that earn interest.

The speculative motivation effectively explains why, after the money has been saved up, the first concern is usually how to spend the money. The expectation that bond prices will decline and that the ensuing capital loss will exceed the interest return, according to Weintraub (1958), is the strongest justification for holding money. The possession of money serves as a medium of exchange whose value is dependent on the volume of income received by the company or individual who holds the money in

question. This is known as a speculative demand for money. Regardless of the market, the outputs and pricing are always in line with the amount of money required at any given time. The value of money held will change in response to changes in the inflation rate in an economy because the value of money kept changes as a result of changes in the inflation rate in an economic system. The profitability of a company will be impacted by this variation.

2.3.6 THE LIABILITIES MANAGEMENT THEORY:

The 1960s were when this theory was created. This theory states that since banks can borrow reserve funds from the money market when necessary, there is no requirement for them to make self-liquidating loans and maintain liquid assets. A bank can create additional liabilities against it from various sources in order to accumulate reserves. These sources include borrowing from central banks, borrowing from other commercial banks, issuing time certificates of deposit, raising capital through the sale of shares, and reinvested profits. These bank funding sources are briefly covered here.

Time Certificates of Deposits:

These serve as the main source of reserve funds for American commercial banks. The maturities of time certificates of deposits range from 90 days to less than 12 months. In the money market, they are negotiable. In the money market, a bank can sell them to obtain liquidity. However, there are two restrictions.

First, time deposit certificates cannot be sold in the market if, during a boom, the money market's interest rate structure is higher than the central bank's ceiling rate. They don't provide commercial banks with a reliable source of funding, either.

Because they have large certificates that they can afford to sell at even low-interest rates, larger commercial banks have an advantage when selling these certificates. So, in this regard, smaller banks are at a disadvantage.

Borrowing from other Commercial Banks:

By taking out loans from other banks with surplus reserves, a bank is able to incur new liabilities. However, these loans are only made for very brief periods—at most a day or a week. The current rate in the money market determines the interest rate for such borrowings. However, borrowing from other banks is only feasible during typical economic circumstances. No bank can afford to make loans to others in these unusual times.

Borrowing from the Central Bank:

In addition, banks incur liabilities on themselves by borrowing from the nation's central bank. They borrow to meet their short-term liquidity needs and do so by discounting central bank bills. However, compared to borrowing from other sources, such borrowings are more expensive.

Raising Capital Funds:

In order to raise money, commercial banks issue new shares or debentures. However, the amount of dividend or interest rate that the bank is willing to pay

determines the amount of money that is accessible through these sources. Typically, banks are unable to offer interest rates that are higher than those offered by trading and manufacturing firms. As a result, they are unable to obtain enough funding from this source.

Ploughing Back Profits:

A commercial bank can also use its profits as a source of liquid capital. However, how much it can earn from this source will depend on its profit margin and dividend payout schedule. The bigger banks are the ones who can rely on this source, not the smaller banks.

2.4 EMPIRICAL REVIEW

On liquidity and bank performance in Nigeria and around the world, numerous studies have been conducted. This section reviews earlier research on the subject in order to identify any gaps that those earlier studies did not address and, since this study was conducted recently, to attempt to fill those gaps.

2.4.1 Cash Reserve Ratio and Bank Liquidity

Banks are the most regulated industry in Nigeria, and all of their activities are governed by policies. One such policy is the requirement for a cash reserve (CRR). According to Ude (2015), the cash reserve requirement is the percentage of total deposit liability that banks must keep in cash with the Central Bank of Nigeria (CBN).

In his study on the determinants of commercial bank lending in Ethiopia, Malede (2017) investigated the role of the cash reserve ratio. The study used panel data from

eight commercial banks from 2005 to 2011. Using OLS, he examined the relationship between commercial bank lending and its determinants. The findings revealed a significant relationship between commercial bank lending and its size, credit risk, GDP, and liquidity ratio.

John (2018) looked at how Ghanaian commercial banks' financial performance and participation in CSR were impacted by their cash reserve ratio (CRR). The Bank of Ghana's data on banks' cash reserve ratios as well as information from the 2013 annual reports of 20 commercial banks in Ghana's 20 banks' participation in CSR and return on investment are used. Using SPSS, quantitative data analysis is done on the data. Pearson's Product Moment Correlation is used to test the first and second research hypotheses. Using ordinary least squares (OLS) regression, the second hypothesis is examined. The cash reserve ratio has been found to have a positive relationship with commercial banks' financial performance, but a negative relationship with how much they participate in CSR.

The financial performance of commercial banks in terms of return on investment is also significantly and strongly predicted by the cash reserve ratio. The cash reserve ratio was one of the independent variables in a study conducted by Olusanya et al. (2018) that looked at the factors influencing commercial banks' lending practices in Nigeria. The study used a multiple regression analysis model and Pearson Correlation. According to the study's findings, the ratio of cash reserves required for reserves is directly correlated with or positively correlated with commercial bank loans and advances.

