

EFFECT OF LIQUIDITY RISK ON PROFITABILITY IN COMMERCIAL BANKS OF NEPAL

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CERTIFICATION OF AUTHORSHIP

I hereby affirm that I have researched and submitted the final draft of dissertation entitled *EFFECT OF LIQUIDITY RISK ON PROFITABILITY IN COMMERCIAL BANK OF NEPAL*. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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TABLE OF CONTENTS

CHAPTER-I: INTRODUCTION.....	3
1.1 Background of the Study	3
1.2 Problem Statement	7
1.3 Objectives of the Study	9
1.4 Rationale of the Study	9
1.5 Limitations of the Study.....	10
CHAPTER II: LITERATURE REVIEW	11
2.1 Theoretical Review	11
2.1.1 Theories of Liquidity	11
2.1.1.1 Anticipated Income Theory	11
2.1.1.2 Shiftability Theory	12
2.1.1.3 Commercial Loan Theory	13
2.1.2 Theories of Profitability.....	14
2.1.2.1 Market-Power Theories	14
2.1.2.2 Efficient-Structure Theory	14
2.1.2.3 Expense-Preference Theory	15
2.1.2.4 Economies of Scale Theory.....	16
2.2 Empirical Literature Review	16
2.3 Research gap	23
CHAPTER III: RESEARCH METHODOLOGY.....	25
3.1 Research Design.....	25
3.2 Population and Sampling procedure	25
3.3 Sampling Method.....	26
3.4 Research framework and definition of variables	26
3.4.1 Conceptual Framework.....	26
3.4.1 Dependent Variable	28
3.4.1.1 Profitability.....	28
3.4.1.2 Return on Assets.....	28
3.4.1.3 Return on Equity	28

3.4.2 Independent Variables	29
3.4.2.1 Liquidity	29
3.4.2.2 Credit deposit ratio	29
3.4.2.3 Cash deposit ratio	29
3.4.2.4 Assets quality	30
3.5 Method of data analysis	30
3.5.1 Descriptive analysis	30
3.5.2 Standard Deviation	31
3.5.3 Correlation analysis	31
3.5.4 Regression Analysis.....	32
3.6 Data Analysis Model.....	32
3.6.1 Regression Model	33
3.6.2 Test of significance.....	33
CHAPTER –IV: RESULTS AND ANALYSIS	34
4.1 Comparison of situation of selected bank.....	34
4.1.2 Return on Assets (ROE)	36
4.1.3 Credit Deposit Ratio	37
4.1.4 Assets Quality	39
4.1.5 Cash Deposit Ratio	40
4.2 Descriptive statistics	42
4.3 Regression Analysis.....	46
4.4 Correlation results (ROE)	50
4.5 Discussion.....	53
CHAPTER-V: SUMMARY AND CONCLUSION	57
5.1 Summary	57
5.2 Conclusion	58
5.2 Implications.....	59

REFERENCE

APPENDIX

ABBREVIATIONS

AQ	=	Asset Quality
ATM	=	Automated Teller Machine
C.V	=	Coefficient of Variance
CADR	=	Cash Deposit Ratio
CDR	=	Credit Deposit Ratio
CRR	=	Cash Reserve Ratio
EBL	=	Everest Bank Limited
EPS	=	Earnings per Share
FY	=	Fiscal Year
ICR	=	Interest Coverage Ratio
IR	=	Investment Ratio
HBL	=	Himalayan Bank Limited
LDR	=	Loan to Deposit Ratio
LR	=	Liquidity Ratio
NABIL	=	Nabil Bank Limited
NMB	=	NMB Bank Limited
NSBI	=	Nepal SBI Bank Limited
NRB	=	Nepal Rastra Bank
r^2	=	Coefficient of Determination
ROA	=	Return on Assets
ROE	=	Return on Shareholder's Equity
S. E	=	Standard Error
S.D	=	Standard Deviation
SBL	=	Siddhartha Bank Limited
SPSS	=	Statistical Packages for the Social Science
T.U	=	Tribhuvan University
WWW	=	World Wide Web

Abstract

The impact of liquidity on the profitability of commercial banks in Nepal is investigated in this study. The independent variables in this study include the credit deposit ratio, cash deposit ratio, and asset quality. The return on equity and return on assets are the dependent variables. The study utilized secondary data sourced from the 2013–2022 Nepal Rastra Bank bank supervision report and the annual reports of six Nepalese commercial banks. This resulted in a total of sixty observations. Using SPSS version 26 for data analysis, the mean, standard deviation, coefficient of variance, multiple correlations, multiple regression, and coefficient of determination were applied. To investigate the connection between bank liquidity and profitability, these regression models are estimated.

Return on equity (ROE) and return on assets (ROA) are the profitability measures, while credit deposit ratio (CDR), cash deposit ratio (CADR), and assets quality (AQ) are the indications of liquidity. According to the findings, assets quality (AQ) and return on assets (ROA) have a negative and significant association, while AQ and return on equity (ROE) have a positive and significant link. The return on equity (ROE) and return on assets (ROA) have a positive but negligible connection with the cash deposit ratio (CADR). The study does, however, show that credit deposit (CDR) has a negative and negligible association with return on equity (ROE) and a positive but small link with ROA.

Keywords: Liquidity, Profitability, Commercial banks, ROA, ROE.

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

One of the main economic drivers is the banking industry. Financial institutions, of which banks are a part, place greater emphasis on the concepts of liquidity and profitability. Easily convertible assets, or liquidity, are essential to the stability of banks. For profitability, liquidity must be balanced. Excess liquidity ought to be invested sensibly to increase bank earnings. The capacity of assets to produce revenue is known as profitability. It's essential for both growth and stability in finances. Sustainability requires banks to have both profitability and liquidity (Khatai, 2020). Every financial organization must have liquidity risk management in place as part of the larger framework for risk management, particularly in the financial services sector. In order to do business securely, uphold positive relationships with stakeholders, and prevent liquidity issues, banks, as financial institutions, should appropriately manage the supply and demand of liquidity. Identification, measurement, monitoring, and reduction of liquidity risk should be facilitated by a well-defined system in a well-managed bank. Efficient systems enable banks to identify sources of liquidity risk in a timely manner, preventing losses from both undervalued and inflated risks (Erika Bareikaitė, 2014).

Liquidity risk management in both domestic and foreign countries begins with an analysis of the theories, concepts, and system framework of commercial banks. Next, by combining management theories with survey data, it breaks down and analyzes the bank's liquidity risk management on both a qualitative and quantitative level, as well as looking at the issues and difficulties that its management has to deal with. The study aims to give reference experiences and practices of regional small commercial banks about liquidity risk management in order to optimize and improve liquidity risk management. To increase the efficacy and precision of emergency management, establish tiered response and handling standards for liquidity emergencies and create corresponding contingency plans in accordance with various tiered standards (Yi Zhou, 2021). Banks all over the world are having trouble with the liquidity crisis as a result of inadequate liquidity management. Since every commitment and transaction

has an impact on a bank's liquidity, it is critical to manage liquidity risks. One of the key components of a framework for enterprise-wide risk management is now liquidity risk. A bank's liquidity architecture should be able to sustain enough liquidity to handle any type of stress event that may arise. Regular evaluation of the liquidity risk management framework and liquidity situation is a crucial supervisory measure that guarantees the bank's appropriate operation.

The definition of profitability is the ability to make money while controlling costs. The difference between the product's production and selling costs determines the profit. According to Boadi (2013), a business is profitable if its selling costs exceed its production costs; otherwise, a loss results. Profit is the sum that remains after all operating expenses are subtracted from a business. According to several economists, profit can be defined as both the reward of ownership and the percentage return on capital invested. It alludes to the sum and portion of the national revenue that is distributed to business owners, or those who provide equity capital in the form of a profit. To put it another way, profitability is the state in which value produced by the utilization of resources is produced in greater quantities than input. Any company venture's performance could be evaluated using its profit as a benchmark. The term profitability describes a company's capacity to turn a profit on capital that has been invested. Businesses will then be more inclined to invest or use resources more effectively in order to turn a profit. Solvency and profitability are connected as well. Return on assets (ROA) ratios are crucial in determining profitability (Ndirangu, 2015).

