# Effect of Liquidity Risk on the Profitability of Mortgage Banks in Nigeria

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## ABSTRACT

The study was inspired by the liquidity risk that the Nigerian mortgage banking business faces in terms of profitability. As a result, the study investigates the impact of liquidity risk on the profitability of Nigerian mortgage banks. This research effort was carried out using secondary data and an ex-post facto research design. The regression statistical technique in the Statistical Package for Social Sciences (SPSS) Version 22.0 was used to assess data derived from the financial statements of listed mortgage banks on the Nigerian Stock Exchange (NSE). The results of the analysis demonstrate that Loan to Deposit has a substantial impact on mortgage banks' net interest margins in Nigeria, and that Current Ratio has a significant impact on mortgage banks' net interest margins in Nigeria. It was so recommended, among other things, that bank management adopt sound lending policies and maintain a sufficient balance between loans and deposits, because bank profit is largely dependent on deposits mobilized and liquidity created through loans given.

KEYWORDS: Liquidity risk, Profitability, Loan to Deposit and cash ratios

## INTRODUCTION

Giving out loans is one of the conventional ways that banks make money. Banks have an incentive and a function to provide loans, but they must do so carefully. Even mortgage banks guarantee their deposits with the NDIC, as banks aim to safeguard their interests and the equity of their shareholders by securing and insuring loans, and there is nothing that can be done to completely eliminate the danger of failure. The assumption that a borrower with immediate access to funds may repay with revenue not yet generated appears to be dangerous.

The failure of a bank to satisfy its debts (whether genuine or perceived) poses a threat to its financial position or existence. Asset liability management helps institutions control their liquidity risk (ALM). It's also known as credit losses, and it's an item that needs to be written down in the financial statements. Such debt does not appear suddenly; rather, it develops over time as a result of 'loan errors' made by lending and credit officers, as well as following faulty administrative handling of the facilities, among other things. A financial institution's stability, business continuity, and profitability are all dependent on good credit management, while worsening credit quality is the most common cause of bad financial performance and condition; it has contributed to the liquidation and collapse of important businesses in the economy on several occasions (Tobi, 2011).

As credit rules are loosened and beached in the process of extending credit to customers, the risk of credit losses grows. As a result, businesses must ensure that receivables management is efficient and effective in both application and practice. Delays in collecting money from debtors when it is due cause major financial problems, increase bad debts, and have a negative impact on customer relations (Nduta, 2013). If payment is late or not made at all, profitability suffers, and if payment is not made at all, the company suffers a total loss. On that logic, strategically managing credit management at the "front end" is simply good business. The largest danger in mortgage banking, like any other financial institution, is lending money and not receiving it back in order to maintain liquidity.

Profitability refers to how much money a company makes from its three main production factors: labor, management, and capital. Profitability is the most crucial indicator of a company's success. Theoretical literature agrees that profitability and liquidity are the most important considerations. While it is true that any firm's purpose is to maximize profit, focusing too much on profitability might lead to a disaster by diminishing the firm's liquidity position (Niresh, 2012). The rate of return on firm assets (ROA), the rate of return on firm equity (ROE), the operational profit margin, and net firm income are four relevant metrics of business profitability. The return on all firm assets is measured by the ROA, which is frequently used as an overall measurement of profitability; the greater the number, the more successful the firm's business is (Zaphaniah, 2013).

A key characteristic of the financial crisis was the inaccurate and ineffective management of liquidity risk. Timely identification of potential credit default is important as high default rates lead to decreased cash flows, lower liquidity levels and financial distress. In contrast, lower credit exposure means an optimal debtors' level with reduced chances of bad debts, nonperforming loans and therefore financial health.

We noticed that none of the earlier research, such as Churchill and Coster (2001); Scheufler (2002); Nduta (2013), looked at the influence of liquidity risk on the profitability of mortgage banks in Nigeria. Ayodele (2015) and Ezejiofor, Adigwe, and John-Akamelu, (2015). Some research focused on microfinance institutions, while others focused on commercial banks. The majority of the job was focused on bank credit management. This was identified as a gap in the literature, and the goals of this study are to fill it. The main objective of the study is to examine the effect of liquidity risk on the profitability of mortgage banks in Nigeria. The specific objectives are to:
1. Ascertain the effect of Loan to Deposit on the Net Interest Margin of mortgage banks in Nigeria.
2. Establish the effect of Cash Ratio on Return on Equity of mortgage banks in Nigeria.

## Review of Related Literature
## Liquidity Risk
Liquidity refers to a bank's ability to support asset growth and meet commitments as they come due without incurring unacceptably high losses. Banks are one of the most important sources of liquidity in any economy (Sokefun 2014). A bank's ability to function successfully is dependent on its liquidity. A bank should make sure that it has enough or too much liquidity to pay its short-term obligations owed to its clients. Banks exist, according to contemporary

economic theories, because they provide two key services in the economy: liquidity creation and risk transformation (Andreou, Philip, and Robejsek, 2004). (2015). Banks, in fact, play an important intermediary role in converting liquid liabilities (deposits) into illiquid assets (loans) (Bonfim and Kim, 2012; Dietrich, Hess, and Wanzenried, 2014). Banks offer loans to consumers using only a small portion of their own resources (equity): the majority of their money are liabilities to third parties, such as on-demand deposits. The total of reserve requirements placed on banks by a monetary authority is frequently used to quantify the banking system's liquidity needs (CBN 2012). A liability is established in a bank's balance sheet when fund providers deposit cash, while an asset is created when the bank delivers funds to borrowers (Hartlage, 2012). A bank must manage its liability and asset sides in order to be able to meet the additions to, and withdrawals from, the accounts by her customers.