Adesina et al. (2018) conducted a study using an Autoregressive Lag Analysis Model (ADL) to identify the monetary policy tools used by the Central Bank of Nigeria (CBN) before, during, and after the bank consolidation exercise (2000–2016) and to ascertain the effects of these policies on the financial performance of deposit money banks (DMBs) in Nigeria. The outcome showed that the CBN's monetary policies had a significant short-term impact on the performance of DMBs but a negligible long-term impact. The CBN in Nigeria has periodically adjusted the cash reserve ratio for Deposit Money Banks (DMBs) over the years with the goal of containing inflation and preserving the financial stability of the economy.

Due to a dearth of studies in this area, it appeared that the impact of the CBN's changes to the cash reserve requirements on the performance of Deposit Money Banks (DMBs) was insufficient. Studies on monetary policies and the financial performance of banks did not place a significant emphasis on the reserve requirement of banks, according to the Nigerian literature that is currently available. This serves as the catalyst for the current investigation into the cash reserve ratio as a predictor of bank liquidity.

2.4.2 Net Interest Margin and Bank Liquidity

When commercial banks have excess capital, according to Claeys and Vennet (2009), they can use that capital to take on risky tasks and increase their profits from financial activities, which would result in a rise in net interest rate margins. Therefore, strict or high regulatory capital ratios tend to reduce the profitability of conventional banks, causing their margin to increase as a result of lower capital maintenance costs.

Garca (2010) looked at both developed and developing nations and discovered that operating costs are a significant variable that is worth more than other factors, which would be the cause of increases in bank interest margins. The Lerner index and net interest margin did not show any correlation in the results either.

Through analysis of the forty-four Kenyan banks, Gounder and Sharma (2012) came to the similar conclusion that the net interest margin was positively correlated with operating costs, credit risk, and implicit interest payments. The net interest margin also has a negative impact on quality control and liquidity risk, though the results are not statistically significant. Liquidity and leverage were found by Doyran (2013) to be significant factors affecting NIM and profits in Argentine banks. Operating costs have a good relationship with NIM. The bank with a lower leverage ratio, which is calculated as debt as a percentage of total assets, has a higher return on assets, while macroeconomic factors were found to be important and had a positive correlation with NIM and a negative impact on profitability. According to another study by Nassar, Martinz, and Pineda (2014), the operating expense, liquidity ratio, and non-performing loans all have a significant impact on the net interest margin (NIM) of commercial banks. The bank's NIM is significantly and positively affected by the credit-to-deposit ratio.

By using various models and data types to analyze the trends of commercial banks, various researchers came to differing conclusions about the net interest margin and concluded the conclusion that strong banking systems channel financing resources at lower costs. There is a sizable share of the implicit interest margin that is relatively small.

Over time, the portion of the operating cost that is in the margin has largely remained constant (Muharrami, 2015).

After examining 40 German banks, Busch and Memmel (2016) came to the conclusion that an increase in interest rates' short-term level has a negative impact on the NIM of conventional banks. Therefore, it demonstrates that increasing the interest margin level has long-term increases while having the opposite effects on the banking system. It demonstrates difficulty for the banks that suffer losses if the short-term interest rate increases. The banks will benefit more in the long run from higher interest rates.

2.4.3 Non Performing Loan and Bank Liquidity

Effect of non-performing loans on the liquidity of deposit money banks in Nigeria is a topic that has been the subject of numerous studies. Previous research found a strong correlation between banks' liquidity and nonperforming loans (Berhanu, 2015; Chikoko, 2013; Edirin, 2014; Vodova, 2011). The findings of these studies showed that, given banks' effective and cautious management of loan policies, the expected credit risk is, over time, more than offset by the banks' adequate loan loss provision, well-structured liquidity risk management, and significant capital adequacy. According to Choon, Hooi, Murthi, Yi, and Shven (2013), banks' ability to maintain liquidity is impacted by excessive lending, which raises their liquidity risk.

Previous research found a bad relationship between bank liquidity and NPLs (Bloem & Gorter, 2001; Toby, 2008; Iqbal, 2012; Ionica, 2012; Jane, 2014; Tafirei, 2014; Nigist & Laximikanthan, 2015). They contended that there is typically an inverse

relationship between the banks' minimum liquidity ratio and the asset quality of the banking sector as measured by NPL. In other words, banks will inevitably face liquidity issues as the amount of NPLs in the sector rises, which will weaken their ability to meet the minimum liquidity threshold. They argued that the detrimental effects of NPLs on banks contribute to their illiquidity conditions, influence insolvency threats, deplete their capital, cause bank runs, and ultimately leave them at the regulators' mercy for a potential exit strategy.

