MAKERERE UNIVERSITY

MAKERERE UNIVERSITY BUSINESS SCHOOL

LOAN PORTFOLIO MANAGEMENT, INCOME DIVERSIFICATION AND LIQUIDITY OF COMMERCIAL BANKS IN UGANDA

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A DISSERTATION SUBMITTED TO MAKERERE UNIVERSITY BUSINESS SCHOOL (FACULTY OF GRADUATE STUDIES AND RESEARCH) IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN BANKING AND INVESTMENT MANAGEMENT OF MAKERERE UNIVERSITY

PLAN A

JUNE 2024

DECLARATION

I Kitenda Hassan, declare to the best of my knowledge that, this dissertation is my original work which has never been published and/or submitted for any award in any other University.

Signed: ---------- Date: 25/06/2024

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APPROVAL

This is to certify that this research dissertation has been submitted with our approval as University Supervisors.

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DEDICATION

To my mother, to whom I owe so much, and to all those so dear to me.

ACKNOWLEDGEMENTS

I am very thankful to God for enabling me to carry out this dissertation successfully. I would like to extend my deep indebtedness to my supervisors, Assoc. Prof. Nalukenge Irene and Mr. Matovu Augustine, who have played a major role in guiding me during this study, encouraging me, and offering invaluable comments from the initial stages of this work up to the final write-up of this thesis.

I also wish to thank my lecturers at the Makerere Business School for the efforts they put into helping me grasp business concepts. To all my classmates, I say thank you for allowing me to learn from you.

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LIST OF ABBREVAIATION

BIS	Bank for International settlements
BOU	Bank of Uganda
LDR	Loan to Deposit Ratio
LPM	Loan Portfolio Management
NII	Non Interest Income
NPL	Non Performing Loans
OECD	Organization for Economic Co-operation and Development.
SPSS	Statistical Package for the Social Sciences

ABSTRACT

The purpose of the study was to establish the relationship between loan portfolio management, income diversification, and liquidity in commercial banks in Uganda.

A quantitative research design was adopted in the study. The target population of this study was the commercial banks licensed by the Bank of Uganda by December 2019. Time-series cross-sectional secondary panel data was analyzed. The data was obtained from all audited published financial statements of accounts of all commercial banks in Uganda between 2011 and 2019. In the measurement of variables, the non-performing loan ratio, the non-interest income ratio, and the loan-to-deposit ratio were considered, and financial ratio analysis was employed to calculate them.

The pairwise correlations between the variables were carried out. F-tests were used to determine the significance of the regression, while the coefficient of determination, overall, within and between R 2, was used to determine how much variation in the dependent variable is explained by independent variables.

The findings of the study indicated that loan portfolio management has a significant negative effect on liquidity. Findings further suggested that income diversification had a negative but statistically insignificant effect on liquidity.

Therefore, the study recommends that for commercial banks to remain liquid, good portfolio management strategies should be adopted to minimise repayment defaults, which result in an increase in the level of non-performing assets.

CHAPTER ONE

INTRODUCTION

1.1 Background

Banks play a significant role in the growth and progress of an economy (Halling & Hayden, 2018). The banking sector is an essential part of the financial structure and plays a significant role in intermediation among depositors and borrowers (Gatuhi, 2015). To execute this function, banks need to manage liquidity to fund increases in assets and meet obligations as they fall due. Rahman and Banna (2015) defined liquidity as the ability of a bank to meet the demand of depositors, process loan requests, and maintain liabilities without any setbacks. A liquidity shortfall at a single bank can have system-wide repercussions. The liquidity of commercial banks in Uganda has continuously shown negative signs over the years. Evidence reveals that, for instance, in 2016, Crane Bank defaulted on its liquidity requirements and obtained liquidity support from BOU above 350b. In 2015, BOU test results revealed that, compared to June 2014, the results suggested that, as of the end of June 2015, banks were more sensitive to a liquidity drain (B.O.U., 2015). Further evidence reveals that liquid assets to total loans decreased from 54.6 percent in 2017 to 45.5 percent in 2018, which indicated reduced banks' capacity to withstand shocks. The liquid assets to total asset ratio decreased from 37.4 percent in 2017 to 31.7 percent in 2018 (BOU 2018). In 2019, Bank of Uganda test results indicated that the liquidity buffers of six banks, albeit small banks, would be depleted by day five of a bank run (BOU 2019). Furthermore, the liquidity coverage ratio, which measures whether a bank holds sufficient high-quality liquid assets to withstand a 30-day stress scenario, decreased from 261.6 percent in 2018 to 229.6 percent in 2020 (BOU, 2020). A simulated bank run test in 2020, entailing the sudden withdrawal of short-term deposits, indicated that the liquidity buffers of six banks would be depleted by day five of a bank

run. Additionally, in 2020, BOU released at least 60b to support commercial banks that had experienced liquidity problems (BOU, 2020).

In this study, the liquidity of financial institutions is explained by loan portfolio management and income diversification (Gololo, 2018). Loan portfolio management (LPM) involves evaluating the steps bank management takes to identify and control risks inherent in the credit process to prevent credit risks before they become real problems (Cornett, 2003). Prior studies by Waweru (2009) and Bloem & Gorter (2001) have shown that loan portfolio management has a direct impact on the liquidity of commercial banks. Income diversification involves banks' activities to gain income not only from conventional interest sources but also from non-interest sources, such as underwriting and trading securities, brokerage and investment banking, and other activities. Syahyunan et al. (2017) noted that in their quest to remain liquid, banks are sourcing for additional income outside of interest income. Scanty research on income diversification exists in the case of developing economies like Uganda. For Uganda, some of the studies on income diversification have been done by Mulwa (2018) and Nsambu (2015). However, studies done in developed countries give differing views on the relationship between income diversification and the liquidity of commercial banks. Butzbach and Mettenheim (2015) revealed a positive relationship between income diversification and liquidity. Tran (2020) and Sinha & Grover (2021) indicate a negative relationship between income diversification and liquidity. Further, Kiweu (2012) noted that income diversification had limited effects on bank liquidity. The mixed results on the effects of income diversification on liquidity call for a study in Uganda to establish the relationship between income diversification and liquidity.