Lion and Dragos (2006) explain the liquidity risk for a bank; as the expression of the probability of losing the capacity of financing its transactions, or the probability that the bank cannot honor its daily obligations to its clients which includes the withdrawal of deposits, maturity of other debt, and cover additional funding requirements for the loan portfolio and investment.

According to Decker, a bank's incapacity to accept drops in liabilities or fund rises in assets, as defined by the Basel Committee for Banking and Supervision (2000), can be categorized into two types of liquidity risk: funding liquidity risk and market liquidity risk (2000). He defined financing liquidity risk as the possibility that a bank may be unable to satisfy its obligations when they are due due to an inability to liquidate assets or insufficient funding sources. Market liquidity risk, on the other hand, is the risk that due to insufficient market depth or market dilation, a bank may be unable to effectively unwind or offset specific exposures without significantly decreasing market prices because of inadequate market depth or market disruptions (Siaw 2013).

## Measuring of Liquidity Risk of mortgage banks
The capacity to recognize the warning indicators of a liquidity crisis is one of the most important aspects of monitoring and managing liquidity risk. According to Epetimehin and Obafemi (2015), the Cash Ratio (CaR), the Loan to Deposit Ratio (LTDR), and the Loan to Total Asset Ratio are the three key metrics of liquidity in Nigeria (LTAR). Aside from recognizing these signals, an organization must also be able to assess risk size in order to take prompt and appropriate action to avoid a downward spiral.

Liquidity risk can be measured in a variety of ways, including:

## 1. Loan to Deposit Ratio (LTD)

By comparing a bank's total loans to its total deposits for the same period, the loan-to-deposit ratio (LTD) is used to determine a bank's liquidity. Divide a bank's total quantity of loans by its total amount of deposits to get the loan-to-deposit ratio. Loan to Total Deposit (LTD) is a liquidity risk variable, according to Baltagi (2005). It quantifies the banks' exposure to liquidity risk. Total loan as a percentage of total deposit is referred to as LTD. Loans account for a higher portion of a bank's interest-earning assets. As a result, as the Ltd ratio rises, a bank's earnings rise. A bank, on the other hand, is a financial institution. When the loan-to-deposit ratio rises, so does the danger of liquidity. To put it another way, a bank Liquidity risk increases when loan to deposit ratio increases. In other words, banks with higher loan to total asset ratio have high exposure to liquidity risk.

From the macroeconomic point of view, Van den End (2016) decomposed the LTD ratio into numerator (loans) and denominator (deposits). He showed that an increase in LTD was due to loan growth that is partly financed by non-deposit funding, which mostly happened in the economic upswing. The opposite occurred during the economic downturn when a rise in deposits lowered the liquidity risk. Demirguc-Kunt, Laeven, and Levine (2003) used the ratio of liquid assets on total assets in order to estimate the effect of regulation and banking concentration.

## 2. Cash Ratio (CaR)

The cash ratio is a measure of a company's liquidity, specifically the proportion of total cash and cash equivalents to current obligations. The score measures a bank's ability to repay short-term debt with cash or near-cash assets such easily marketable securities. This information is useful to regulators for determining a bank's liquidity risk.

The cash ratio, according to Ibe (2015), is particularly effective at sterilizing excess liquidity in the banking sector. The regulatory authorities can adequately oversee it. Liquid assets are directly tied to deposits rather than the most liquid loans and advances under the cash ratio of bank assets. These are also called liquidity ratio (LR) according to Ross, Randolph, Westerfield, and Jafe (2013). Short-term creditors are very interested in this ratio. They measured cash ratio as the result of cash divided by short-term liabilities.

## Profitability

The measures of bank profitability usually considered in the literature on the determinants of bank profitability are the return on assets (ROA), return on equity (ROE) and in some cases, the net interest margin (NIM). Bank profitability determinants are usually explained in the form of internal and external variables.

According to Osuagwu (2014), the return on assets (ROA), return on equity (ROE), and, in some situations, the net interest margin are the most commonly used indicators of bank profitability in the literature on the determinants of bank profitability (NIM). Internal and external variables are commonly used to understand bank profitability determinants. Liquidity risk, credit risk, bank size, financial leverage, and expense management are examples of internal variables that influence bank management decisions and, in turn, policy objectives. A bank's main assets are its loans to people, businesses, and other companies and its holding securities, while its main liabilities are the deposits and the borrowed money, either from other banks or by means of selling commercial paper in the money market. The following conceptualized the profitability variables.