An insignificant correlation was found between the two well-known concepts of bank liquidity and NPLs by Muhammed and Gang (2016). They argued that Chinese banks' creation of liquidity is independent of and unrelated to changes in NPLs. Compared to the loan growth used by earlier studies, they found that liquidity creation was a better indicator of risk because it helps to provide an absolute amount of risk transformation. The literature at hand demonstrated that additional elements like capital, size and loan growth also affect banks' liquidity (Nzioka & Kariuki, 2021). Numerous studies that have discovered a positive correlation between these two ideas have looked at the relationship between the banks' capital and liquidity.

According to the authors, people tend to grow their businesses as their capital increases, pay off more debt, meet customer demands, invest in profitable assets, and ultimately aim for continuity. They further stated that the minimum capital requirements for banks have strengthened and made them more resilient, decreased the risk of insolvency, and restored public confidence in their ability to deliver services (Aymen,

2015; Bunda & Desqui, 2005; Choon et al., 2013, Faroq & Nasir, 2017; Jane, 2014; Tseganesh, 2012; Vodova, 2011; Gakpo, Anafure & Mensah, 2021).

Previous research revealed a bad correlation between banks' liquidity and size (Choon et al., 2013; Faroq & Nasir, 2017; Rauch, Steffen, Hackethal & Tyrell, 2009; Tannotta, Nocera & Sironi, 2007). They noticed that bigger banks typically have less liquidity than smaller ones. They asserted that large banks maintain sizable investment portfolios that serve as a backup plan for when financial difficulties arise. Additionally, when these big banks run out of money, they can turn to the CBN as a last resort. However, since bank regulators work tirelessly to safeguard their interests, this response might create a moral hazard issue.

Small banks, in contrast to large banks, frequently work to reach the minimum liquidity limit; as a result, they look to increase liquidity as needed. Vodova (2011, 2013) argued that decreased demand for loanable funds by deposit money banks and their clients is caused by higher lending rates. They asserted that this response might lead to a credit crunch and cause imbalances between bank liquidity and the monetary policy rate (MPR). Monetary Policy Rate (MPR) was found to be positively but insignificantly related to banks' liquidity by Johannes, Sheefeni, and Jacob (2016).

2.4.4 Monetary Policy and Bank Liquidity

Gertler and Gilchrist (1994) conducted a study on how bank business lending responds to tightening monetary policy, which was cited by Jegede, C. A. (2014). Their research shows that when policies are tightened, business lending does not decrease.

They concluded that a decrease in consumer and real estate loans is the cause of the entire decline in total lending. However, Jegede, C. A. (2014) cited Kashyap and Stein (1995) who found evidence that business lending might react to tighter monetary policy. They discover that when the policy is tightened, loans at small banks decline in total as well as in business loans, whereas loans at large banks remain unaffected.

Small banks may have a different response than large banks, which could mean they are less able to prevent the loss of core deposits when the policy is tightened because they have less access to alternative funding sources.

Using an Asymmetric Vector Correction Model (AVECM) that allows for different behaviors in both the short-run and the long-run, Gambacorta and Iannoti (2005), as cited by Jegede, C. A. (2014), studied the velocity and asymmetry in the response of bank interest rates (lending, deposit, and inter-bank) to monetary policy shocks (changes) from 1985–2002. The study demonstrates that after the introduction of the 1993 Banking Law, the speed of bank interest rate adjustment to monetary policy changes significantly increased. Interest rate adjustments in response to positive and negative shocks are asymmetric in the short run, with the theory that in the long run, the equilibrium is unique.

They also discovered that during times of monetary tightening (easing), banks adjust the prices of their loans and deposits more quickly (see Somoye and Ilo, 2009). The limited impact of monetary policy on bank lending in Ghana between 1998 and 2004 was studied by Amidu and Wolfe (2008). The study found that the country's economic situation as well as support and changes in the money supply have a significant impact on

Ghanaian banks' lending behavior. Their results also lend credence to earlier studies' findings that bank lending is adversely impacted by the prime rate set by the central bank and the rate of inflation. While inflation was statistically insignificant, the prime rate was. According to the study, bank size and liquidity significantly affect a bank's capacity to provide credit when necessary based on firm-level characteristics.

Macroeconomic instability's effects on Nigeria's banking sector lending behavior between 1986 and 2005 were studied by Somoye and Ilo (2009). Their research exposed the mechanism by which monetary policy stocks are transmitted to bank operations. The outcome of vector error correction and cointegration suggests a long-term connection between bank lending and macroeconomic instability.