Prior studies on the loan portfolio management and liquidity of banks have been conducted by Sambaza (2016) and Waweru (2009), which revealed a positive relationship between loan portfolio

management and liquidity. This study examines the relationship between income diversification, loan portfolio management, and the liquidity of banks.

1.2 Problem statement

Banks play a pivotal role in financial intermediation by channeling funds from lenders to borrowers. Thus, the importance of liquidity transcends the individual bank, since a liquidity shortfall at a single institution can have system-wide repercussions. Despite the efforts made by commercial banks to obtain satisfactory levels of liquidity, indicators show that the banking system's resilience to liquidity shocks, reduced over the years, as the liquidity ratio for commercial banks has reduced from 52.9 in 2018 (BOU, 2018) to 46.5% in 2022 (BOU, 2022). In 2020, a bank run stress test entailing the sudden withdrawal of short-term deposits indicated that the liquidity buffers of six banks would be depleted by day five; furthermore, the BOU released at least 60b to support commercial banks that had experienced liquidity problems. The liquidity coverage ratio, which measures whether a bank holds sufficient high-quality liquid assets to withstand a 30-day stress scenario, was reduced from 261.6 in 2018 to 184.5% in June 2022 (BOU, 2022). This can be attributed to poor loan portfolio management and a lack of income diversification. Therefore, this study seeks to examine the relationship between loan portfolio management, income diversification, and liquidity in commercial banks in Uganda.

1.3 Purpose of the study

The purpose of this study was to examine the relationship between loan portfolio management, income diversification and liquidity in commercial banks in Uganda

1.4 Objectives of the study

i. To examine the relationship between income diversification and liquidity of commercial banks in Uganda.

ii. To examine the relationship between loan portfolio management and liquidity of commercial banks in Uganda

iii. To establish the effect of loan portfolio management and income diversification on the liquidity of commercial banks in Uganda

1.5 Research questions

i. What is the relationship between income diversification and liquidity of commercial banks in Uganda?

ii. What is the relationship between loan portfolio management and liquidity of commercial banks in Uganda?

iii. What is the effect of loan portfolio management and income diversification on liquidity of commercial banks in Uganda?

1.6 Scope of the study

Geographical Scope

The study focused on all the commercial banks in Uganda and the study was majorly carried out in Kampala

Subject Scope

The study focused on loan portfolio management, income diversification and the liquidity of commercial banks. The specific context of the study was on the liquidity of commercial banks in Uganda. This study was limited to commercial banks in Uganda.

Time Scope

The study examined data for all commercial banks obtained from the audited financial statements between 2011 and 2019.