When a company's revenues surpass its expenses, it is said to be profitable if its net income (bank). Income is derived from the businesses' (banks') operations, while expenses are the price of the resources needed to turn a profit. The primary goal of the businesses is profitability. Without profitability, businesses cannot last in the market for an extended period of time. Assessing historical profitability, estimating present profitability, and projecting future profitability are therefore critical to the business. According to Das, Cwdhury, Rahman & Dey (2015), the income statement displays revenue and expenses, which indicate the profitability of the business, while the cash flow statement displays cash inflow and outflow, which indicate the liquidity of the business.

The link between liquidity and profitability is inverse or negative since a bank's profitability is negatively impacted by a large liquidity position and vice versa. However, occasionally a liquidity issue might make a depositor panic, and banks may have difficulties repaying deposited funds. Banks cannot raise their advance positions in order to boost profitability during a liquidity shortage. In an effort for banks to maintain an extremely efficient liquidity position, banks should make riskier investments in order to boost their profitability because there is a positive correlation between risk and return. Conversely, increased risk affects the banks' liquidity. Any bank's liquidity position is higher when interest rates are lower, and a higher liquidity position suggests that capital base is available. A liquidity excess may arise from having a lot of money on hand but not enough invested in real industries. Due to the economic downturn, funds are typically invested in unsuccessful businesses, and unsuccessful businesses are unable to pay back the banks' loans because they perform poorly in the marketplace and the banks lack the liquidity to make additional investments or repay depositors' funds (Das et al, 2015).

It is thought that liquidity risk kills banks. This risk may have a negative impact on the capital and earnings of the bank. As a result, the management of a bank must make sure that there are enough reasonably priced funds available to meet future requests from both providers and borrowers. This assertion is supported by numerous conventional bank collapse stories from both the past and the present. For example, when the US subprime mortgage crisis peaked in 2008–2009, central banks had to provide hitherto unheard-of levels of liquidity support to keep the financial system afloat. Despite receiving such widespread assistance, a number of banks had to be resolved, forced into mergers, or failed. Thereafter, a decline in finance liquidity resulted in serious problems. The European Central Bank and the US Federal Reserve poured billions of dollars in overnight credit into the interbank market in reaction to its freeze. Additional liquidity supports were required by certain banks (Longworth, 2014, Bernanke, 2012).

The long-term conclusion that follows from the impacts of liquidity on the firm's performance is that it measures profit and promotes the firm. It is debatable to what extent profit and liquidity have an impact on the growth and success of the company, and no census has been conducted (Umobong, 2015). According to researchers,

liquidity can be measured using liquidity ratios such as the current ratio, cash ratio, and quick ratio. Liquidity is defined as a large position in assets or cash that can be easily changed to cash. Many liquid assets produce flexibility for a firm with a minimum risk position. The current ratio can be calculated by dividing current assets by current liabilities, just as the cash ratio, which calculates the company's liquidity, can be calculated by dividing the total of cash and marketable securities by current liabilities (Ngwili, 2013).

Research on the profitability of Nepalese banks is crucial since it provides recommendations for improving the country's economy, which depends on banks for stability and growth. According to Baral (2010), stability in the banking industry contributes to economic stability. A limited number of studies have examined the factors that influence the profitability of Nepal's commercial banks. For instance, Karki (2014) discovered a positive correlation between capital adequacy and profitability, while Joshi (2014) found a positive relationship between bank loan and liquidity, and Mahajan (2007) found a positive relationship between bank profitability and capital adequacy and liquidity. (Karki, 2014) discovered that there is a positive correlation between deposits and loan advances, the liquidity ratio fluctuated somewhat during the time, and the return on equity is deemed good. The suggestions provided state that an adequate investment program must be implemented in order to lessen the current state of the liquidity of banking and financial institutions.

It is a dynamic idea, to sum up. Every study is solely based on a limited time frame. Therefore, the position of liquidity and profitability has been shifting based on a variety of internal and external factors. Thus, the purpose of this study is to examine how liquidity affects commercial banks' profitability. A bank has to do several things, and one of the most important ones is to keep profitability and liquidity under check. A bank cannot operate in the market effectively if it is not adequately balanced and its impact on profitability is not carefully examined. Thus, the primary goal of the research is to examine how bank profitability and liquidity affect the financial performance of Nepalese commercial banks. It specifically looks at how the quality of assets, cash deposit ratio, and credit deposit ratio affect the return on equity and return on asset of Nepal's commercial banks.

The NRB bank supervision report and the unaudited Q4 report of the relevant commercial banks (2021/22) outline the current state of liquidity and profitability. Liquid assets for commercial banks include cash balances, bank balances held with the Nepal Rastra Bank (NRB) and other financial institutions (BFIs), money on hand, and investments in government securities. These assets increased from Rs. 1,167 billion to Rs. 1,239 billion in the fiscal year 2021/22. During this time, the percentage of liquid assets to deposits, or the total liquid assets to deposit ratio, dropped from 28.56 to 27.27 percent. In a similar vein, the percentage of liquid assets to total assets, or the total liquid assets to total assets ratio, dropped from 22.34 to 20.66 percent.

Twenty commercial banks declared a net profit of Rs. 70,170 million for the fiscal year 2022/23–2023. With an average profit per bank of Rs. 3,500 million, the previous year's earnings increased by 25%. Of them, two saw a decrease in profit, and eighteen saw an increase in profitability. With a net profit of Rs. 7,520 million, Nabil Bank took first place. Global IME Bank and Rastriya Baniya Bank came in second and third, with net profits of Rs. 7,250 million and Rs. 4,910 million, respectively. Conversely, Machhapuchhre Bank, with a net profit of Rs. 1,854 million, posted the lowest profit. Profits for Citizens Bank International Limited and Kumari Bank Limited were Rs. 2,210 million and Rs. 1950 million, respectively.

1.2 Problem Statement

Regarding banks' risk management of liquidity; various scholars have presented differing perspectives. Certain researchers found positive relationships with the same study variables, whereas other researchers found negative relationships. Other than this, these characteristics did not appear to be related, according to other studies. As a result, a gap appears, and in order to close it, some queries are posed. Shrestha (2018) discovered that the profitability of Nepalese commercial banks is not significantly impacted by liquidity. According to research by Ndoka, Islami, and Shima (2016), liquidity risk is anticipated to have a significant impact on commercial banks' profitability. Pokharel and Pokhrel (2019) found a strong correlation between profitability and liquidity ratios, with the exception of the association between return on assets and the investment of government securities in current assets. According to the researcher's findings, banks have not kept their standard liquidity ratios.

According to research reports from other nations, commercial banks' profits are negatively impacted by retaining more liquid assets, which also impedes the bank's ability to make investments that could fuel growth and expansion. On the other hand, the commercial bank will need to maintain fewer liquid assets on its balance sheet in order to optimize profit. In the event of fire sales, the commercial bank will be exposed to significant interest charges and liquidity risk if it holds an excessive amount of illiquid assets (Casu et al., 2015).

A study of earlier research revealed that a commercial bank's profitability was significantly impacted by its liquidity position. Subsequent research also revealed that the liquidity situation of commercial banks has a significant impact on the operation of the money and capital markets. The pursuit of liquidity has a propensity to dilute returns, and the firm's liquidity position could be adversely threatened by the maximum of its return. A group of commercial banks that offered services in the same industry and operating in the same setting were also looked at in those earlier investigations. Furthermore, the research sought to determine whether there were any variations in the respective liquidity positions of those commercial banks. The purpose of this study is to determine how an economy's liquidity status affects commercial banks' profitability.