2.4.5 Capital Adequacy Ratio and Bank Liquidity

According to Daniel N. N. (2015), Mugwanga (2014) conducted research using multiple linear regression analysis and the correlation coefficient on the variables that affect the capital adequacy of commercial banks in Kenya from 2009 to 2013. The study demonstrated a strong correlation between capital risk and capital adequacy. Liquidity risk, credit risk, interest rate risk, return on asset ratio, return on equity ratio, and revenue power ratio did not have any meaningful relationships with capital adequacy.

A relatively high impact on the Capital Adequacy and the changes that occur is caused by the combination of liquidity risk, credit risk, capital risk, interest rate risk, return on asset ratio, return on equity ratio, and revenue power ratio, as the percentage of the interpretation reached about 81 percent.

The banking industry in Kenya was investigated by Gudmundson, Nyoka, and Odongo (2013) about the minimum capital requirement and its effects on bank competition. They examined how core capital affected bank competition and performance using two empirical measures of competition. They discovered that regulatory effectiveness enhances competition in the banking sector using the Lerner index, a measure of competitiveness to several variables. They discovered proof that capital affects competition in a nonlinear way. Once consolidation begins, the advantages of higher capital requirements for competitiveness become apparent (captured by core capital squared). The performance of banks is significantly and significantly impacted by bank structure.

The findings highlight the impact of capital regulation on bank competition, bank performance, and Kenya's financial stability. Additionally, a significant factor affecting the competition in and performance of the banking sector is the state of the macroeconomic environment.

For the years 2000 to 2002, Kamau (2004) modeled the regulatory effects of Kenya's minimum capital requirements on bank risk behavior and capital levels using the method of the simultaneous equation. The study estimated the relationship between the capital adequacy ratio and risk portfolio in the banking sector using the three stages least square method. The study's findings showed that while risk-based capital requirements had little impact on undercapitalized banks, they had a significant impact on banks with

sufficient capital. The study's findings indicate that regulatory restrictions have an impact on bank behavior, especially for capitalized banks.

Gorton and Winton (2000) demonstrate how a higher capital ratio may inhibit the creation of liquidity. by deposits crowding out one another. They contend that deposits are a better form of liquidity insurance for investors than bank equity investments. Therefore, higher capital ratios convert an investor's money from relatively liquid bank deposits to relatively illiquid bank capital, decreasing the investor's overall liquidity. Increases in bank capital requirements, according to Kim and Santomero (1988), as cited by Daniel, N. N. (2015), would encourage bank risk-taking and have adverse effects on bank safety.

However, as shown by Furlong and Keeley (1990) and Keeley and Furlong (1989), both of which are cited by Daniel, N. N. (2015), this conclusion is predicated on the assumption of a constant cost of funds, and as a result, it ignores the effects that increased capital would have on reducing the risk exposure of debt-holders who would accept lower returns. Therefore, higher capital requirements would improve overall bank returns.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter includes techniques and procedures adopted to execute the study. It details the research design, population of the study, sources of data, model specification and method of data analysis.

3.2 Research Design

For this study, ex-post facto research design is adopted. This is because the data for the study were from secondary source, hence it cannot be manipulated by the researcher. The Inferences about relations among variables are made without direct intervention, from commitment variables of independent and dependent variables.

This research work embraces the use of secondary time series data in examining the determinant of liquidity of commercial banks in Nigeria.

3.3 Population and Sample of the study

The population of this study is the entire deposit money banks in Nigeria. However, data was collected for over the period of 2010 to 2021 covering a total of 13 banks, which therefore constitute the sample for the study.

3.4 Sources of Data

Data used for this study are secondary data; they are annual time series data on Liquidity ratio, cash reserve ratio, net interest margin and non-performing loan for the

period 2010–2021. Data for this study are collected from investigated annual reports, Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Indicators.

3.5 Model Specification

The main aim of the research study is to evaluate the determinants of Liquidity in commercial banks in Nigeria. Firm specific factors such as Liquidity ratio, non-performing loan as well as macro-economic factors like cash reserve ratio, inflation and net interest margin were used to evaluate liquidity determinants. Thus, the model for this study is specified as follows:

LR = f (CRR, NIM, NPL, MPR, CAR)

$LR_{it} = b_0 + b_1CRR_{it} + b_2NIM_{it} + b_3NPL_{it} + b_4MPR_{it} + CAR_{it} + U_t2$

Where:

LR= Bank Liquidity ratio (loan to deposit ratio)

CRR = Cash Reserve Ratio

NIM= Net Interest margin

NPL= Non-performing Loans

MPR = Monetary policy rate

CAR = Capital adequacy ratio

it = indicate firm i at time.

b_0 = Intercept

b_1-b_4 = Coefficients to be estimated

U_t = Error Term

Liquidity Ratio is the dependent variable, while Cash Reserve Ratio, Net interest Margin and Non-Performing Loans are the independent variables.