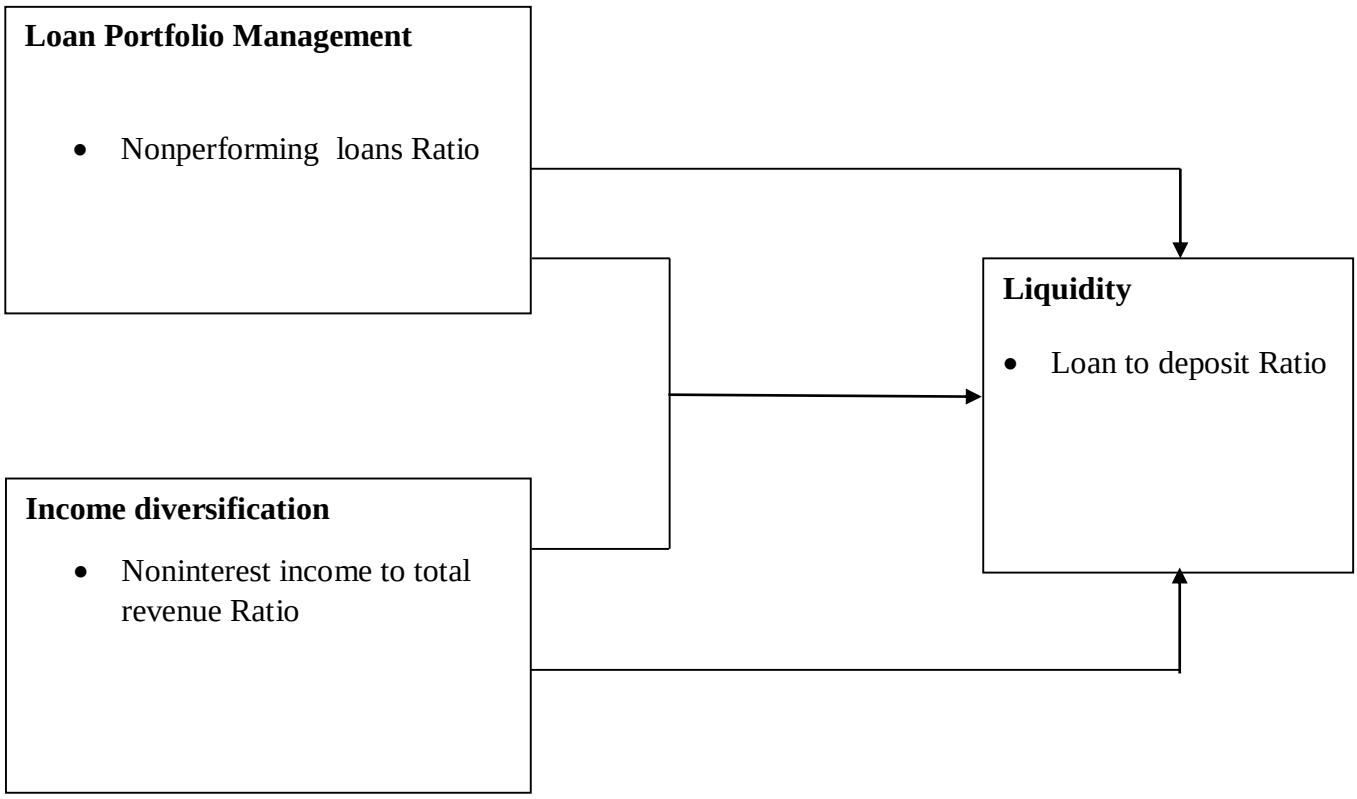
1.7 Significance of the study

i. The study is beneficial to commercial bank managers and staff as they will clearly understand more about the impact of loan portfolio management and income diversification on the liquidity of commercial banks in Uganda. They will have the advantage of applying the recommendations made in the study and engaging the relevant stakeholders in a bid to maximise returns.

ii. The research also contributes to the literature on loan portfolio management and liquidity of commercial banks, especially in developing economies like Uganda.

iii. The understanding of loan portfolio management, income diversification, and its impact on liquidity in financial institutions will be of great benefit to the government and regulatory bodies. It will help the regulators understand the scope of loan portfolio management and how to strengthen the systems in the financial industry in terms of policies to determine the adequacy of liquidity management provided for by the regulator.

1.8 Conceptual framework



Source: *loan analytics, 2004; Kosmidou, K. et al (2008)*; Batool and Jamil, 2019; Brahmana et al., 2018.

Description of the model

The model explains the relationship between loan portfolio management, income diversification, and liquidity. The framework shows that the liquidity of a financial institution depends on the degree to which the management and officials of the bank manage and control risks that are inherent in the credit process.

The framework shows that the loan portfolio management of financial institutions has a direct influence on the liquidity of these institutions (Waweru, 2009). If financial institutions manage the risks that are inherent to the lending process, then they will manage their liquidity levels.

The framework shows that income diversification influences liquidity. Tarazi (2014). Bank income diversification may facilitate risk absorption, which may give rise to more bank liquidity creation.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a detailed discussion of the reviewed literature in relation to the theory, variables and relationships to the study variables.

2.1 Theoretical Reviews

Shift Ability Theory

Shift Ability Theory was proposed by Moulton (1918). This theory suggests that the liquidity of an institution is maintained when it holds assets that could be easily sold or converted to other investments for cash. This assertion contends that the liquidity level of banks is capable of improving if they are always in possession of assets to sell, as this is good for the proper functioning of the banks. Therefore, the theory contends and recognises that the shift ability, transferability, or marketability of the assets of banks serve as a basis for ensuring their liquidity. Shift Ability Theory is of the view that securities held by banks that are highly marketable or transferrable become a vital source of bank liquidity (Maaka, 2013). The theory was brought to prominence after the global financial crisis of 2007, which led banks to run into short runs where the interbank markets were marred by liquidity shortfalls. Fillipo and Harris (2011) put forward the idea the idea that the global crises exposed the inherent liquidity challenges faced by banks in the interbank market. Tirole (2010) pointed out that banks may have challenges obtaining the desired level of liquidity in periods of distress because the level of confidence in the market is likely to be adversely affected in such periods, resulting in creditworthiness also invariably lacking in the market.

Finance distress theory

Baldwin and Scott (1983) purported that when a firm's business deteriorates to the point where it cannot meet its financial obligations, the firm is said to have entered a state of financial distress. The first signals of financial distress are violations of debt payments and the failure or reduction of dividend payouts. Boritz (1991) depicts a process of financial distress that begins with an incubation period characterised by a set of bad economic conditions and poor management that commits costly mistakes. In the case of commercial banks, the inability to provide cash to depositors and loans to borrowers as and when the demand arises may constitute a liquidity crisis. Other creditors also need to be taken into account when firms are putting in place risk management measures. Credit risks in banks also need to be addressed since they may lead to financial distress. Loan portfolio management is an important determinant of the firm's liquidity. The banks should manage the credit and liquidity risks to avoid financial distress. The theory of financial distress emanates from the liquidity and credit risk facing a firm.

2.2 Liquidity

The Bank for International Settlement (BIS) (2008) defines liquidity as the ability of a bank to fund increases in assets and meet obligations as they come due without incurring unacceptable losses. According to Sugar and Rajesh (2008), the success of any bank depends on the level of liquidity that is sufficient for its operation. Inefficient management of liquidity results in serious impairment of banking functions and a contagious effect on the economy. A bank is set to be liquid if it stores sufficient liquid assets and cash, together with the ability to raise funds quickly from other sources to enable it to meet its payment obligations and financial commitments promptly.

According to Sambaza (2016), banks should maintain sufficient liquidity; this brings stability to the financial sector and provides the public with confidence in them. Therefore, for economic

development to take place, the banking sector must be sound and have sufficient liquidity buffers to be the catalyst of economic activity.

According to Sheefeni and Nyambe (2016), as opposed to other risks, liquidity risk and its management have not received the attention that they deserve. However, the 2007–2009 global credit crisis brought about new changes and prompted a shift to focus on the importance of prudent liquidity measurement and management. These actions are in line with the view that there are benefits to holding more liquid assets when economic conditions deteriorate (Mugenyah, 2015). Therefore, even though the ultimate objective of commercial banks is to maximise their profits, preserving liquidity is just as important.