According to Sah and Lertjanyaki's (2019) research, banks with higher capital adequacy ratios have higher bank liquidity, which has a positive association with capital adequacy ratio. Additionally, the results showed a significant negative association between the book value of financial performance and the credit deposit ratio and the liquidity ratio. According to Pokharel and Pokhrel's (2019) research, bank liquidity is positively correlated with the cash reserve ratio and adversely correlated with the current ratio. Therefore, the goal of this study is to examine how Nepalese commercial banks manage their liquidity risk while taking into account their financial ratios, as different financial ratios have a big impact on bank liquidity. The problems explored in regarding the determination of bank's liquidity and profitability is as follows:

- What is the liquidity position and profitability position of selected Nepalese commercial banks?

- What is the relationship between liquidity and profitability of Nepalese commercial bank?
- Does liquidity have an impact on the profitability of commercial banks in Nepal?

1.3 Objectives of the Study

The general objective of this study is to analyze the impact of the liquidity risk management on profitability in Nepalese commercial banks. The specific objectives of this study are as follows:

- To analyze the situation of credit deposit ratio, cash deposit ratio, assets quality to return on assets and return on equity of selected commercial banks.
- To examine the relationship of credit deposit ratio, cash deposit ratio, assets quality to return on assets and return on equity.
- To analyze the effect of credit deposit ratio, cash deposit ratio, assets quality to return on assets and return on equity.

1.4 Rationale of the Study

Since the banking industry plays a significant role in driving economic activity in all economies, it is imperative to manage commercial bank liquidity risk in every way possible. This study has multifaceted relevance in certain domains of the sample banks under consideration, which supports and aids in the discovery of crucial information and facts for scholars, investors, brokers, traders, financial institutions, and general public awareness. As this study focuses on managerial functions, it is envisaged that it will assist policymakers in developing suitable policies for the management of liquidity risk in commercial banks from a Nepalese viewpoint. The results of this study will support bank management in controlling liquidity risk, which measures a bank's capacity to absorb shock in times of crisis. A well-funded banking sector is necessary to maintain the stability and confidence of the financial system in the nation, and the research can also serve as a point of reference for the monetary authorities, such as the Nepal Rastra Bank (NRB), in their efforts to increase liquidity and financial stability in the Nepalese banking system. The monetary authorities may use the study's conclusions to reinforce their regulations and give financial

institutions the necessary guidance. The study is important for depositors and investors as well because it provides guidance on whether to make an investment, take a withdrawal, or use the bank's lending facilities. In order to determine if it will be advantageous to deposit money, withdraw it, or pursue other business opportunities in order to optimize their wealth, they must consult the banks' historical profitability records. Finally, but just as importantly, this work is important since it provides reference material for future academics who might want to do additional research in this field. This is due to the fact that motivated researchers in the field can use this work as a reference to direct future research in this field.

1.5 Limitations of the Study

Owing to time and space constraints, this study only examined the data from three "A" class commercial banks; other fourteen "A" Class banks and many other financial institutions now in operation in the nation were not included. This has restricted the study's scope. Ten consecutive financial years' worth of historical data (2013/14 to 2022/23) have been consulted and examined. The following is a way to identify the limitation:

- Only limited statistical and financial tools are used for data analysis.
- Limited use of scientific and sophisticated tools may limit the validity of the study findings.
- The report is focused on the financial aspect and more importantly on liquidity and profitability aspect of the banks; it does not cover all other aspects.
- Time and volume limitation have throttled the scope of the study.
- This study is highly based on secondary data sources obtained from annual report of the concerned bank. Therefore, the accuracy of the calculation is fully dependent on the accuracy of the data provided by the sample banks.

CHAPTER II

LITERATURE REVIEW

A sample of the theoretical and practical components of the research are provided by the review of the literature. It places focus on having knowledge of the subject that has been offered by writers and scholars in the past. In order to comprehend what has been done and what may be investigated further, the attention is mostly on the liquidity and profitability of Nepalese commercial banks. The many viewpoints from those authors and academics have been offered here, based on reviews of books, journals, and documents by well-known authors.

2.1 Theoretical Review

2.1.1 Theories of Liquidity

A commercial bank's principal goal is to generate liquidity while maintaining stability in its finances. Nonetheless, banks' concrete management of their liquidity risk takes several forms. Put another way, different theories of liquidity management exist. Theories of liquidity management address the precise location of its implementation inside the company, the measurement and monitoring of liquidity, and the steps banks can take to address or avoid a liquidity shortfall. The theories of liquidity that have been drawn from earlier studies and theses are listed below.

2.1.1.1 Anticipated Income Theory

According to this hypothesis, banks can control their liquidity by carefully phasing and arranging the loans they provide to their clients. In this case, liquidity can be planned if a customer's expected loan payments are contingent on the borrower's future. These concepts emerged with the codification of the doctrine of expected income by Herbert V. Prochnow, (1949) which linked the intrinsic soundness of term loans which were becoming increasingly significant with suitable repayment plans that were tailored to the borrower's projected income or cash flow. Under this system of banking policy, the credit demands of business were well satisfied, and loan commitments were freely pursued. However, as the economy changed, the banking system had to meet increased demands, which necessitated a new strategy for

managing balance sheets and presented new financial difficulties for firms. Bank loan commitment rules would become increasingly significant in the lending process under this new condition of affairs.

2.1.1.2 Shiftability Theory

According to this notion, a bank's liquidity is preserved if it has assets that it may sell or transfer to investors or other lenders in order to raise money. According to this perspective, banks' liquidity could be improved if they constantly had assets to sell and the discount market and central bank were prepared to buy the asset being offered for sale. Accordingly, this theory acknowledges and maintains that a bank's asset's shiftability, marketability, or transferability serves as a foundation for guaranteeing liquidity. This argument goes on to say that a bank's highly marketable securities are a great source of liquidity. The commercial loan theory was superseded by the shiftability theory liquidity, which was further enhanced by the expected income concept. The shiftability theory, which was formally formulated by Harold G. Moulton in (1915), maintained that the best way for banks to guard against large deposit withdrawals was to keep credit instruments with readily available secondary markets as a type of liquidity reserve. Commercial paper, prime bankers acceptances, and most importantly Treasury bills were all included in this liquidity reserve. All of these products passed the marketability and capital certainty tests under typical circumstances due to their short durations to maturity.

Similar to the reason the commercial loan theory of credit was abandoned, a significant flaw in the Shiftability theory was found. This flaw is that secondary reserve assets become ineffective as a source of liquidity during general crises due to a lack of a market (Casu et al 2006). Liquidity was eventually seen to reside outside of the banking sector, and the central bank's position as lender of last resort gained renewed relevance. Furthermore, because business conditions directly affected bank borrowers' ability to repay their loans, the soundness of the banking system came to be associated more closely with the overall health of the economy. With a modified version that contained the notion of ultimate liquidity in bank loans lying with shiftability to the Federal Reserve Banks, the shiftability theory was able to endure these realizations. Under this institutional scheme, The banks' concerns about

liquidity were partially transferred to the loan portfolio under this institutional framework, where it was crucial to maintain high-quality assets that could pass the test of fundamental soundness (Allen and Gale, 2004).

2.1.1.3 Commercial Loan Theory

Numerous criticisms of this theory have been made by Nwankwo (1992) and Dodds (1982). The main drawback, as seen from many angles, is that the theory does not align with the requirements of economic development, particularly for emerging nations, since it does not account for long-term loans, which are the primary driver of growth. Additionally, the theory places more emphasis on the maturity structure of bank assets loans and investments than it does on the assets' potential marketability or shiftability. In his *Wealth of Nations*, Adam Smith offered the first comprehensive explanation of the theory (1776). It is essentially a liquidity-focused asset management theory, with the tenet that banks should limit their earning assets to "real" bills of exchange and short-term, self-liquidating advances intended for business use. It was stated that this would allow individual banking institutions to keep the liquidity required to satisfy demand for deposit withdrawals. This fundamental idea became known in the United States as the commercial loan theory of credit under somewhat changed circumstances.