3.6 Operationalization of Variables

1. Liquidity ratio: The liquidity ratio is measure of the extent to which bank is able to meet its financial obligations to its customers and creditors, particularly satisfying customers demand for cash withdrawals. It is measure in this study as total loan divided by total deposit.

2. Cash reserve ratio: cash reserve ratio is an instrument used by central bank to restrict the amount of credits bank can create. The higher the ratio, the less the amount of deposit available to banks to grant loans. It was collected in this study from Central Bank statistical bulletin.

3. Non-performing Loan: This indicator is the amount of loan granted by the bank but not paid back within the stipulated period under the loan agreement, usually 90 or 180 days. It is collected from the banks' financial report.

4. Net interest margin: This indicator is measured as the difference between the lending rate and deposit rate.

5. Monetary policy rate: Monetary policy rate is an instrument employed by central bank to control the quantity of money available in an economy. It was collected in this study from Central Bank statistical bulletin.

6. Capital adequacy Ratio. This indicator is estimated as bank capital divided by risk-weighted assets of the banks. It measured the extends to which capital is sufficient to

cover assets of the bank expose the financial risk. It was collected in this study from banks annual reports.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

The data collected was analysed in this chapter. The analysis was carried out in the order of descriptive, correlation and regression analysis. The hypothesis formulated in chapter one is also tested in the section. The data was estimated using E-view 9.0 computer software.

4.2 Data Presentation and Interpretation

This section presents and interprets the estimations results starting with the descriptive statistic, correlation and regression in that order.

Table 1: Descriptive Statistic

	LDR	NPL	NIM	MPR	CRR	IF	CAR
Mean	0.625631	9.891462	8.171827	12.29718	18.38417	12.36417	0.211971
Median	0.630000	8.456338	7.849840	12.05500	21.25000	11.89000	0.200000
Maximum	1.090000	37.25329	11.06417	14.50000	30.11000	18.55000	0.950000
Minimum	0.030000	0.600000	6.344450	6.250000	1.000000	8.000000	0.100000

Std. Dev.	0.177681	5.404235	1.421426	2.133523	8.114783	3.187678	0.095079
Skewness	-0.509222	1.379262	0.654299	-1.707991	-0.667124	0.361356	3.958425
Kurtosis	4.173342	6.646801	2.391482	5.661975	2.594005	2.124139	27.65474
Jarque-Bera	15.69075	135.9060	13.53770	121.9078	12.64281	8.381402	4358.462
Probability	0.000392	0.000000	0.001149	0.000000	0.001797	0.015136	0.000000
Sum	97.59846	1543.068	1274.805	1918.360	2867.930	1928.810	33.06750
Sum Sq. Dev.	4.893450	4526.892	313.1702	705.5474	10206.70	1575.001	1.401207
Observations	156	156	156	156	156	156	156

Researcher's estimation 2022

Table 1, highlight the summary statistic of the variables employed in this study to examine the determinants of bank liquidity in Nigeria. The table 1 shows that on the

average, bank liquidity (LDR) measured in this study as loan to deposit ratio is relatively low. The result implies that about 62.56% of customers' deposit is used to fund loan by the banks. This informed the reason to determine the factors responsible for bank liquidity within the period under investigation. The maximum value of the variables (LDR, CRR, NPL, IF, NIM, MPR AND CAR) are higher than their respective mean value, an indication that they are measuring different parameters. Also, the standard deviation of the various variables lies below their respective mean, suggesting that the indicators engage in this study are relatively stable. The probability of the Jarque-Bera statistic is significant at 5% level for all the variables, indicating that the data series are not normally distributed. Therefore, it should be subjected to unit root test before applying regression to avoid regression spurious outcome.

Correlation

The correlation technique is used to ascertain the association among the variables. Thus, the covariance correlations analysis was performed on the data set to further examine the background relationship between the variables used in this study. The result of the correlation analysis is presented in Table 2 below

Table 2: Correlation Matrix

Variable	LDR	NPL	NIM	MPR	CRR	IF	CAR

LDR	1.000000						

NPL	-0.142451	1.000000					
	0.0761	-----					
NIM	0.095026	0.017216	1.000000				
	0.2380	0.8311	-----				
MPR	0.178760*	-0.010970	-0.254783	1.000000			
	(0.0256)	0.8919	0.0013	-----			
CRR	0.050249	-0.006035	-0.718022	0.629854	1.000000		
	(0.5333)	0.9404	0.0000	0.0000	-----		
IF	0.023829	-0.007549	-0.115587	0.360983	0.619082	1.000000	
	(0.7678)	0.9255	0.1507	0.0000	0.0000	-----	

CAR	-0.076564	-0.066136	0.239559	-0.093690	-0.216041	-0.032916	1.000000
	(0.3421)	0.4120	0.0026	0.2447	0.0068	0.6833	-----

Researcher's computation 2022

The table 2 above indicates that the variables are related in one way or the other. Specifically, non-performing loan(NPL) and capital adequacy ratio (CAR) are negatively but insignificantly associated with bank liquidity (LDR). On the contrary, monetary policy rate (MPR) is positively and significantly related to bank liquidity at 5% level. The result implies that a rise in monetary policy rate will boost bank liquidity. The table further revealed that other variables are positively but not significantly associated with bank liquidity (LDR). Overall, the result indicates that none of the variable is perfectly related to the other, an indication that there is no autocorrelation in the data series.