How banks can ensure liquidity

Banks need the preparation and control needed to ensure that the company retains adequate liquid assets, either as an obligation to satisfy the incidental lenders' demand or as a measure to apply the requirements of the monetary authorities (Olagunju et al., 2011). The key goal of liquidity management is to ensure that the cash inflows of a bank are matched with its cash outflows. If sustained across all banks, this equilibrium promotes the development of a sound and stable banking sector, which is a necessary element in the successful execution of banking intermediation. In summary, bank liquidity can be managed as follows: meeting all cash outflow obligations constantly and regularly (both on- and off-balance sheets), evading the obtaining of funds at market premiums or via the involuntary sale of assets, and complying with stipulated liquidity conditions and statutory reserve requirements (Farai, 2020).

Loans to total deposit ratio

The major activity of the bank is using the deposits effectively through lending. In general, the loan-to-deposit ratio is commonly used as a statistic for assessing the bank's liquidity (Saleh, 2014). Nevertheless, this ratio reflects the variance between a bank's major income from loans and the actual cost of raising capital (Shah et al., 2018). Furthermore, if the ratio of total loans to total deposits is too high, more liquidity risks may arise, causing a significant drop in future performance. The ratio is calculated by dividing the total amount of loans by the total amount of deposits (Michael, 2014). The resulting figure is expressed as a percentage.

The LDR is a useful tool for assessing the level of liquidity of a bank and provides insight on banks' risk level, fund utilisation, and intermediation activities (Rengasamy, 2014). The LDR is the total value of loan facilities issued divided by the aggregate value of deposits mobilised (Kurotamunobaraomi et. al., 2017).

Liquidity Coverage Ratio

The LCR requires banks to hold a sufficient stock of highly liquid assets to survive a 30-calendar-day period of market stress (Bech & Keister, 2012). As explained by the Basel Committee on Banking Supervision (2013), the objective of the LCR is to promote the short-term resilience of the liquidity risk profile of banks. It does this by ensuring that banks have an adequate stock of unencumbered, high-quality liquid assets that can be converted easily and immediately in private markets into cash to meet their liquidity needs for a 30-calendar day liquidity stress scenario.

2.3 Loan Portfolio Management

Koch and Wall (2000) define loan portfolio management (LPM) as the process that manages and controls inherent risks in the credit process. Because a review of the LPM process is so important,

it is a primary supervisory activity. LPM involves evaluating the steps bank management takes to identify and control risk throughout the credit process.

The assessment focuses on what management does to identify issues before they become problems. The guideline, prepared for the benefit of both examiners and bankers, discusses the elements of an effective LPM process. It emphasises that the identification and management of risk among groups of loans may be at least as important as the risk inherent in individual loans. For decades, good loan portfolio managers have concentrated most of their effort on prudently approving loans and carefully monitoring loan performance (Scharfstein & Stein, 2000).

Effective loan portfolio management begins with oversight of the risk in individual loans. Prudent risk selection is vital to maintaining favourable loan quality. Therefore, the historical emphasis on controlling the quality of individual loan approvals and managing the performance of loans continues to be essential. However, better technology and information systems have opened the door to better management methods. A portfolio manager can now obtain early indications of increasing risk by taking a more comprehensive view of the loan portfolio. To manage their portfolios, bankers must understand not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated (Papadopoulos, 1989).

Ensuring proper loan portfolio management

Geek (2014) describes LPM as the process of developing a loan portfolio and managing the risks inherited from these loans. Proper loan portfolio management involves Loan portfolio assessment for banks allows for a simple approach to examine systems step-by-step, along with the processes and guidelines that establish portfolio quality and deal with the actual portfolio sample, dispersed over financial institution branches (Abdus 2004). In addition, Gregoriou and Hoppe (2009)

emphasised systematically paying detailed attention to a loan portfolio, such as evaluating the risk or return profile of the loan portfolio and enhancing its soundness through monitoring.

Measures of loan portfolio management in financial institutions

Nonperforming loan ratio.

The non-performing loans (NPL) ratio is the amount of non-assets divided by the total credit granted by the bank. The ratio of bank nonperforming loans to total gross loans measures bank health and efficiency by identifying problems with asset quality in the loan portfolio. According to Kasmir (2004), a high NPL indicates low loan quality. On the other hand, the low non-performing loan ratio indicates good loan quality (Albulescu, 2015).

Loan Loss Provisions

Banks use loan loss provisions to cover different kinds of loan losses, like NPLs, customer bankruptcy, etc. However, its minimum portion is consumed in NPLs, as the banks have significant NPLs each year (Makri et al. 2014). Higher loan loss provision is an indication of management inefficiency, and it is often positively associated with actual losses. Banks with poor credit quality are facing more risk in their loan portfolio, which results in higher NPLs (Beck et al. 2015). Based on the literature, the following relationship is expected.

2.4 Income diversification

For a commercial bank, a diversification strategy means a broadening of income sources, an expansion of business scopes, and an extension of operating activities. Generally speaking, diversification can be classified into three types: asset diversification, geographic diversification, and income diversification, all of which have developed in line with technological advances, policy changes, and customer demand (DeYoung et al., 2004).

Diversification of assets refers to different types of loans within the loan portfolio. Geographic diversification refers to expansion in terms of operational area, where banks set up branches in different regions or countries through establishment or acquisition and provide financial products and services in local or wider regions to achieve cross-regional or multinational operations (Meslier et al., 2014). Finally, income diversification refers to the activities of banks that are beyond the scope or range of a single financial service product. This type of diversification is manifested by banks' ability to cross the boundaries of traditional commercial banks in product services and to provide customers with several or all of banking intermediation, securities, insurance, and trust services (Schmid & Walter, 2009). Banks may also update and refine their credit business through financial innovation and may expand into intermediary businesses, securitization, and various types of segmentation within each traditional service. With income diversification, banks no longer rely on a single source of income, such as traditional net interest income. Instead, they increase new income through diversified business lines and diversify the income streams of different businesses through increased non-interest activities.