## Net Interest Income (NIM)

This practice of receiving deposits and lending comes at a cost to both the depositor and the borrower in the shape of interest. The difference between the interest given to depositors and the interest charged to borrowers is known as the interest margin. Ideally, banks should pay lower interest to depositors and charge greater interest to borrowers. In this context, net interest margin is defined as the difference between a bank's interest earned and interest expended divided by its total assets.

## Return on Equity (ROE)

The rate of return achieved by the bank for each currency unit that becomes the company's capital is known as return on equity (ROE). The net ratio of ordinary equity gauges the rate of return on ordinary shareholder investment, according to Brigham and Houston (2012). This Return on Equity Ratio demonstrates how well own capital is used. The higher this ratio, the better. The bank's position will be stronger as a result, and vice versa. Divide net income by shareholder equity to calculate return on equity. In this setting, how much yield do banks provide per year per currency that investors invest in? (Tang, 2016). The return on investment (ROI) is a measure of the profit made by investors on their investment in a company. Higher results result in a higher stock return. Profitability has an impact on stock returns, according to Berggrun, Cardona, and Lizarzaburu (2020). The ability of a corporation to make profits using its own capital is measured by its return on equity (ROE).

**Empirical Review**

Ezejiofor, Olise, and John-Akamelu (2017) calculated a telecommunication corporation's investment value to evaluate if it is comparable to commercial banks in Nigeria. Ex-post-facto research was used in this study. Data from seven years of annual reports and accounts from telecommunication firms and commercial banks were used to calculate the Profitability, Dividend Cover, Long-Term Solvency, and Operating Efficiency ratios. To evaluate the data, financial ratios were used, as well as the t-test statistic. The profitability of telecommunication companies in Nigeria differs significantly from that of commercial banks, according to the findings; there is a significant difference between the coverage ratios of telecommunication firms with that of commercial banks in Nigeria. Otekunrin, Fagboro, Nwanji, Femi, Ajiboye and Falaye (2019) examined the performance of selected quoted deposit money banks in Nigeria, as well as the liquidity management of 17 deposit money banks listed on the Nigerian Stock Exchange (NSE), from 2012 to 2017. The study extracts secondary data from 15 deposit money banks' financial statements for six years, and analyzes the data using the ordinary least square method (OLS). The capital ratio (CTR), current ratio (CR), and cash ratio (CSR) were used as liquidity management proxies, while return on assets was used as a performance proxy (ROA). Liquidity management and bank performance are favorably associated, according to the study, and liquidity management is an important aspect in corporate operations and consequently leads to business profitability Ravi (2012) investigated numerous characteristics related to credit risk management and how they affect banks' financial performance in Nepal in his study. Default rate, cost per loan asset, and capital adequacy ratio were among the criteria examined in the study. For eleven years (2001-2011), financial reports from 31 banks were used to evaluate the data, comparing the profitability ratio to the default rate, cost of per loan assets, and capital adequacy ratio, which were presented in descriptive, correlation, and regression formats. According to the findings, all of these variables show a negative relationship with bank financial performance; nevertheless, the default rate is the best predictor of bank financial performance. In their study, Shahbaz, Tabassum, Ramzan, Mansoor, Ishaq, and Yasir (2012) looked at the influence of risk management on non-performing loans and profitability in Pakistan's banking sector. Five banks were chosen for data gathering, and the entire data was secondary in nature. Furthermore, the data was analyzed using Bar and Pie Chart analysis to investigate risk management practices in banks, as well as variations in NPL and

profitability. The findings of this study show that there is no appropriate risk management mechanism in Pakistan's banking sector. The study also found that non-performing loans are expanding as a result of a lack of risk management, endangering bank profitability. In Nigeria, Adeusi, Akeke, Obawale, and Oladunjoye (2013) investigated the relationship between risk management methods and bank financial performance. Secondary data was gathered using a panel data estimation technique and a four-year progressive annual report and financial statement of ten banks. The findings suggest an inverse association between bank financial performance and question loans, with a positive and significant capital asset ratio. Similarly, it appears that the bigger the number of bank-managed funds, the better the performance. According to the findings, there is a strong link between bank performance and risk management. According to Hossein, Hasanzadeh, and Shahchera (2014), the banking system is the beating heart of every economic system, and numerous elements influence its performance, the most important of which are liquidity risk variables. NPL (non-performing loans) ratios, liquidity ratios, liquidity gap ratio, capital ratio, and bank size are some of the variables. The purpose of this research is to investigate the relationship between these variables and the performance of the Iranian banking sector, including profitability metrics such as ROE and ROA. The impact of microeconomic issues on the performance of the Iranian banking sector is also examined. Using a GMM linear forecasting model and a four-step econometric model, it was concluded that there is a significant relation between mentioned factors (dependent variables) and the profitability ones (independent variables). According to Ejoh, Inah and Ebong, (2014) examined effect of credit and liquidity risk and on bank default risk among deposit money banks in Nigeria. The study is aimed at assessing the extent to which the relationship between credit risk and liquidity risk influences the probability of bank defaults among deposit money banks, a study of First bank of Nigeria Plc. The study adopted experimental research design where questionnaires were administered to a sample size of eighty (80) respondents. The data obtained were presented in tables and analyzed using simple percentages. The formulated hypotheses were tested using the Pearson product moment correlation and chi-square statistical tool. The results of the study revealed that there is a positive relationship between liquidity risk and credit risk. This is based on the fact that an increase in credit risk (bad loan), the loan (asset) portfolio of such a bank is negatively affected causing an increase in bank illiquidity. Based on the findings, it was