Unit Root Test

It is usually asserted that time series data has unit root in them. Therefore, to circumvent inconsistent regression estimations and to know the order of integration, the unit root test was conduct on the variables. To this end, the Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), Augmented Dickson Fuller-Fisher (ADFF), Philip Peron-Fisher (PPF) unit root techniques were applied on the data set. The outcome of the panel unit root tests on the data set is presented in Table 3 below.

Table 3 reveals that not all the variables are stationary at levels. Specifically, LDR failed the the stationarity tests at 5 percent significance level judging by the PPF unit root test procedure. Also, CRR and NPL were not stationary at level, using ADFF as yardstick for assessment. Similarly, IF was not statistically significance at 5% level judging by IPS, ADFF and PPF unit root tests techniques. Therefore, the unit root test procedures were repeated on the variables at their first difference level. The result in table 3 shows that all the variables are now stationary at their first difference. The implication of the unit root test result is that some of the variables should be treated at their differenced form for better regression results, hence the need to apply first difference generalised method of moments regression tool in this study.

Table 3: Panel Unit Root Tests on Variables

	At level				**At first difference**			
Variables	**LLC**	**IPS**	**ADFF**	**PPF**	**LLC**	**IPS**	**ADFF**	**PPF**
LDR	-3.756 (0.0000)	-2.351 (0.0000)	41.817 (0.0256)	36.3362* (0.0857)	-13.791 (0.0000)	-9.707 (0.0000)	119.507 (0.0000)	142.027 (0.0000)
CRR	-6.173 (0.0000)	-1.919 (0.0275)	34.533* (0.1221)	54.684 (0.0015)	-11.574 (0.0000)	-8.544 (0.0000)	106.669 (0.0000)	111.986 (0.0000)
NPL	-4.679 (0.0000)	-1.893 (0.0000)	38.763* (0.0513)	43.172 (0.0185)	-4.526 (0.0000)	-2.380 (0.0086)	46.197 (0.0087)	46.649 (0.0077)
IF	-4.959	-1.250*	28.325*	22.86*	-10.669	-5.786	75.973	145.361

	(0.0000)	(0.1056)	(0.342)	(0.6408)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
NIM	-6.880 (0.0000)	-2.762 (0.0029)	43.003 (0.0193)	60.830 (0.0001)	-10.863 (0.0000)	-5.865 (0.0000)	76.828 (0.0000)	91.281 (0.0000)
MPR	-15.939 (0.0000)	-12.707 (0.0000)	154.397 (0.0000)	154.375 (0.0000)	-16.252 (0.0000)	-13.601 (0.0000)	158.955 (0.0000)	282.592 (0.0000)
CAR	-10.866 (0.0000)	-6.018 (0.0000)	78.814 (0.0000)	78.188 (0.0000)	-12.605 (0.0000)	-8.947 (0.0000)	112.738 (0.0000)	113.561 (0.0000)

Researcher's Estimation, 2022

As indicated in table 3, all the variables are stationary at first difference, implying they are integrated of order 1(I), and that the variables have no trend element in them.

Regression Results and Discussion

The determinants of bank liquidity in Nigeria is the focus of this study. The factors affecting bank liquidity were captured using the difference generalised method of moment's regression technique. The outcome of the regression procedure is displayed on table 5. The table 5 reveals the absence of over-or-under restriction in the estimation procedure because the Sarjan statistic is not significant at 0.05 percent judging by the probability value of 0.3586, and it is within the range 0.25 and 0.90 needed for a valid estimation. The implication of this result is that the model is correctly specified.

Furthermore, to be ensure there is no serial correlation in the regression output, it was subjected to Arrelano and Bond (1991) autocorrelation test. The result displayed on table 4 below shows that both AR(1) and AR(2) are not significant at 5% level. This

validates that there is no serial correlation in the regression result. Overall, the diagnostic tests confirm that the instrumental variables incorporated in the model are correlated with their respective error terms, implying that the regression outcome is reliable and consistent.