In principle, income diversification is a shift from lending activities towards non-lending activities such as investment banking, trading, and insurance (Busch & Kick, 2009). According to Mujeri and Younus (2009), income diversification entails advisory services, asset management services, the sale of insurance and mutual fund products, payment products, electronic bill payments, and the sale of credit cards. Generally, income diversification generates non-interest income, which is grouped into fee income and non-fee income. Activities that generate fee income include loan processing, bill discounting, letters of credit and guarantee, account keeping, service, and management (Lepetit et al., 2008; DeYoung & Roland, 2001). While non-fee income arises from foreign exchange transactions, investment in government and corporate securities, rental premises

owned by the bank, and gains from the sale of premises (Rushdi & Tennant, 2003), institutions charge fees that provide noninterest income as a way of generating revenue and ensuring liquidity in the event of increased default rates. Non-interest income makes up a significant portion of most banks's revenue (Stiroh, 2004).

Measures of income diversification.

Noninterest income to total revenue ratio.

Edirisuriya et al. (2015) used the ratio of noninterest income to total revenue as a measure of income diversification. Non-interest income is the composition of fee-based income, related investment income, and other non-interest income. A higher coefficient refers to greater bank diversification in its income.

2.5 Income diversification and liquidity

Meslier et al. (2014) found that bank revenue diversification may facilitate risk absorption, economies of scale and scope, a reduction in total volatility, capital savings, and increased bank profits, which may give rise to more bank liquidity, assuming bank risk is given via providing stronger financial foundations to meet depositors' demand of withdrawing funds at par value at a moment's notice and providing borrowers liquidity off the balance sheet.

Gropp and Heider (2010), using a sample of European banks, investigated the impact of income diversification on liquidity. According to the findings, greater income diversification was inversely connected to the liquidity of banks. According to the authors, banks with more diversified income sources may have lower liquidity, as they can rely on alternative income streams to maintain levels of liquidity.

Dang (2020), in a study of Vietnamese commercial banks from 2007 to 2018, observed that Vietnamese banks that were less liquid diversified into non-traditional banking to generate non-interest income to increase liquidity. Similar results were recorded for commercial banks in Vietnam from 2007–2017 by Hoang et al. (2020), who concluded that banks focusing more on traditional banking activities have higher liquidity than those focusing on non-traditional banking activities. Furthermore, the same negative relationship between income diversification and liquidity has been recorded for large US-holding banks (Tran, 2020) and Indian banks (Sinha & Grover, 2021).

Hahm (2008) conducted a study to examine the determinants and consequences of non-financing income diversification on commercial banks in OECD countries and in this paper. The author of the study examined the determinants and consequences of the changing income structure of commercial banks in the era of financial conglomeration. The study also investigated the impacts of non-interest income expansion on bank profitability and risks. According to the study, banks with low liquidity, represented by high impaired loan ratios, tend to invest more in non-interest income diversification.

DeYoung and Jang (2016) investigated whether and how U.S. commercial banks actively managed their liquidity positions between 1992 and 2012, prior to the implementation of the Basel III liquidity rules. And the results suggested that banks with higher non-interest incomes tend to have lower liquidity targets, potentially impacting their liquidity management strategies.

Nilgun (2022) examined the effect of loan-to-deposit ratio, non-performing loan ratio, other operating expenses ratio, and non-interest income ratio on the return on assets ratio. Data from 31 banks was analysed in the study. It was found that banks relying on non-interest income have low liquidity levels, while non-interest income helps them manage funding gaps efficiently.

Butzbach and Mettenheim (2015) investigated the effect of income diversification on the creation of liquidity for a sample of European banks. The findings revealed a positive relationship between income diversification and liquidity. The authors argued that diversified banks are better positioned to generate internal liquidity due to their ability to tap into different income sources and mitigate idiosyncratic risks.

Kiweu (2012). In his paper, the author investigated the effect of income diversification on bank performance and the reduced volatility of revenue of Kenyan commercial banks and found that income diversification in Kenyan banks does not significantly impact earnings volatility, suggesting limited effects on bank liquidity.

2.6 Loan portfolio management and liquidity

According to Bloem and Gorter (2001), though issues relating to non-performing loans may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions, which tend to have large loan portfolios. Besides, the large bad loan portfolios will affect the ability of banks to provide credit. Huge non-performing loans caused by poor portfolio quality could result in a loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems.

Asiedu-Mante (2002) asserted that high default rates had plunged some banks into serious liquidity problems, culminating in the erosion of public confidence in these banks. He indicated further that

a combination of poor lending practices and ineffective monitoring of credit facilities extended to customers has contributed to high loan delinquency in some banks.

Subedi and Neupane (2013) studied the determinants of bank liquidity and their influence on the financial performance of Nepalese commercial banks. They focused on six commercial banks, using a primary data collection method in the form of a questionnaire and a secondary data collection method in the form of statistics from the banks' annual financial statements. A linear regression model was used to include loan-to-deposit data covering the period 2002–2003 to 2011–2012. Based on quantitative methods, hypotheses were tested, and conclusions were reached. The results of the regression analysis showed that the share of non-performing loans had a negative and statistically significant effect on commercial bank liquidity.

Epure and Lafuente (2015) also suggested that healthy loan portfolios are vital for the progress of lending institutions in view of their effect on the liquidity of banks. For this reason, interest on loans contributes significantly to the interest income of commercial banks and improves the liquidity management of the banks. But the process of earning more revenue is shortchanged by nonperforming loans (NPLs), usually as a result of default from borrowers, which leads to the bad loan menace.