recommended that internal loan and credit monitoring strategies should be implemented in full to ensure that loans and credit granted to customers are collected in full plus interest thereon and deposit money banks should not maintain excess liquidity simply because they want to effectively manage their liquidity position. The study relates to researcher's work on liquidity risk and on bank default risk but it differs from research's work because the study was studied only First bank of Nigeria Plc but the researcher's own is on mortgage banks in Nigeria. Ayodele, (2015) examined the causes of bad and doubtful debts, effects on banks' profits and investment and how they can be ameliorated with the use of appropriate securities and management teams put in place. The study made use of secondary data collected from ten-year annual reports of First Bank Nig. PLC, a sample selected purposively from Nigerian commercial banks. Regression analysis was used to determine the effect of bad debts on the investment growth of the bank. And it was discovered that bad and doubtful debts has an inverse relationship with investment growth of the bank. And, loan losses and credit risk if not checked will lead to low investment growth rate thereby jeopardizing shareholders' returns. It is therefore suggested that both commercial banks and monetary authorities should put necessary machineries in place to safeguard any impending loan losses in the banking sector in order to instill confidence among depositors and boost the Nigerian economy as a whole. The study relates to researcher's work on bad and doubtful debts of banks but it differs from research's work because the study was studied only First bank of Nigeria Plc but the researcher's own is on mortgage banks in Nigeria. Ezejiofor, Adigwe, and John-Akamelu (2015) investigated the impact of credit management on a manufacturing company's liquidity and profitability. In order to meet the study's aims, three hypotheses were developed. The study used a descriptive research design. Two manufacturing businesses' samples were chosen. The information was gathered from the firms' annual reports. Financial ratios were used to examine the data, and the three hypotheses were tested using ANOVA in the SPSS statistical program 20.0 version. The researchers discovered that loan policy has an impact on profitability management in Nigerian manufacturing enterprises. Ndifon, Inah and Ebong (2014) studied the and effect of Credit and Liquidity Risk and on Bank Default Risk among Deposit Money Banks in Nigeria. The objective of the research is to assessing the extent to which the relationship between credit risk and liquidity risk influences the probability of bank defaults among deposit money banks, a study of First bank of Nigeria Plc. The study adopted experimental research design where questionnaires were administered to a sample size of eighty (80) respondents. The data obtained were presented in tables and analyzed using simple percentages. The formulated hypotheses were tested using the Pearson product moment correlation and chi-square statistical tool. The results of the study revealed that there is a positive relationship between liquidity risk and credit risk. This is based on the fact that an increase in credit risk (bad loan), the loan (asset) portfolio of such a bank is negatively affected causing an increase in bank illiquidity. Also, liquidity risk and credit risk jointly contribute to bank default risk. Based on the findings, it was recommended that internal loan and credit monitoring strategies should be implemented in full to ensure that loans and credit granted to customers are collected in full plus interest thereon and deposit money banks should not maintain excess liquidity simply because they want to effectively manage their liquidity position. Olarewaju and Adeyemi, (2015) in their paper which is to examine the existence and direction of causality between liquidity and profitability of deposit money banks in Nigeria. Fifteen quoted banks out of the existing nineteen banks were selected for the study. They are; Guarantee Trust bank, Zenith bank, Skye bank, Wema bank, Sterling bank, First City Monument bank, United Bank for Africa, Eco bank, First bank, Access bank, Diamond bank, Unity bank, Fidelity bank, Union bank and IBTC bank. Pairwise Granga Causality test was carried out to determine the presence and direction of causality between banks' liquidity and profitability. From the finding of this study, at 5% and 10% level of significance, it was revealed that the F-statistics corresponding to the null hypotheses of no causal relationship (both unidirectional and bidirectional) between LODEP (a proxy for liquidity) and ROE (profitability measure) for banks like Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank, are too low and as such there is no enough evidence for the rejection of the corresponding null hypotheses. Thus, the result revealed that there is no causal relationship (be it unidirectional or bidirectional) between liquidity and profitability of Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank. The result also shows that there is a trace of unidirectional causality relationship running from liquidity to profitability for banks like Skye bank, First bank, Access bank and FCMB. Based on the findings and conclusions, the study recommend that the apex bank