The idea of credit known as commercial loans was rendered outdated due to its conceptual shortcomings and practicality issues. A fundamental tenet of the theory was that short-term commercial loans were preferable as the profits from the commercial transaction they were used to support would be used to repay the loans. Even if bank loan portfolios did meet theoretical requirements, it was realized that this assumption would most likely not hold during a general financial crisis because, in the majority of commercial transactions, the buyer of goods sold by the original borrower had to rely heavily on bank credit. Consequently, even short-term loans supporting transactions involving actual products would become illiquid in the absence of ongoing general credit availability. Furthermore, if banks were to contribute to the country's economic progress, strict adherence to the orthodox theory was practically impossible (Casu, 2006). Furthermore, it was found to be inappropriate to keep renewing short-term notes in order to fund long-term capital

projects. In actuality, one factor in the practice's death was banks' incapacity or failure to modify loan arrangements to the unique circumstances associated with longer-term applications.

2.1.2 Theories of Profitability

The collection of definitions, concepts, and assertions that are logically connected and utilized to forecast and explain facts is known as a theory. To define, establish, and explain concepts and structures are the main goals of theory. Research informs theories, and theories give conceptual support for research. Research either creates new hypotheses or enhances those that already exist. Research and theory are therefore connected. Theories of profitability offer a conceptual foundation and broad conclusions about profit. The ideas of profitability that have been drawn from earlier studies and theses are listed below.

2.1.2.1 Market-Power Theories

According to the market power theory, companies unite in order to increase their capacity to control product pricing through collusion or output reduction. Nevertheless, a number of recent studies have found that enhanced operating efficiency is considerably more likely to result from greater merger activity than from increasing market power (DePamphilis, 2019). In the banking sector, market power theory is used to explain a bank's profitability and how its market share influences it. An increase in market share causes deposits to rise. The bank's capital ratio and loan ratio rise as a result of its increased deposit base. Bank lending capacity will grow and be able to offer loans at reduced rates as a result of the increase in loan ratio. Thus, profits of the banks are determined by the concentration level of the market.

2.1.2.2 Efficient-Structure Theory

According to the efficient-structure theory, growing concentration comes after better gains in terms of timing. In other words, stronger performance eventually results in growing market share and concentration, and better management and practices raise profitability. The efficiency theory's foundation is the observation that more profitable banks ultimately have lower expenses due to their increased efficiency. The X-efficiency and scale efficiency hypotheses are two further theories that are part of

the efficient-structure hypothesis. Based to the X-efficiency hypothesis, banks that have superior management and procedures increase profit and reduce costs, bringing them closer to the lower bound cost curve of best practices. According to the scale-efficiency theory, certain banks are able to operate at a larger size and hence incur reduced expenses. For scale-efficient banks, reduced costs translate into more profit and quicker growth (Jeon & Miller, 2005).

2.1.2.3 Expense-Preference Theory

The Bank performance serves as a test for the notion of expense-preference behavior. Becker introduced it initially in 1957, and Williamson improved it further in 1963. According to expense preference theory, managers of the company may decide to prioritize maximizing individual utility over maximizing firm profits when given the opportunity to act discretionarily. A favorable desire for higher spending on employee numbers, pay and benefits, and other perks is typically indicative of expense preference behavior. The financial services industry's spending preference behavior has been the subject of much research, with varying degrees of success. There are two methods for studying the behavior of expenditure preference. First, it is proposed that managers see real profit maximizing and true utility maximization as two distinct choices. As a result, managers decide to maintain the company's output and some of its inputs at a level that maximizes profits, but they overspend on labor (Gropner & Oswald, 1996).

Certain managers exhibit a propensity for expenses. Overriding the goal of maximizing returns for the bank's investors is their attempt to raise salaries and perks. Excessive office expenses and overstaffing may result from such expense preference behavior. Employees benefit more from expense preference behavior than do stockholders in this way. It is detrimental to the investors because the management can only raise costs by taking money out of the bank's profit. Therefore, investors should always exercise caution in determining whether the bank is experiencing expense preference behavior or not. If so, the management team needs to be adjusted or altered. If not, bank expenses can spiral out of control (Singh, 2010).

2.1.2.4 Economies of Scale Theory

In the study of Fu and Sio (2011) the presence of economies of scale means that large banks have a cost advantage over small banks, while evidence of economies of scope implies that multi-product banks are more efficient than financial boutiques. Banks that can produce banking services such as business loans, auto loans and checking accounts etc. at lower cost can pass some of these savings onto businesses and households while using less of the economy's valuable resources (Campbell, 2020).

2.2 Empirical Literature Review

The study by Kumar and Yadav (2013) had two goals when it came to studying bank liquidity risk management. Its first goal is to demonstrate the risk to liquidity that banks take on when funding long-term assets with short-term liabilities. Second, it explores the details of liabilities that are subject to refinancing risk or rollover. The study's methodology adopts a theoretical approach, wherein the total assets are subtracted from fixed assets, balances in current accounts with other banks, other assets (lease excluded), and intangible assets. It also uses basic concepts 12 principles to be exact for the supervision and management of liquidity risk. The research's conclusions are supported by theoretical justifications. They make recommendations based on the Reserve Bank of India's and the Basel Committee's liquidity management principles.

High off-balance sheet exposures, a reliance on short-term corporate deposits, maturity date mismatches between assets and liabilities, slow economic growth, rapid asset expansion beyond available funds, concentration of short-term deposits, restricted allocation to liquid government instruments, and sparse placement of funds in long-term deposits are among the internal factors within banks that may potentially contribute to liquidity risk issues. It is also mentioned that there are non-economic factors, sensitive financial markets, external and internal economic shocks, declining depositor trust in the banking industry, abrupt large-scale liquidity withdrawals from depositors, and unanticipated termination of government deposits. The study also presents ratios for managing liquidity risk, including earning assets, transitory assets, and volatile liabilities. It is recommended that banks establish their own ceilings for these ratios based on their profile, expertise, and capacity for managing liquidity risk.

For example, it recommends volatile liabilities to have an industry average of 40%. In order to distinguish between the governance of liquidity risk management and the measurement and management of liquidity risk, the study presents 12 unique principles that serve as a foundation for the management and supervision of liquidity risk.

In order to meet financial obligations and maximize investments and profits within the conventional banking sector, banks must accurately estimate their liquidity needs. This is why Farooq et al. (2015) conducted an empirical study on the impact of liquidity risk management on firm performance in Pakistan's conventional banking industry. It specifically looks at the impact of managing liquidity risk on a bank's overall performance as determined by Return on Equity (ROE) and Return on Assets (ROA), especially through the evaluation of the Current Ratio and Loan to Deposit Ratio. In order to do this analysis, the researchers treated liquidity and liquidity indicators as independent variables and used a variety of performance metrics, including ROA and ROE. They found links between the Loan-to-Deposit Ratio (LTD) and ROA and ROE in Pakistani banks through their investigation. They also found correlations between ROE and the current ratio, which shed light on how these financial variables affect a bank's operations. The researchers measured the extent to which changes in the Loan-to-Deposit Ratio (LTD) affected ROA and ROE by utilizing regression models and R² values. In the context of Pakistan's banking industry, these computations provide a quantitative understanding of the relationship between liquidity management and bank performance by illuminating the precise impact of LTD on the performance of Askari Bank and Muslim Commercial Bank.