According to Choon et al. (2013) and Vodova (2013), the researchers confirmed that there is a negative relationship between NPLs and liquidity. This conclusion was reinforced by the fact that when banks extend excessive lending, the possibility of a default increases, which in turn reduces commercial bank liquidity.

Raavinuthala et al. (2022) studied issues in liquidity management in banking systems, and the findings indicated that loan portfolio management can have a negative impact on liquidity in banking systems due to the increase in non-performing loans, which reduces the overall liquidity of banks.

Munteanu (2012) studied bank liquidity and its determinants in Romania. The author analysed 27 banks in Romania over the period 2002–2010. The data used in the study was obtained from Fitch's bank scope database for bank-specific factors. The liquidity ratios used in this study as well as the results of the regression are consistent with the liquidity ratios used in studies conducted by Vodova (2013) and Choon et al. (2013). The results of the panel data regression analysis confirmed that commercial bank liquidity is positively related to non-performing loans (Munteanu, 2012).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The chapter presents the methodology used to carry out the study. It presents the research design, study population, sample size, sampling methods, data collection methods and instruments, procedure for data collection, data analysis, and measurement of variables.

3.1 Research design

The study employed a quantitative research approach based on secondary data, which comprised all selected commercial bank financial reports. In this research, financial ratio analysis was utilised to accurately measure, describe, and comprehensively analyse the intricate relationships between loan portfolio management, income diversification practices, and the liquidity of commercial banks in Uganda. A quantitative research design was used to answer the study objectives.

3.2 Study population

The study population was comprised of all the commercial banks in Uganda, and a total of 25 registered commercial banks were considered for the study. (Bank of Uganda Annual Report, 2019). All active banks in Uganda report the audited financial performance to the BOU for validation, approval, and publication on an annual basis.

3.3 Data sources

This research study made use of secondary data. Data was collected from validated and approved financial statements of commercial banks from 2011 to 2019 obtained from newspapers and the respective bank websites. The rules require that a financial institution shall, within four months after the end of its financial year, publish its audited annual financial statements and the External Auditors Report.

3.4 Data collection instruments

The study employed secondary data that was extracted from audited financial statements and annual reports of commercial banks. Secondary data collection instrument specified in Appendix II was used.

3.5 Measurement of variables

	Independent Variables		Definition		Source
1	Nonperforming loans Ratio	NPL	Nonperforming loans / total loans	Epure&Lafuente, 2015, Kwambai and Wandera, 2013, Li, 2007,Mehmed 2014,Million et al. 2015	Annual report
2	Non Interest Income Ratio	NII	Total Non Interest Income/ Total Revenue	DeYoung& Rice, 2004,Stiroh, 2004, Stiroh& Rumble 2006,Gompers et al., 2003,Edirisuriya et al., 2015.	Annual report
3	Total Loans To Total Deposits Ratio	LDR	Total Loans/ Total Deposits	Shah et al., 2018, Kosmidou et al, 2008, Nasieku et al., 2013	Annual report

3.6 Data processing and analysis

The data was organized and financial ratios computed using Excel program in order to obtain the study variables. Statistical techniques in the form of regression and correlation were used to establish the relationship between the dependent variables and the independent variables. Statistical Package for the Social Sciences (SPSS) was mainly used to analyse the data.

Tests of Significance

The F-test was used to determine the significance of the regression, while the coefficient of determination, R2, was used to determine how much variation in the dependent variable is explained by independent variables. Beta coefficients were used to compare the strength of the effect of each individual independent variable to the dependent variable, and ρ-value results are said to be statistically significant within the 0.05 level, which means that the significance value must be smaller than 0.05. The significance was determined by the t-value, which indicates how many standard errors the sample diverges from the tested value.

3.7 Analytical Model

The study adopted a multiple regression model to determine the effects of each of the variables with respect to liquidity. Regression is concerned with describing and evaluating the relationship between a given variable and one or more other variables. More specifically, regression is an attempt to explain movements in a variable by reference to movements in one or more other variables.

The model specifically took the form

$$Y = \beta o + \beta 1\ X1 + \beta\ 2\ X2 + e$$

Whereby, Y is Liquidity, as measured by, Total Loans to Total Deposits (LDR). Independent variable includes; X1 = Non performing loans ratio, X2 =Non Interest income Ratio. B0 is the Y intercept, β1…to β2 are the regression co-efficient and ε = Error term

CHAPTER FOUR

PRESENTATION AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the analysis of the data on the study variables. The analyses include descriptive statistical analysis, correlation analysis and regression analysis. The descriptive statistics are intended to establish the state of the commercial banks in light of the variables under study, while the correlation and regression analyses serve to establish the both the no causal and causal relationship between the study variables and as such be able to address the objectives of the study.

4.1 Descriptive Analysis

The descriptive analysis was conducted to establish the level of loan portfolio management, income diversification and liquidity prior to establishing the relationship between the variables. Include the nonperforming loans Ratio, non-interest income to total revenue ratio and loan to deposit ratio.

Table 4.1: Descriptive Statistical analysis

Variable	Ratio	N	Min	Max	Mean	Std. Deviation
Loan portfolio management	Nonperforming loans Ratio	8	0.000	0.421	0.05	0.052
Income diversification	Noninterest Income to total revenue Ratio	8	0.011	0.445	0.241	0.097
Liquidity	Loan to deposit Ratio	8	0.000	7.245	0.565	0.575

Source; Commercial banks audited financial statements

The population consisted of 25 commercial banks licensed by the Bank of Uganda and operational in Uganda in the period between 2011 and 2019.