(Central Bank of Nigeria) should ensure close supervision and monitoring of deposit money banks' strength and level of liquidity in an attempt to stabilize and strengthen the financial sector of the economy. The study relates to researcher's work on liquidity and profitability of banks but it differs from research's work because the study was studied all the deposit money banks in Nigeria Plc but the researcher's own is on mortgage banks in Nigeria. From 2014: Q2 to 201: Q2, Ngozi (2018) investigates Non-Performing Loans (NPLs) and their consequences on the stability of Nigerian banks with national and international operational licenses. For each licensed category, a "limited" dynamic GMM is used to assess the macroeconomic and bank-specific causes of NPL. In a panel vector autoregressive framework, the Z-Score is built to proxy banking stability, and its reaction to shocks NPLs is explored. The findings show that while the determinants of NPLs differ across the two types of banks, the weighted average loan rate is a key macroeconomic driver of NPLs for both. The findings also support the moral hazard hypothesis and the efficiency risk-return tradeoff. Uwalomwa, Olubukunola and Oyewo (2015), conducted a research that the study critically assessed the effects of credit management on bank's performance in Nigeria. In achieving the objectives identified in this study, the audited corporate annual financial statement of listed banks covering the period 2007-2011 were analyzed. More so, a sum total of ten (10) listed banks were selected and analyzed for the study using the purposive sampling method. However, in an assessing the research postulations, the study adopted the use of both descriptive statistics and econometric analysis using the panel linear regression methodology consisting of periodic and cross-sectional data in the estimation of the regression equation. Findings from the study revealed that while ratio of non-performing loans and bad debt do have a significant negative effect on the performance of banks in Nigeria, on the other hand, the relationship between secured and unsecured loan ratio and bank's performance was not significant. Ghebregiorgis and Asmerom (2016) conducted a research that this study aims at measuring the profitability, risk, and efficiency of the banking sector in Eritrea. We have employed the major financial ratio analysis to evaluate the performance of the Commercial Bank of Eritrea and the Housing and Commerce Bank of Eritrea. The results obtained indicate that both banks generally are not scoring significant improvement of their respective performances throughout the sample period (1997-2007), as it is indicated by most of the profitability, risk, and efficiency measures. It is obvious that a number of bank specific factors like

size, ownership, capital structure, equity, age, and experience significantly affect bank's performance. The study relates to researcher's work on profitability of banks but it differs from research's work because the study was studied the commercial banks in Eritrea but the researcher's own is on mortgage banks in Nigeria. Saeed and Zahid (2016) in their study which aimed to analyze the impact of credit risk on profitability of five big UK commercial banks. For measuring profitability, two dependent variables ROA and ROE were considered whereas two variables for credit risks were: net charge off (or impairments), and nonperforming loans. Multiple statistical analyses were conducted on bank data from 2007 to 2015 to cover the period of financial crisis. It was found that credit risk indicators had a positive association with profitability of the banks. This means that even after the deep effects of credit crisis in 2008, the banks in the UK are taking credit risks, and getting benefits from interest rates, fee, and commissions etc. The results also reveal that the bank size, leverage, and growth were also positively interlinked with each other, and the banks achieved profitability after the financial crisis and learned how to tackle the credit risk over the years. The study relates to researcher's work on credit risk and profitability of banks but it differs from research's work because the study was studied the commercial banks in UK but the researcher's own is on mortgage banks in Nigeria. Cordero, (2017) examined the relationship between banks' performance and their nonperforming loans (NPLs). With increasing NPLs in recent years, the quality of lending assets is a key significant and influencing factor for banks' operational risk. The research methodology is to integrate the radial and non-radial measures of efficiency into the network production process framework with NPLs; this study utilizes network epsilon-based measure model to evaluate the banking industry performance. These results showed that the overall banking sector was capable of pursuing growth in both operations and profits while accounting for risk management. The potential applications and strengths of network data envelopment analysis in assessing financial organizations are also highlighted. Abubakar, Ezeji, Shaba and Ahmad (2016) also studied the Impact of Credit Risk Management on Earnings per Share and Profit after Tax with special focus on Nigerian listed banks. In a bid to address their concern, the study empirically examined the effects of credit risk management indicators which is represented by Interest Income, Non-Performing Loans (NPL), Loan Loss Provision (LLP) and Loans and Advances (LA) on bank performance as measured by Earnings per

Share (EPS) and Profit after Tax (PAT). Bank Size (BS) proxied by total assets and Equity Capital (EQCAP) are included as control variables. The study employed panel regression analysis on a sample of 14 deposit money banks (DMBs) listed on the Nigerian Stock Exchange (NSE) for the period, 2000 through 2013. Although, the study did not find any empirical evidence to support the hypotheses that credit risk management indicators significantly influence EPS, it showed that loans and advances, interest income, bank size and equity capital exert significant positive impact on PAT. In line with prior studies, the study also revealed a significant negative effect of loan loss provision and an insignificant positive influence on PAT. The findings suggest the need for Nigerian DMBs to increase the quantum of loans and advances and asset base in order to enhance interest income. Adegoke and Awoniyi, (2017) conducted a research that examines the effect of liquidity risk exposure, long-term and short-term liquidity risk on the profitability of Deposit Money Banks. Expos-facto research design was used for the study. The study employed secondary data, sourced from the audited financial reports of the banks within the period of the study spanning from 2007 to 2016. The data were analyzed through panel data regression analysis. The study found that liquidity risk exposure has negative and insignificant effect on profitability of Deposit Money Banks. The study concluded that both short-term and long-term liquidity risk have positive effect on the profitability of deposit money banks. In view of this, the study recommends that the management of Deposit Money Banks should maintain short, medium and long-term cash forecasts in order to forestall problem of illiquidity and reduce liquidity risk. The study relates to researcher's work on liquidity risk and profitability of banks but it differs from research's work because the study was studied all the deposit money banks in Nigeria Plc but the researcher's own is on mortgage banks in Nigeria.