Table 4: Arellano-Bond Test for Serial Correlation

Test order	M-Statistic	Rho	SE(rho)	Prob.
AR(1)	-0.278787	-1.703635	6.110881	0.7804
AR(2)	0.132331	0.374326	2.828710	0.8947

Researcher's estimation using E-view Software

Since the regression estimation satisfy all the necessary conditions for a reliable and consistent procedures, the study conclude that the outcome of the regression is appropriate for policy direction. Therefore, we went ahead to interpret the regression result presented on table 5 below.

Table 5: Regression Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLDR(-1)	0.504613	0.068547	7.361544*	0.0000
NPL	-0.004381	0.006550	-0.668891	0.5051
NIM	0.017851	0.023069	0.773824	0.4409

CAR	-1.697652	0.382894	-4.433739*	0.0000
MPR	-0.015351	0.005814	-2.640076*	0.0096
CRR	0.005822	0.003401	2.711781*	0.0001
J-Statistic 10.5687 Prob. J-Stat. 0.3585 Instrument Rank 13 * = Significance at 5% level				

Researcher's Computation 2022

Table 5 above clearly reveals that bank liquidity in the past proxy by the lag loan to deposit ratio (DLDR-1) positively and significantly determine current bank liquidity. The implication of the result is that previous liquidity status of the bank, has the capacity to influence future liquidity, therefore banks should keep a substantial part of the deposits received from customers in liquid form.

Table 5 further discloses that non-performing loan negatively determine bank liquidity. However, this indicator is not significant at 5% level. The not significance impact of non-performing on bank liquidity may be occasion by the fact that a substantial part of credit advanced by banks are paid back by the borrower in Nigeria.

A close look at table 5 also reveals that net interest margin (NIM), otherwise known as interest rate spread is a positive determinant of bank liquidity. The not significance of this indicator in this study may not be unconnected to the high interest rate regime in the

country presently. Indeed, high interest rate discourages borrowing, thereby making the bank more liquid, hence the positive effect.

However, it is obvious in table 5 that capital adequacy ratio (CAR) is a strong determinant of bank liquidity in Nigeria. The significance impact of capital adequacy on liquidity, implies that the more capital in the possession of the bank, the more amount of money the bank will have to settle depositors and other creditors. The negative effect of the indicator on liquidity may be because the current capital adequacy ratio operational in Nigeria is still far from the global standard.

Similarly, monetary policy rate (MPR) negatively and significantly determine bank liquidity in Nigeria. Monetary policy rate is the benchmark for other interest rate including bank lending rate. A rise in monetary policy rate pushes lending rate upward, and this serve as incentive for banks to grant more loan because of the interest income accrued, hence the negative effect. The result may also mean that the current monetary policy rate is not high enough to discourage bank borrowing. Hence, banks are still lending a substantial portion of customer deposits.

Finally, cash reserve ratio (CRR) a positive and significant determinant of bank liquidity in Nigeria. The outcome of this finding suggests that, as cash reserve ratio rises, the ability of the bank to grant credits to customer is limited, hence the positive effect. Surely, an increase in cash reserve means the banks have to keep a major part of customers' deposit on reserve, thereby making the bank more liquid.

4.3 Test of Hypotheses

Hypothesis is a tentative statement formulated based on the researcher's expectation. In this section, the hypotheses stated earlier in chapter one is tested using the regression outcome.

Decision Rule

Reject the null hypothesis if the T-statistic is significant at 5% level (using the probability value), otherwise we accept the hypothesis. The T-statistic and probability values in table 5 applies.

Test of hypothesis one (H_1): Cash reserve ratio has no significant impact on the liquidity of Nigerian banks.

Test statistic: The test statistic of cash reserve ratio (CRR) in table 5 of this study stood at a value of 2.7118 and it is significant at 5% level (judging by the probability value). On this backdrop, the hypothesis that cash reserve ratio has no significant impact on the liquidity of Nigerian banks is rejected in favour of the alternative hypothesis. The study therefore conclude that cash reserve ratio has significant impact on bank liquidity in Nigeria.

Test of hypothesis two (H_2): Net interest margin does not have significant effect on the liquidity of Nigerian banks.

Test statistic: The test statistic of net interest margin in table 5 in this study with a value of 0.7738 in absolute term is not significant at 5% level. Therefore, we accept the hypothesis that net interest margin has no significant effect on bank liquidity in Nigeria.

Test of hypothesis two (H_3): There is no significant relationship between non-performing loan and the liquidity of Nigerian banks.

Test statistic: The test statistic of non-performing loan in table 5 of this study has a value of 0.6688 in absolute term. However, it is not significant at 5% level. On this backdrop, we could not reject the hypothesis that non-performing has no significant effect on the liquidity of Nigerian banks. Therefore, we conclude non-performing has no significant effect bank liquidity in Nigeria.

Test of hypothesis two (H_4): Monetary policy rate has no significant influence on bank liquidity in Nigeria.