The impact of liquidity on bank profitability in Nepalese commercial banks was disclosed by Pradhan and Shrestha (2016). This study's main goal is to examine how liquidity affects Nepalese commercial banks' performance, especially by identifying relationships between capital ratio and return on equity (ROE). Furthermore, the research aims to prove that the capital, liquidity, and investment ratios have a favorable impact on bank performance. 144 observations, or secondary data, from the annual reports of sixteen commercial banks covering the fiscal years 2005–06 through 2013/14 are used in the research. Key insights are uncovered via descriptive statistics: The return on assets (ROA) is 1.92% on average, while the range of ROE is

-458.43% to 194.03%. The capital ratio averages 0.076%, while the liquidity ratio averages 7.27%. Regression models are used in further analysis to compare investment ratio, liquidity ratio, capital ratio, and quick ratio as independent factors to ROA and ROE as dependent variables. For every explanatory variable, the findings are shown as simple and multiple regressions with intercepts, slope coefficients, and t-statistics. To further improve the analysis's depth, lag variables are also taken into account in order to determine how they affect ROE and ROA.

Shrestha (2019) investigated the factors influencing Nepalese commercial banks' financial performance using panel data analysis. This paper's goal is to thoroughly analyze the factors affecting the financial performance of commercial banks in Nepal, with a particular emphasis on identifying the element that contributes most significantly to this performance. Descriptive correlation and a causal comparative research design are the methodologies used in this study, which includes data from 17 commercial banks from 2010–11 to 2017/18. Return on Assets, Management Efficiency, Operational Efficiency, Liquidity, Credit Risk, and Asset Quality are only a few of the financial measures that were gathered from the income statement and balance sheet in addition to important indicators that the corresponding banks supplied. For the fundamental model, multivariate regression analysis was used.

Based on the results, it was shown that the dependent variable, ROA, had a mean value of 1.8271% and a range of 0.05% to 8.15%. The mean value of credit risk is 0.6946%, but the mean value of liquidity is 79.4048%. The mean values of asset quality and operating efficiency are 1.787 and 4.9280, respectively. ROA has negative connections with LIQ and OE but favorable correlations with ME, CR, and AQ, according to correlation analysis. For Nepalese commercial banks, the Fixed Effect model shows that operational effectiveness, liquidity, asset quality, and managerial effectiveness have a positive impact on return on assets (ROA), whereas credit risk has a negative impact. According to the study's findings, these bank-specific variables account for 68.84% of the variation in ROA and have a substantial impact on the financial performance of Nepalese commercial banks. The predicted Fixed Effect model's applicability for describing these institutions' financial performance is further supported by the F-test results.

Pokharel and Pokharel (2019) studied how a Nepalese commercial bank's profitability was affected by liquidity. This study's principal goal was to assess the profitability and liquidity positions of Nepalese commercial banks, followed by an examination of the impact of liquidity on those positions. Using secondary data from financial accounts, yearly reports, unpublished government records, and the Nepal Rastra Bank (NRB) website was the main technique used. This study used data from five commercial banks over a seven-year period, from 2010–11 to 2016/17–17. Regression, correlation, and descriptive statistics were all used in the analysis. Liquidity was defined as the independent variable and profitability was measured using Return on Assets. The findings showcased fluctuations in the profitability positions of the banks throughout the seven years.

The results indicate that ADBL had the highest mean ROA (2.77) and EBL had the highest mean ROE (23.02), but SRBL had the lowest mean ROA (1.05) and ROE (10.02). The best bank was determined to be Everest Bank Ltd. due to its low standard deviation and coefficient of variation, as well as its ROA, ROE, S.D., and C.V. Additionally, the research investigated the relationship between profitability and liquidity in a subset of institutions. According to the investigation, certain liquidity ratios (ROA and ROE) showed unfavorable connections with profitability, while other ratios showed positive relationships. The effect of liquidity on profitability was evaluated using regression analysis, where R^2 denotes the proportion of profitability variability that liquidity can account for. The findings indicated that there is a noteworthy correlation between profitability and liquidity, underscoring the significance of liquidity management in shaping a bank's financial outcomes.

Khatri (2020) investigated how a Nepalese commercial bank's profitability was affected by liquidity. This study's primary goals were to identify and understand the relationship between liquidity and profitability in Nepalese commercial banks in order to investigate the effects of liquidity management on the sector's profitability. Using secondary data collected over a seven-year period from 10 commercial banks, the technique produced a total of seventy observations. The main sources of information were the yearly reports of the chosen commercial banks and the bank supervisory reports that Nepal Rastra Bank provided.

The research employed a range of formulas to examine the correlation between the variables, including Return on Equity (ROE) and Return on Assets (ROA) models. An overview of the independent variables (Capital Deposit Ratio, or CDR), dependent variables (ROA and ROE), and capital adequacy deposit ratio, or CADR, was provided using descriptive statistics. The mean, standard deviation, lowest and maximum values, and the total number of observations were all included in these statistics. The averages and variances of ROA, ROE, AQ, CDR, and CADR were displayed in the results, offering important insights into the patterns in these financial metrics among the selected commercial banks. Additionally, correlation analysis was done to show how various liquidity management metrics related to the profitability of commercial banks in Nepal.

The correlations emphasized the relationships—both favorable and unfavorable—between profitability measurements and liquidity indicators. The Hausman test was used to identify the suitable model for analysis given the panel data type of the investigation. It was determined that fixed effects models were appropriate, guaranteeing precise statistical analysis. The models demonstrated the importance and intensity of the correlations between profitability measurements and liquidity management indicators. Asset Quality (AQ) showed a substantial negative correlation with ROA, suggesting that AQ has an unfavorable effect on ROA. Furthermore, there was a slight but positive correlation between ROA and the Capital Deposit Ratio (CDR) and the Capital Adequacy Deposit Ratio (CADR). On the other hand, Asset Quality (AQ) and ROE showed a positive and substantial association, indicating that higher asset quality would result in higher ROE. CDR and CADR, on the other hand, did not show any discernible correlations with ROE, highlighting the complex link that exists between profitability and liquidity management in Nepal's commercial banking industry.

Saleh and Afifa (2020). The study set out to explore post-crisis dynamics in order to add to the body of banking literature already in existence. It also sought to find out how bank capital, credit risk, and liquidity risk impacted bank profitability in this time frame. The study recognized the vital role that banks play in the financial industry, highlighting the importance of banks as brought to light by the global financial crisis. Using conventional panel data estimate approaches, the study's

methodology looked at how bank capital, credit risk, and liquidity risk interacted to affect the profitability of Jordanian commercial banks. Regression models with fixed and random effects were applied, and the Hausman test confirmed that the fixed effect model was appropriate. Researchers used the generalized method of moments (GMM) estimator to increase the robustness of their findings. The results clarified a number of important points. The average standard deviations of the mean values for Return on Average Equity (ROAE), Return on Average Assets (ROAA), and Net Interest Margin (NIM) were examined.

The credit policy of Jordanian banks was reflected in the elevated levels of credit risk they faced. However, the banks' robust liquidity balances allowed them to weather a variety of economic situations, as evidenced by the comparatively low liquidity risk. When financing assets, bank capital made up about 10% of internal resources. The study also shown how banks in Jordan vary in size and how they prioritize growing their loan portfolios in order to improve performance. Moreover, it underscored the detrimental effect that liquidity risk has on bank profitability, even though the net interest margin effect was not statistically significant. Furthermore, the study highlighted the beneficial impact of bank capital on profitability, bolstering the idea that increased capital leads to enhanced profitability and highlighting the connection between capital, return on assets, and net interest margin.