However, according to a current evaluation of past research, some studies were conducted outside of Nigeria, resulting in a location gap; others were conducted in distinct sectors, such as manufacturing, Nigeria Breweries, and selected enterprises, resulting in a sector gap. Some studies used different variables as proxies for profitability, profit margin, and return on investment, resulting in a variable gap. There is a methodology gap since some studies utilized different methods and designs, such as experimental research design. Finally, some of the academics used various statistical tools such as ordinary least square, correlation, and Multiple Linear Regression, as well as student t-test and ordinary linear regression, resulting in analytical gaps: Saeed and Zahid (2016);

Asantey and Tengey (2016). (2014). The goal of this research was to determine the impact of liquidity risk on the profitability of Nigerian mortgage banks.

## Methodology
## Research Design
This study used an ex-post facto research strategy because it aimed to examine the impact of previous factors on the current happening or event, as well as its strengths. It is the most appropriate design to utilize when selecting, controlling, and manipulating all or any of the independent variables is not always possible. Tables were used to show, evaluate, and interpret the data obtained.

The data for this study came from the annual reports of Nigerian mortgage banks that are listed on the Nigerian Stock Exchange (NSE).

As a result, this study relied solely on secondary data. The majority of the other materials were from published journals, conference papers, articles, and other online resources. The data available on the internet is restricted, as most of the years are not available. As a result, the study was limited to data from 2012 to 2019 due to the fact that some mortgage banks failed to file their financial statements, as reported by the Nigerian Stock Exchange in Nigerian News Direct on December 9, 2019.

## Population of the Study
The population of this study is made up of the Nine (9) Mortgage banks in Nigeria, listed in the Nigerian Stock Exchange (NSE), registered and accredited by the Federal Mortgage Bank of Nigeria (FMBN) and Central Bank of Nigeria (CBN) within the year 2012 to 2019.

### Table 1 List of quoted mortgage banks in Nigeria

| S/N | Mortgage Banks |
|-----|----------------|
| 1 | Abbey Mortgage Bank Plc |
| 2 | Jubilee-Life Mortgage Bank PLC |
| 3 | Aso Savings & Loans Plc |
| 4 | Trust Bond Mortgage Bank PLC |
| 5 | Infinity Trust Mortgage Bank Plc |
| 6 | Resort Savings & Loans PLC |
| 7 | Omoluabi (Living Spring) Savings & Loans PLC |
| 8 | AG Homes Savings & Loans PLC |
| 9 | Lagos Building and Invest. Co. |

Source: Nigeria Stock Exchange, 2021.

## Sampling and Sampling Techniques
The purposive sampling approach was used to determine the size of the sample for the investigation. This is appropriate due to the lack of availability and

incompleteness of some population statistics for the study period. Because some of the data for some of the populations is missing, and some of the listed mortgage institutions have not filed their financial statements with the Nigerian Stock Exchange, this method was chosen. Seven (7) quoted mortgage banks were purposefully picked from nine (9) listed mortgage banks in Nigeria due to the availability and completeness of their financial data. This accounted for 77.7 percent of the population sample.

## Model Specification

The study considered Mortgage bank's profitability as the dependent variable (NIM, ROE and ROA) while Loan to Deposit (LTD), Cash Ratio (CaR) and Current Ratio (CuR) variables represent independent variables. Each individual profitability variables are regressed against both the control variables per time. The functional form of the model is as follows,

Profit = f (FRit, Contit)

Where Profit indicates the profitability variables,
**Model 1**
NIM = β0 + β1 LTD + β 2 LTD + β 3 LTD+ …..……
£

**Model 2**
ROE = β0 + β1 CaR + β 2 CaR + β 3 CaR + …..……
£

## Data Analysis Techniques

The study uses secondary data sources to gather information relevant in achieving the research objectives. The study cover data for eight years, 2012 to 2019. The secondary data was collected from the published annual reports in the banks websites, Nigerian Stock Exchange (NSE) fact book, CBN database and the Nigerian Bureau of Statistics (NBS) website.

A regression statistical tool is utilized for the analysis of the hypotheses formulated in this research work to established the effect of liquidity risk on the profitability of mortgage banks in Nigeria. Linear regression analysis is used as data analysis technique with the aid of Statistical Package for Social Science (SPSS Version 22.00). The results obtained from the model are represented in tables to aid in analysis and ease with which the inferential statistics is being drawn.

### Decision rules:

➢ Accept the null hypothesis if the P Value is greater than 0.05 and then the alternate hypothesis will be rejected.

➢ Accept the alternate hypothesis if the P Value is less than 0.05 and then the null hypothesis will be rejected.

## Data Presentation and Analyses
### Descriptive Statistics

Table 3 below summarizes the descriptive statistics of the variables included in the regression models as presented. It represents the variables of the 7 listed mortgage banks operating in the Nigeria whose financial results were available for the years 2012-2019.