Test statistic: The test statistic of monetary policy rate in this study has a value of 2.6401 in absolute term (see table 5 above) and is significant at 5% level. Due to the significance outcome, we reject the hypothesis that monetary policy rate has no significant effect on the liquidity of Nigerian banks. Therefore, we conclude that monetary policy rate has significance effect on bank liquidity in Nigeria.

4.4 Discussion of Findings

Deposit money banks occupy an important place in the development of any economy. Specifically, banks help to lubricate the economy by channeling funds from the depositors to the borrowing public through its intermediating function. However, banks are expected to satisfy depositors' demand for cash withdrawals, otherwise there will be bank crisis which may lead to bank runs and financial crisis. As a result, the monetary regulatory authority like the Central bank of Nigeria (CBN) uses various instruments to

ensure that bank is liquid all the time and to guarantee financial stability. Meaning, banks are expected to keep a substantial part of the deposits in liquid form. Therefore, the aim of this study is to ascertain the factors that determine bank liquidity in Nigeria. This study found that both internal and external factors significantly account for the liquidity of Nigerian banks. Specifically, bank capital adequacy ratio is a significant determinant of bank liquidity in Nigeria. Indeed, banks with high capital is less risky and more liquid because such bank will definitely have its capital or assets to fall back on to boost liquidity.

Cash reserve ratio is a tool that measure the portion of customer deposits to be kept by banks. A higher ratio means that banks have less amount to be used as credits, thus boosting bank liquidity. Indeed, this study found that cash reserve ratio significantly and positively determines bank liquidity in Nigeria. Cash reserve ratio is potent instrument by Central Banks to regulate banks activities. An increase in cash reserve ratio limits the ability of banks to create credits, thus making the bank more liquid.

Monetary policy rate is the benchmark for other interest rates and is used by the monetary authority to regulate the amount of money in circulation. Meaning, a rise in monetary policy rate will automatically lead to an increase in bank lending rate, and this will serve a disincentive for borrowing because of the increase in the cost of borrowing. The implication is that lending by banks will be restricted, thus making them more liquid. The findings of this study shows that monetary policy rate significantly but negatively determine bank liquidity in Nigeria. The result tends to portray that monetary policy rate

is a potent instrument to influence the liquidity of banks in Nigeria. This finding is contrary to Johannes et al (2016) who found that monetary policy rate has positive but not significant influence on bank liquidity.

However, non-performing loan as well as net interest margin have do not significantly determine banking liquidity in Nigeria with the period under investigation. The result implies that the factors do not pose serious threat to the liquidity of banks in Nigeria.

Overall, this study found that cash reserve ratio, monetary policy rate and capital adequacy ratio are major determinants of bank liquidity in Nigeria. Therefore, it advice that both the managers of banks and the monetary regulatory authority should pay devoted attention to these indicators as they have the capacity to forestall bank liquidity

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The major aim of this study was to ascertain the factors that determine bank liquidity in Nigeria. The effect of non-performing loan, net interest margin, cash reserve ratio, monetary policy rate and capital adequacy ratio on liquidity of thirteen (13) banks for the period 2010 to 2021 were examined. The difference generalised method of moment was applied on dynamic model to ascertain the impact. This section highlights the major findings of the study, draw the conclusion and make necessary recommendations.

5.2 Summary of Findings

Based on the outcome of the regression analysis and discussion thereto, the following specific findings were established:

(i) That cash reserve ratio significantly and positively determine bank liquidity in Nigeria.

(ii) That monetary policy rate significantly and negatively determine bank liquidity in Nigeria.

(iii) That Capital adequacy ratio significantly and negatively determine bank liquidity in Nigeria.

(iv) That non-performing loan does not significantly determine bank liquidity in Nigeria.

(v) That net interest margin does not significantly determine bank liquidity in Nigeria

5.3 Conclusion

This study examine the factors that determine bank liquidity in Nigeria. The effect of non-performing loan, net interest margin, cash reserve ratio, monetary policy rate and capital adequacy ratio on liquidity of thirteen (13) banks for the period 2010 to 2021 were examined. The difference generalised method of moment was applied on dynamic model to ascertain the effects of the indicators on bank liquidity. The study adopt the expo-facto cross-sectional research design. The attributes of the data were ascertained using descriptive statistics, while the relationship between the variables was detected through covariance analysis. E-view 9.0 computer software was engaged for the analysis. It was found in this study that cash reserve ratio, monetary policy rate and capital adequacy ratio are major determinants of bank liquidity in Nigeria.

5.4 Recommendations

Based on the findings from the analysis, the following recommendations were made for policy decisions:

i. Bank managers should pay devoted attention to monetary policy regulatory instruments such as cash reserve ratio and monetary policy rate because of their effect on bank liquidity.

ii. That bank managers should ensure they have adequate capital because high capital is potential booster of bank liquidity.

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