Aumana, et al. (2020) the impact of managing liquidity risk on the financial performance of Nigerian deposit money banks was studied examined the possibility of a substantial relationship between Non-Performing Loans (NPLs) and the Net Operating Profit Margin (NOPM) of a few Nigerian deposit money banks. An ex-post facto study approach was used in terms of methodology. The data was obtained from a variety of published sources, such as the official records of particular Nigerian deposit money institutions, pertinent journals, yearly reports or financial statements, previous studies on liquidity risk, and books on the subject of the study. First Bank and Guarantee Trust Bank (GTB), two randomly chosen banks, had data from 2010 to 2019 examined. Because of their ease of use and superior computational qualities, descriptive statistics and the Ordinary Least Squares (OLS) method were used. The standard deviation showed a significant range of values away from the mean values, according to the results of the descriptive statistics. Net Operating Profit Margin

(NOPM) had a low standard deviation, indicating that it did not significantly deviate from the mean. Regression study revealed that the levels of Non-Performing Loans (NPLs) and Leverage Ratio (LEV) accounted for 94.24% of the variation in Net Operating Profit Margin (NOPM). Additionally, the adjusted R-Squared, which was higher than 50%, highlighted the notion that NPLs and LEV were important determinants in calculating NOPM for the Nigerian deposit money institutions that were chosen. While the leverage ratio did not significantly affect NOPM for the chosen banks, the F-Statistic supported the model's statistical significance and highlighted the major impact of NPLs on NOPM.

According to KC and Archya (2022), bank-specific determinants of Nepalese commercial banks' profitability examined the variables affecting the country's commercial banks' profitability in the years 2011–2012 and 2020/21–2021/22. The methodology involved the pooling of data from sixteen commercial banks for the period of 2011 to 2021/22. The goal of the study was to comprehend how different bank-specific factors relate to and affect the profitability of Nepal's commercial banks. Several statistical and mathematical methods were used to assess the data, which came from the NRB website and the annual reports of representative banks. The study used both comparative and descriptive causal research designs, and the sample banks were selected by random sampling.

The results showed that bank profitability was measured using Return on Assets (ROA), which was used as the dependent variable. The mean was found to be 1.67%, with a maximum of 4.01% and a low of 0.02%. As independent variables, we included Assets Quality (AQ), Capital Adequacy Ratio (CAR), Bank Liquidity (BL), Deposit Growth (DG), Interest Spread (IRS), and Bank Size (BS). The spectrum of these factors and how they affected ROA were demonstrated by the results. As an illustration, the means for AQ, CAR, BL, DG, IRS, and BS were, respectively, 1.72%, 13.72%, 21.82%, and Rs 93,319.66 million. The regression analysis revealed the impact of these variables on ROA, with adjusted R square suggesting that 15% of the change in ROA was explained by these factors. The resulting regression equation demonstrated the relationship between the independent and dependent variables. Notably, IRS and CAR had a positive effect on ROA, while AQ, DG, BL, and ln BS had a negative effect. The study used a Hausman test, validating the appropriateness

of a Random effect model over a Fixed effect model for analysis. Among these variables, ROA showed the least standard deviation, indicating relatively minor variation around the mean. Conversely, DG demonstrated the highest standard deviation, signifying a broader range of values. The regression results demonstrated that AQ, BL, IRS, CAR, DG, and BS had an impact on ROA. The adjusted R square value of 0.1536 suggested that 15% of the variation in ROA could be explained by these variables, leaving 85% unexplained. Statistically, IRS, CAR, and DG significantly affected ROA, while BL, AQ, and BS were statistically insignificant at the 5% level of significance. AQ, DG, BL, and In BS displayed a negative effect on ROA, while CAR and IRS showcased a positive effect. The Durbin-Watson statistic of 1.138879 indicated no autocorrelation, and the p-value of the F-statistic (0.0000) affirmed that the model fit well. The resulting regression equation indicated that, with AQ, BL, IRS, CAR, DG, and BS held constant at zero, the ROA of commercial banks would be 0.9999. The regression coefficients shed light on how one-unit changes in the independent variables led to changes in ROA. Lastly, the study suggested that the Random Effect model was more suitable than the Fixed Effect model, supported by a Hausman test p-value of 0.71.

2.3 Research gap

The above-mentioned pertinent literature evaluation has enhanced the basic comprehension and information needed to provide this study significance and purpose. Numerous scholars investigate credit risk, bank size, liquidity management, and macroeconomic factors. Commercial banks' profitability and liquidity are impacted by this research. Several ratio analyses have been employed by researchers to carry out those analyses. The restricted ratios employed in earlier studies to assess banks' financial performance are unable to address the issues at hand. This study conducts a comprehensive analysis and generalization of different ratios. Every ratio in this study has been grouped based on its type and region. Various ratios, trend analysis, and statistical tools are used in this study to measure different liquidity and profitability related variables (Salesh&Afifa,2020).

To determine liquidity and profitability, researchers have looked at cash deposit ratios, credit deposit ratios, asset quality, return on equity, and return on asset. But

other qualitative elements like politics, technology, government regulations, and other macroeconomic variables might also have a role in determining bank profitability and liquidity. This study excludes qualitative elements that determine earnings in favor of just using financial and statistical data. This study aims to be unique from other prior thesis investigations in terms of sample size, sample bank type, methodology, and statistical instruments employed. Analysis of standard deviation, regression analysis, and trend line analysis is used as the main model of study with the view to obtain the relevant and accurate result (Khatai, 2020).

In order to attain high earnings, the banking industry in Nepal is becoming increasingly competitive through the development of credit and liquidity management procedures. It is challenging to determine which commercial banks operate poorly and have strong finances. In order to keep a healthy balance between lending out more credit and keeping ample liquidity, banks are treading carefully. The banks who are able to keep everything in balance are the ones reaping the highest profits. In order to ascertain if the sample banks have been successful in keeping this equilibrium, this investigation was done. The country's environment has an annual impact on financial performance. Thus, this study closes the current research gap regarding the in-depth examination of profitability and liquidity performance assessments. Using a variety of statistical methods, including trend analysis and the coefficient of correlation, in addition to financial instruments like the profitability ratio and liquidity, this study attempts to define the usage of variables in bank profitability. This will most likely be the relevant study in the field of financial institution and bank performance. The study's time frame is the fiscal year 2013/14 to 2022/23.

The previous researcher had selected sample of bank as randomly but in this study sample has selected on the basis of cluster that private ownership bank and joint venture bank with 10 year data. So, this is the research gap of study.

CHAPTER III

RESEARCH METHODOLOGY

This chapter covers the approach used to analyze the study's data. This chapter has covered the study's sample and population, sources, methodology for gathering data, data analysis tool, and other associated limitations. The accuracy, validity, and applicability of the data have all been determined with its assistance. An appropriate research approach is necessary in order to achieve the study's justification. Below is a quick overview of the research approach that was employed for this study.

3.1 Research Design

This study's primary goal was to find out how Nepalese commercial banks' profitability was impacted by liquidity risk. The research design used in this study is essentially both causal comparative and descriptive. While descriptive techniques have been modified to assess investment success, financial and statistical tools have been utilized to scrutinize data. This report's primary source of secondary data is the annual reports that the relevant banks produce, together with additional publications that touch on the subject at hand. Both Microsoft Excel and SPSS were used in the study to analyze secondary data.

3.2 Population and Sampling procedure

There are now 20 commercial banks in operation in Nepal as of mid-Jan 2024. It would be nearly impossible to examine every one of these banks in this investigation. Therefore, the entire population of banks is considered to be these figures. From them, a sample of three commercial banks was selected for this study, and their data was analyzed for 10 years, from 2013/14 to 2022/23, in an effort to meet the study's goal. Three commercial banks chosen for the study, the length of the investigation, and the quantity of observations are displayed in the table.

Table 1*Selection of banks along with study period and number of observations*

S.N.	Commercial Banks.	Study Period	No. of Observations
1.	Nabil Bank Limited	2013/14 - 2022/23	10
2.	Everest Bank Limited	2013/14- 2022/23	10
3.	Himalayan Bank Limited	2013/14- 2022/23	10
	Total Observations		30

Source: www.nrb.org.np

3.3 Sampling Method

The process used to choose the sample units is known as the sampling procedure. As of right now, the random sample approach has been used in this study's sampling strategy. The process of selecting a sample of observations from a population in order to draw conclusions about the population is known as random sampling. The study specifically employs the judgmental sampling technique.