According to the analysis conducted, the loan portfolio quality of commercial banks in Uganda reveals that their average nonperforming loan ratio is 5% over the years 2011 to 2019. This indicates that a considerable portion of the banks' loan portfolios are not performing, which means that approximately 5% of all loans are not generating revenue for the banks and are instead costing them in terms of legal fees and other debt collection-related expenses.

The noninterest income to total revenue ratio is a measure of income diversification among commercial banks in Uganda. On average, over the years, commercial banks in Uganda have had a ratio of 0.241, indicating that 24% of their income is generated from non-interest sources. This ratio is consistent with the high rate of nonperforming loans in the banking industry. As interest income is the primary source of income for commercial banks, a high level of income diversification suggests an increase in the number of nonperforming loans.

The liquidity of the commercial banks in Uganda, measured by the loan-to deposit ratio, is such that their average was approximately 0.565 over the study period. This implies that approximately 56% of the bank deposits are held up in loans.

4.2 Correlation Analysis

Correlation analysis was conducted to measure the strength of linear associations between the study variables under study as summarized in table 4.2.

Table 4.2: Correlation Analysis

	1	2	3
Loan Portfolio Management (1)	1		
Income diversification (2)	.467**	1	
Liquidity (3)	-.664**	-.402**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Income diversification and liquidity of commercial banks in Uganda

Based on the results presented in Table 4.2, there is a significant negative correlation between income diversification and liquidity ($r = -.402^{**}$, $p<.01$). This suggests that during the study period, an increase in non-interest income was associated with a decrease in liquidity. This may be due to the fact that income diversification can indicate a shift in strategy by a financial institution from loans as a primary source of income to other sources, which negatively impacts the loan-to-deposit ratio (liquidity).

Loan portfolio management and liquidity of commercial banks in Uganda

The findings in Table 4.2 revealed a significant negative correlation between loan portfolio management and liquidity ($r = -.664^{**}$, $p<.01$). This indicates that over the years, an increase in nonperforming loans is associated with a decline in liquidity over time. This suggests that when the bank's loans are not performing well, they reduce the number of loans issued to applicants, which may explain the low loan-to-total-deposit ratio.

4.3 Regression Analysis

To establish if changes in the independent variables could cause changes in the dependent variable, a multiple regression analysis was conducted using the Ordinary Least Squares estimation method

4.3.1 Unit Test for Stationarity

Since the data on the variables was a time series, it is mandatory to test for the stationarity of the series to ensure the stability of the regression coefficients. The unit root test for stationarity was performed using the Augmented Dickey-Fuller method. The results in Table 3 show that the absolute value of the ADF test statistic, Z(t), for all of the variables, that is, loan portfolio quality (-3.245) and liquidity (-3.167), is greater than the critical values at 5% (-3.000), while that for income diversification (-2.925) is greater than the critical value at 10% (2.630). Furthermore, the Mackinnon-Approximate P-value is less than 0.05. This is an indication that the hypothesis of a unit root is rejected. Implying that the time series for all the variables is stationary. The study selected to estimate an Ordinary Least Squares Model based on the fact that all variables were found to be stationary in their level form.

Table 4.3: Augmented Dickey-Fuller Test

Dickey-Fuller Statistics	Loan Portfolio Quality	Income diversification	Liquidity
Z(t)	-3.245	-2.925	-3.167
1% Critical Value	-3.750	-3.750	-3.750
5% Critical Value	-3.000	-3.000	-3.000
10% Critical Value	-2.630	-2.630	-2.630
Mackinnon Approx. P-Value	0.0175	0.0425	0.022

4.3.2 Multiple Regression Model

The multiple regression analysis involves Liquidity as the dependent variable and loan portfolio management and income diversification as the independent variables. The estimation results of the regression equation are presented in Table 4.4.

Table 4.4: Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	-.238	.054		-4.416	.000
Loan Portfolio Management	-.685	.108	-.661	-6.346	.000
Income Diversification	-.122	.868	-.081	-.141	.445
R Square	.493		F Statistic		6.435
Adjusted R Square	.239		Sig.		.000

Dependent variable: Liquidity

The results in Table 4.4 show that the predictor variables explain at least 23.9% of the variance in liquidity of commercial banks (adjusted R square =.2339). In addition, the regression model was found to be significant (sig. .000). The results further indicated that income diversification (Beta =. -.122, Sig. =.445) was not a significant predictor and loan portfolio management (Beta = -.685, Sig. =.000) was a significant predictor. It means that a change in loan portfolio management leads to -0.685 negative changes in liquidity. This implies that high non-performing loans, signified by poor loan portfolio management, would lead to a reduction in liquidity, while income diversification contributes -0.122 negative changes in liquidity. This means that high levels of income diversification are associated with low levels of liquidity. The regression model was also found to be well specified (F statistic = 6.435, $p < .01$).

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the discussion of findings in regards to the objectives of the study, the conclusion, the recommendations, limitations and further areas of study.

5.1 Discussion of findings

Findings regarding the objectives of the study are further discussed here to check their relevance on the overall knowledge generation. The discussion of findings is structured in line with the objectives of the study and paying attention to the key findings attained from the process of data analysis.