## Data Analysis

### Table 2 Descriptive Statistics

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| NIM | 48 | .01 | 9.20 | 4.5812 | 2.39385 |
| ROE | 48 | -12.20 | 23.93 | 1.3721 | 6.16310 |
| CuR | 48 | 27.70 | 864.96 | 213.0670 | 151.62306 |
| CaR | 48 | 6.82 | 675.58 | 96.4424 | 141.58230 |
| LTD | 48 | 2.13 | 586.92 | 149.3904 | 102.46296 |
| Valid N (list wise) | 48 |  |  |  |  |

*Source: Data analysis from SPSS 22.*

The parameters utilized in the analysis are summarized in Table 2. Net Interest Margin has a higher mean value of 4.58 and a 2.39 percent standard deviation. In comparison to the amount it pays in interest on deposits, this value revealed that the selected 7 mortgage banks earn 2.39 percent on loans and advances. The net interest margin (NIM) is a measure of a bank's profitability and growth. The mean ROE was 1.37, indicating a pretty large return to bank equity holders in Nigeria, while the standard deviation was 6.16 percent, indicating a comparatively high return to shareholders from their investment in Nigerian mortgage banks. The standard deviation was 3.36 percent, which is a reasonable figure- The result also shows that the mean current ratio of the institutions under consideration was 2.13, implying that the banks had more current assets than current liabilities to meet their obligations. The standard deviation, on the other hand, was 151.62 percent, indicating a quite significant variability. The Cash Ratio averaged 0.96, indicating that Nigerian mortgage banks can meet their short-term obligations entirely using currency and cash equivalents. The standard deviation was 141.58 percent, showing that the variation was also quite large. The mean Loan to Deposit was 1.49, which is quite high,

indicating a relatively high loan and advance in comparison to deposit. The standard deviation was 102.46% indicating a rather high deviation.

## Test of Hypotheses
### Test of Hypotheses I
Ho: Loans to Deposit has no significant effect on Net Interest Margin of mortgage banks in Nigeria?

**Table 3 Model Summary**

| Model Summary | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .055[a] | .003 | .019 | 2.41610 |
| a. Predictors: (Constant), LTD | | | | |

*Source: Data analysis from SPSS 22.*

From the table 3 above, which is model summary, there are two pieces of essential information which are $R^2$ and Adjusted $R^{2.}$. Coefficient R is the measure of relationship between dependent variable and independent variable. In this case the $R^2$ = 0. 003 this shows weak positive relationship while the Adjusted $R^2$ is 0.019% of the variation in Net Interest Income can be explained by Loan to Deposit.

The model summary is used to know or determine whether relationships exist or not.

**Table 4 Analysis of variable (ANOVA) hypothesis 1**

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| | Model | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | .809 | 1 | .809 | .139 | .011[b] |
| | Residual | 268.526 | 46 | 5.838 | | |
| | Total | 269.335 | 47 | | | |
| a. Dependent Variable: NIM | | | | | | |
| b. Predictors: (Constant), LTD | | | | | | |

*Source: Data analysis from SPSS 22*

The above table which is called ANOVA table is used to find out if the model is statistically significant or not.

This is because $R^2$ is not a test of statistical significance, it only measures and explains variation in Y from a predictor. The F- ratio is used to test whether or not the $R^2$ occurred by chance alone. The F- ratio found in the ANOVA Table measures the probability of chance from a straight line.

From the ANOVA Table above, we could see that the overall equation to be statistically significant (F=0.139)

**Table 5 Coefficient of correlation of hypothesis 1**

| Coefficients[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | |
| | B | Std. Error | Beta | | | |
| 1 (Constant) | 4.390 | .621 | | 7.069 | .000 | |
| LTD | .001 | .003 | .055 | .372 | .011 | |
| a. Dependent Variable: NIM | | | | | | |

*Source: Data analysis from SPSS 22.*

## Decision
The regression analysis performed for testing whether Loan to Deposit have no significant impact on the Net Interest Margin of mortgage banks in Nigeria is shown in above table.

The value of $\beta$ is 0.055 (which is positive), T-value is 0.372 (which is less than standard 2.00) and P-value or significance level is 0.011 (which is less than 0.05). Results illustrate that Loan to Deposit has positive relationship and significant effect on Net Interest Margin. Because of this P-value is less that than the significant level, the null hypothesis is rejected and the alternate is accepted which says that, Loan to Deposit have significant effect on the Net Interest Margin of mortgage banks in Nigeria. LTD will significantly have effect on the NIM of the mortgage banks because a decrease in banks loans and deposit will affect the Net Interest income.

**Test of Hypothesis II**

Ho: Cash Ratio has no significant effect on Return on Equity of mortgage banks in Nigeria.

**Table 6 Model Summary of hypothesis II**

| Model Summary | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .076[a] | .006 | -.016 | 6.21195 |
| a. Predictors: (Constant), CaR | | | | |

*Source: Data analysis from SPSS 22.*

From the table 6 above, which is model summary, there are two pieces of essential information which are R and $R^2$. Coefficient R is the measure of relationship between dependent variable and independent variable. In this case the R = 0.076 this shows weak relationship while the $R^2$ is -0.016%. The model summary is used to know or determine whether relationships exist or not.