3.4 Research framework and definition of variables

3.4.1 Conceptual Framework

The dependent variables of bank profitability and liquidity are the main focus of the investigation. The liquidity of Nepalese commercial banks is explained by three independent variables. The credit deposit ratio, cash deposit ratio, and asset quality are these three factors. Return on equity and return on assets are the two dependent variables. The variables influencing profitability and liquidity in Nepalese commercial banks are displayed in the chart.

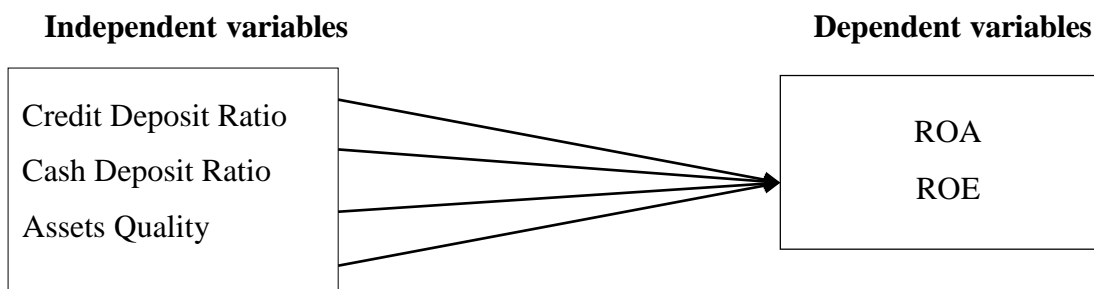


Figure 1: *Schematic diagram of study variables*

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The ability of the bank to guarantee the availability of money to satisfy maturing debts or financial commitments at a fair price at all times is referred to as liquidity. Based on the aforementioned theory or a review of the literature, the conceptual framework can be created. The credit deposit ratio, cash deposit ratio, and asset quality are independent variables, and return on equity and return on assets are dependent variables, used to analyze the effect of liquidity on commercial bank profitability. A financial measure called return on assets indicates the percentage return on total assets, and the return on equity indicates the percentage return on all shareholders' equity. The ratio of liquid assets to total assets is measured by the liquidity ratio. In general, profitability will decrease with a higher liquidity ratio and vice versa. Liquidity management is considered an independent variable in this study. Liquidity is measured using variables such as the credit-deposit ratio (CDR), cash-deposit ratio (CADR), and assets-quality (AQ). The ratio of outstanding credit to total bank deposits is known as the credit deposit ratio, or CDR (Mishra & Pradhan, 2019).

A high CDR suggests two things: (1) the bank is making more interest-bearing loans out of its deposits; and (2) the bank is making more money overall (Rengasamy, 2014). On the other hand, a very low ratio indicates that the bank is not employing assets to produce income while still being at low risk. Shrestha (2018) asserts that the credit deposit ratio and the profitability of commercial banks are significantly correlated. The Cash-Deposit Ratio (CADR) represents the proportion of bank cash retained to total deposits (Mishra & Pradhan, 2019). It is the proportion of loans made by a financial organization to the amount of deposits it has raised. It implies that lending, the main activity of banks, is utilizing a large amount of funds from financial institutions. A greater ratio indicates a bank's stronger liquidity position, which is more beneficial for novel investment opportunities. According to Shrestha (2012), the ratio of bank balance to deposit and cash have no appreciable effect on profitability. The ratio of non-performing loans (NPLs) to total loans is known as assets quality (AQ). Long-term arrears on a loan are a popular description of non-performing loans. NPLs have been a significant concern for regulators and financial institutions (Rifat, 2016). Poorer credit quality and a higher likelihood of additional

loan loss being deducted from income are associated with larger non-performing loan ratios (Kingu, Macha, & Gwahula, 2018).

3.4.2 Dependent Variable

3.4.2.1 Profitability

The difference between revenues and expenses over a given time period is called profit. In order to endure and expand over an extended duration, a business needs to generate revenue. As a result, the financial management needs to constantly assess how profitable the company is operating. The profitability ratios are computed to assess a business's operational effectiveness. It serves as a gauge for any institution's financial performance. This suggests that a higher profitability ratio corresponds to a better bank financial performance and vice versa. The study's key finding is how the bank assesses its financial condition. Consequently, the dependent variables serve as the profitability's proxies. The dependent variables Return on Equity (ROE) and Return on Asset (ROA) are most frequently utilized in research (Khatai, 2020).

3.4.2.2 Return on Assets

The ratio of net income to total assets is known as ROA. This ratio, which is derived by dividing net income by total assets, assesses the profitability attained by the bank through the use of its assets in diverse operations. One important profitability statistic is return on assets, which calculates a company's profit per dollar of assets. This ratio, which is based on the company's generated profits, indicates the operating efficiency of the business (Moussa, 2015).

The formula to calculate return on assets is given below:

$$\text{ROA} = \frac{\text{Ratio Of Net Income}}{\text{Total Assets}}$$

3.4.2.3 Return on Equity

The ratio of net income to equity held by common stockholders, or return on equity, represents the rate of return on investment for common stockholders. The goal of management is to maximize return on investment for shareholders. Thus, return on equity is the most accurate indicator of a company's ability to achieve its objective (Moussa, 2015). The return on equity can be calculated as follows:

$$\text{ROE} = \frac{\text{Ratio Of Net Income}}{\text{Total Equity}}$$

3.4.3 Independent Variables

3.4.3.1 Liquidity

Liquidity ratios evaluate the company's capacity to pay short-term debt. It displays the company's immediate financial health. It measures how quickly a bank can turn its assets into cash in order to pay for withdrawals from deposits and other immediate liabilities. A bank has to make sure that it does not have too much liquidity or too little liquidity. The banks are not benefiting from either of the liquidity conditions. The credit deposit ratio, cash deposit ratio, and asset quality are the independent variables used in studies to assess a bank's liquidity (Bhattarai, 2015).

3.4.3.2 Credit deposit ratio

The ratio of outstanding credit to total bank deposits is known as the credit deposit ratio (Mishra & Pradhan, 2019). A high CDR suggests two things: (1) the bank is making more interest-bearing loans out of its deposits; and (2) the bank is making more money overall (Rengasamy, 2014). On the other hand, a very low ratio indicates that the bank is not employing assets to produce income while still being at low risk. Shrestha (2018) asserts that the credit deposit ratio and the profitability of commercial banks are significantly correlated.

$$\text{CDR} = \frac{\text{Ratio Of Loan And Advance}}{\text{Total Deposit}}$$

3.4.3.3 Cash deposit ratio

The ratio of bank cash to total deposits is known as the cash deposit ratio (Mishra & Pradhan, 2019). It is the proportion of loans made by a financial organization to the amount of deposits it has raised. It implies how much of a financial institution's funds are allocated to lending, which is the main function of banks. A greater ratio indicates a bank's stronger liquidity position, which is more beneficial for novel investment opportunities. According to Shrestha (2012), the ratio of bank balance to deposit and cash have no appreciable effect on profitability.

$$\text{CADR} = \frac{\text{Ratio Of Cash And Bank Balance}}{\text{Total Deposit}}$$

3.4.3.4 Assets quality

The ratio of non-performing loans (NPLs) to total loans is known as assets quality. Long-term arrears on a loan are a popular description of non-performing loans. NPLs have been a significant concern for regulators and financial institutions (Rifat, 2016). Poorer credit quality and a higher likelihood of additional loan loss being deducted from income are associated with larger non-performing loan ratios (Kingu, Macha, & Gwahula, 2018).

$$AQ = \frac{\text{Ratio Of Nonperforming Loan}}{\text{Total Loan}}$$

3.5 Method of data analysis

3.5.1 Descriptive analysis

In order to address pertinent concerns, data collection is the methodical process of gathering and analyzing data from various information sources. Evaluating gathered data accurately can aid academics in making predictions about trends and phenomena in the future. The approaches taken to assess the bank's liquidity and profitability, the kinds of data used, the methods by which they were gathered, the way in which they were managed, and the procedure by which an empirical model with measurements for each of its constituent parts was built are all examples of the data collection methods that were used in this study. Secondary data is used to complete this research. The secondary data was gathered from official bank sources, as well as from a variety of published (Journals, newspapers, and magazines) and unpublished (previous unpublished master's thesis related to this study) sources containing journals of previous studies and annual reports of the sample banks. There have also been references to numerous websites and books about financial management. The analysis in this study is quantitative in nature and is predicated on historical data. The arithmetic mean has been used to measure the central tendency under descriptive statistics. The coefficient of variation and standard deviation have been used to gauge the consistency. Similarly, the fixed effect technique has been taken into consideration to observe the normalcy of the data. Statistical graphics have been employed, depending on the data type, to analyze the phenomena. Regression models with several variables have been used to determine cause and effect. The correlation matrix has also been used to look at the correlation coefficients between the variables. All statistical parameters in this study were estimated using Microsoft Excel, a data

analysis toolkit, and a computer.