5.1.1 Loan portfolio management and Liquidity

The study findings revealed that loan portfolio management has a significant negative coefficient (Beta = -.685, $p<0.001$). This implies that, assuming all other variables are held constant, a unit increment in nonperforming loans due to poor loan portfolio management would result in a decrement of 6.85 units in liquidity. This means that an increase in the level of nonperforming loans due to poor loan portfolio management will lead to a reduction in the liquidity of commercial banks. This finding seemed to conform to Bloem and Gorter (2001), who state that if a bank has a high number of non-performing loans, this leads to a reduction in the bank's ability to extend credit further, which then results in a liquidity crunch and prejudices other creditors that are in good standing. This eventually leads to investors and depositors withdrawing their funds, thus pushing the bank into a liquidity crisis. This is consistent with Choon et al. (2013) and Vodova (2013), who confirmed that there is a negative relationship between NPLs and liquidity. This conclusion was

reinforced by the fact that when banks extend excessive lending, the possibility of a default increases, which in turn reduces commercial bank liquidity. They are also in agreement with Asiedu-Mante (2002), who asserted that high default rates had plunged banks into serious liquidity problems, culminating in the erosion of public confidence in these banks.

5.1.2 Income diversification and liquidity

The results also show that income diversification has a negative but statistically insignificant coefficient (beta = -.122, p >.05). This means that high levels of income diversification are associated with low levels of liquidity (loan/deposit ratio). The findings imply that as banks diversify from loans, a major source of income, to other incomes, it negatively affects the loan-to-deposit ratio. Secondly, the diversification may be driven by lower interest income (which is supposedly expected to be the main source of income), which is a result of poor loan performance, which impacts the liquidity of banks. These findings are in agreement with Hahm (2008), who conducted a study to examine the determinants and consequences of non-financing income diversification on commercial banks in OECD countries and suggested that banks with low liquidity, represented by high impaired loan ratios, tend to invest more in non-interest income diversification. This is also consistent with DeYoung and Jang (2016), who suggest that banks with higher non-interest incomes tend to have lower liquidity targets. Gropp and Heider (2010), using a sample of European banks, investigated the impact of income diversification on liquidity. According to the findings, banks with more diversified income sources may have lower liquidity, as they rely on alternative income streams to maintain levels of liquidity. The results also agree with Dang (2020), whose study of Vietnamese commercial banks from 2007–2018 showed that Vietnamese banks that were less liquid diversified into non-traditional banking to generate non-interest income to increase liquidity.

However, the results are in disagreement with Butzbach and Mettenheim (2015), who investigated the effect of income diversification on the creation of liquidity for a sample of European banks. The findings revealed a positive relationship between income diversification and liquidity. Kiweu (2012) suggested that income diversification has a limited effect on bank liquidity.

The effect of loan portfolio management and income diversification on liquidity.

The study indicated that loan portfolio management and income diversification have a negative effect on liquidity. However, loan portfolio management has a significant effect, while income diversification has an insignificant effect. These findings are in agreement with studies by Raavinuthala et al. (2022), who stated that loan portfolio management can have a negative impact on liquidity in banking systems due to the increase in non-performing loans, which reduces the overall liquidity of banks. The findings also contradict the work of Munteanu (2012), who stated that loan management has a positive effect on the liquidity of banks in Romania.

5.2 Conclusion

It is evident that loan portfolio management greatly influences the liquidity of commercial banks in Uganda. This indicates that high non-performing loans are related to poor bank liquidity. Thus, it is possible to conclude that banks with fewer non-performing loans are more liquid than the others.

The study further showed that there is a negative relationship between income diversification and liquidity. This implies that banks with a high NII ratio tend to have a low loan-to-deposit ratio.

5.3 Recommendations

Based on the findings, it is suggested that the management of Ugandan commercial banks devise measures geared towards the consolidation of information and data, which would aid in the

management and provision of credit services amongst different stakeholders. The use of data science would aid banks in strengthening their loan analysis and loan administration capacities. Establishing clear loan policies and lending guidelines. It is also important for management to ensure that loan terms and conditions are strictly adhered to during the approval process.

Given the relationship between non-interest income and liquidity, the study recommends a watchful diversification drive by the banks when increasing their non-interest income earnings by monitoring risk and return tradeoffs.

5.4 Limitations of the study

The study focused on Commercial banks which could limit the generalization of the findings from the study.

Secondly, the findings were obtained from annual reports of over a period of 10 years covering 2011 to 2019 given the nature of banking business; changes can arise anytime causing change in the way banks do their business.

5.5 Areas for Further Research

Further study is also recommended to be carried out of other deposit taking financial institutions such as tier ii institutions, MDIs.

This research has only considered one type, of banking diversification, i.e. the income diversification. Future research should be extended to consider the development of some other types of diversification, for example asset diversification

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APPENDICES

APPENDIX 1: LIST OF LICENSED COMMERCIAL BANKS IN UGANDA

1	ABC Capital Bank Limited	13	Equity Bank Uganda Ltd
2	Absa Bank Uganda Limited	14	Exim Bank (Uganda) Ltd
3	Bank of Baroda	15	Finance Trust Bank Ltd
4	Bank of Africa Uganda Ltd.	16	Guaranty Trust Bank (Uganda) Limited
5	Bank of India (Uganda) Ltd	17	Housing Finance Bank Ltd
6	Cairo Bank Ltd	18	KCB Bank Uganda Limited
7	Commercial Bank of Africa (Uganda)	19	NC Bank Uganda Limited
8	Centenary Rural Development Bank Limited	20	Orient Bank Ltd
9	Citibank Uganda Ltd	21	Stanbic Bank Uganda Ltd
10	DFCU Bank	22	Standard Chartered Bank Uganda Limited
11	Diamond Trust Bank Uganda Limited	23	Tropical Bank Ltd
12	Ecobank Uganda	24	United Bank for Africa Uganda Ltd

APPENDIX 2: DATA COLLECTION INSTRUMENT.

Name of the Bank …….

VARIABLE	**DESCRIPTION**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
Loan portfolio Management											
NPL	Total nonperforming loans / total loans * 100										
Income Diversification											
NII	Total noninterest income/ total revenue*100%										
Liquidity											
LDR	Total loans/ total deposits*100%										