**Table 7 Analysis of variable (ANOVA) Test of Hypothesis II**

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 10.179 | 1 | 10.179 | .264 | .610[b] |
| | Residual | 1775.060 | 46 | 38.588 | | |
| | Total | 1785.240 | 47 | | | |
| a. Dependent Variable: ROE | | | | | | |
| b. Predictors: (Constant), CaR | | | | | | |

*Source: Data analysis from SPSS 22*

The above table which is called ANOVA table is used to find out if the model is statistically significant or not.

This is because $R^2$ is not a test of statistical significance, it only measures and explains variation in Y from a predictor. The F- ratio is used to test whether or not the $R^2$ occurred by chance alone. The F- ratio found in the ANOVA. Table measures the probability of chance from a straight line.

From the ANOVA Table above, we could see that the overall equation to be statistically significant (F=0.264).

**Table 8 Coefficient of correlation of hypothesis II**

| Coefficients[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.689 | 1.089 | | 1.552 | .128 |
| | CaR | -.003 | .006 | -.076 | -.514 | .610 |
| a. Dependent Variable: ROE | | | | | | |

*Source: Data analysis from SPSS 22*

**Decision**

The regression analysis performed for testing whether Cash Ratio has no significant impact on return on equity of mortgage banks in Nigeria is shown in above table. The value of β is -0.076 (which is negative), T-Value is 0.514 (which is less than standard 2.00) and P-value or significance level is 0.610 (which is greater than 0.05). Results describe that there is negative relationship. Hence, we accept the null hypothesis and reject the alternate hypothesis which says that Cash Ratio has significant effect on return of shareholder's equity of mortgage banks in Nigeria.

**Discussion of Findings**

The thrust of this current study is to examine the effect liquidity risk on the profitability of mortgage banks in Nigeria. The findings discussed in line with the specific of objectives of the study.

Generally, the study established that Loan to Deposit have significant effect on the Net Interest Margin of mortgage banks in Nigeria. LTD significantly have effect on the NIM of the mortgage banks because a decrease in banks loans and deposit which are the major revenue generating items will affect the Net Interest income, this is in line with the work of The researchers Puspitasari, Sudiyatno, Aini, and Anindiansyah (2021) looked at the link between Net Interest Margin and Return on Assets of listed banks on the Indonesia Stock Exchange from 2015 to 2018, using Net Interest Margin as the mediating variable. He came to the conclusion that partial CAR and ROA

had a favorable and significant effect on the Loan to Deposit Ratio based on his research. Simultaneously, CAR, NPL, and ROA all have a 34.9 percent influence on the level of influence of LTD, with the rest influenced by other factors not explored. Tarusa, Yonas, Chekolb, and Mutwol's (2012) findings are backed up by the findings of other studies.

The second finding of the study posit that Cash Ratio has no significant impact on Return on Equity of mortgage banks in Nigeria. Cash ratio only have effect on the banks in the short runs. It crystalized as an endemic red flag when this ratio consistently falls below the required threshold, while Return on Equity are expected returns from the banks equity holder in the long run. Calice, 2012 found out that banking sector suffer from decline in asset quality which of major concern to owners of equity This finding is consistent with previous research by Fakhrun, Bambang, and Ary (2019) on the impact of Cash Ratio, Debt to Equity Ratio, Receivables Turnover, Net Profit Margin, Return on Equity, and Institutional Ownership to Dividend Payout Ratio on the impact of Cash Ratio, Debt to Equity Ratio, Receivables Turnover, Net Profit Margin, Return on Equity, and Institutional Ownership to Dividend Payout Ratio. Purposive sampling was used. A total of 19 companies were evaluated in this study. Classical tests, multiple linear regression analysis, F test, modified R square, and t test were used to analyze the data. According to their findings, the Cash Ratio, Debt to Equity Ratio, and NPM had no meaningful impact on the dividend payout ratio (a profitability indicator) in manufacturing companies between 2011 and 2016.

## Conclusion and Recommendations
### Conclusion
It is determined from the preceding chapter's study that liquidity risk, as measured by the current ratio and loan to deposit as independent variables, has an impact on the profitability of Nigerian mortgage banks. As a result of this research, it was discovered that there is a link between liquidity risk and mortgage bank profitability in Nigeria. If mortgage banks fail to address liquidity risk issues, they risk failing to meet their financial obligations and meet the demands of their customers, which could have a negative impact on the entire financial system. To improve operational efficiency and effectiveness, the optimal level of liquidity should be maintained.

### Recommendations
The following suggestions are based on the conclusions and findings presented above.

1. Bank management should adopt good lending policies and maintain an adequate loan-to-deposit ratio because bank earnings are mostly dependent on deposits mobilized and liquidity created through loans given. Mortgage banks, on the other hand, should pay close attention to NDIC Deposit Insurance as a means of mitigating the liquidity risk associated with large-scale withdrawals during economic downturns.

2. Despite the fact that the study's findings indicate that cash ratio is not a significant determinant of mortgage bank performance in Nigeria, management and relevant policymakers should continue to implement appropriate cash management policies that will either maintain or improve the current operational strategy in order to achieve greater operational efficiency. To avoid any liquidity risk or bank distress, frequent monitoring of mortgage liquidity levels and compliance with CBN cash reserve policies for mortgage institutions in Nigeria is required.

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