3.5.2 Standard Deviation

The most widely used and practical measure of dispersion that produces consistent, accurate, and steady results in practice is the standard deviation. Given that it takes into account the signs of deviations and is based on all observations, this measure of dispersion is mathematically valid. The definition of it is the square root of the arithmetic mean that is positive, obtained from the square of the deviations from the arithmetic mean. The Greek letter σ (read as sigma) is used to represent it. According to Tiwari, Ghimire, and Gaire (2006), it can also be defined as the root mean squared departure from the mean. Symbolically,

$$\sigma = \sqrt{\frac{\sum x^2}{N} - \frac{(\sum x)^2}{N}} \quad (3.1)$$

Where, N = Number of Observation
 x = Variate Value
 \bar{x} = Arithmetic Mean of a distribution

This study examined the effects of total loan, total deposit, ROA, and ROE using basic regression analysis. As a result, ROA and ROE are regarded as dependent variables, and total loan divided by total deposit is the independent variable.

3.5.3 Correlation analysis

A degree of linear link between two or more variables is known as correlation. There are three categories for correlation. These relationships are multiple, incomplete, and straightforward. A correlation might be zero, positive, or negative. There are two types of correlation: linear and nonlinear. A crucial metric for characterizing the degree to which one variable explains another is the coefficient of correlation. Finding the correlation between two variables has never been easier. The extreme goods' sizes have no bearing on it. The standard symbol for the Karl Pearson coefficient of correlation is "r."

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}} \quad (3.2)$$

where, n = number. of observation of X and Y.

$\sum XY$ = sum of the product of the observations in series X and Y.

$\sum X$ = sum of the observations in series X.

$\sum Y$ = sum of the observations in series Y.

$\sum X^2$ = sum of the square of the observations in series X.

$\sum Y^2$ = sum of the square of the observations in series Y.

Interpretation of Correlation Co-efficient: -

- i. It lies always between +1 and -1.
- ii. When $r = +1$; there is perfect positive (+ve) Correlation.
- iii. When $r = -1$; there is perfect negative (-ve) Correlation.
- iv. When $r = 0$; there is no Correlation.
- v. When r lies between 0.7 to 0.999 or -0.7 to -0.999; there is a high degree of +ve Correlation (or high degree of -ve Correlation).
- vi. When r lies between 0.5 to 0.699; there is a moderate degree of Correlation.
- vii. When r is less than 0.5; there is a low degree of Correlation.

3.5.4 Regression Analysis

The degree of association between two variables can be ascertained via regression analysis. Therefore, when the value of another variable is known, it is the statistical value of one variable. The dependent variable is the unknown that needs to be predicted, and the independent variable is the known. A basic regression line's typical form is as follows:

$$Y = \beta_0 + \beta_1 AQ + \beta_2 CDR + \beta_3 CADR + \varepsilon \quad (3.3)$$

Where, Y = Dependent Variable, β_0 = Intercept of dependent variable, β_1 , β_2 & β_3 = coefficient of independent variables, ε = error terms.

3.6 Data Analysis Model

Numerous financial, statistical, and accounting instruments have been employed to meet the study's objectives. Data analysis has been conducted with respect to the existing data pattern. The analysis's conclusions are presented using basic statistical techniques including graphs, percentages, and regression. Results from comparisons using statistical, accounting, and financial techniques have been collated under several topics, and a descriptive interpretation of the results has been provided.

3.6.1 Regression Model

Regression analysis was utilized in the study to determine the link between the independent factors, which included the CDR credit deposit ratio, CADR cash deposit ratio, and AQ asset quality, and the dependent variables, which included ROA and ROE. As a result, the regression model will.

$$ROA = \beta_0 + \beta_1 AQ + \beta_2 CDR + \beta_3 CADR + \varepsilon \dots (3.4)$$

$$ROE = \beta_0 + \beta_1 AQ + \beta_2 CDR + \beta_3 CADR + \varepsilon \dots (3.5)$$

Where, β_0 = Intercept of dependent variable, β_1 , β_2 & β_3 = coefficient of independent variables, ε = error terms.

The bank's profitability is measured by ROE and ROA in the model above. The dependent variables are represented by β_0 for the dependent variable and β_1 -3 for the independent variable. The assets quality is denoted by AQ, the credit deposit ratio by CDR, and the cash deposit ratio by CADR. E is the error term, and they are independent variables.

3.6.2 Test of significance

A formal process for contrasting observed evidence with a claim is called a test of significance. The significance test was performed using the F-test and the t-test for the fixed effect method, the truth of which is being accessible. Examine the statistic, To compare the averages of two groups and ascertain if the differences between them are more likely to be the result of chance, statisticians employ t-tests. It is any statistical hypothesis test where the test statistic, under the null hypothesis, has a t-distribution. It is most frequently used in situations where, if the value of a scaling term in the test statistic were known, the test statistic would follow a normal distribution. In some cases, the test statistic has a t distribution when the scaling term is computed using the data. The most popular use of the t-test is to determine whether the means of two populations differ from one another. Any statistical test that exhibits an F-distribution for the test statistic under the null hypothesis is called an F-test. In order to determine which statistical model better matches the population from which the data were sampled, it is most frequently used to compare models that have been fitted to data sets. In the 1920s, Fisher created the statistic first called the variance ratio.

CHAPTER –IV

RESULTS AND ANALYSIS

This chapter deals with the presentation and analysis of relevant data of the banks. Data analysis is the relationships or new hypothesis, which should be subjected to statistical test of significance to determine with validity data and can be served to indicate any conclusion. Data are collected from secondary sources by using financial and statistical tools and its findings.

4.1 Comparison of situation of selected bank

4.1.1 Return on Total Assets Ratio

This ratio measures the overall profitability of all working funds i.e. total assets. A firm has to earn satisfactory return on working funds for its survival. The following table shows return on total assets ratio of selected banks including Nabil Bank Limited, Everest Bank Limited and Himalayan Bank Limited.

Table 1

Return on Assets

	NABIL	HBL	EBL
2013/14	3.03	1.54	2.24
2014/15	2.66	1.30	2.20
2015/16	1.81	1.34	1.59
2016/17	2.15	1.92	1.52
2017/18	2.57	2.11	1.72
2018/19	2.47	1.61	1.78
2019/20	2.11	2.08	1.80
2020/21	1.46	1.66	1.36
2021/22	1.56	1.68	0.84
2022/23	1.01	1.09	1.10

Source: Appendix-I

The Return on Assets (ROA) figures provided for NABIL, HBL, and EBL from 2013/14 to 2022/23. The financial performance of these banks over the years. ROA is

financial metric that measures a company's profit from its assets. NABIL ROA started relatively high at 3.03 in 2013/14, indicating efficient asset utilization. Over the years, it gradually decreased, reaching its lowest point of 1.01 in 2022/23. This declining trend suggests a potential decrease in profitability relative to its asset base. Factors contributing to this trend might include changes in market conditions, shifts in the banking landscape, or adjustments in NABIL strategic direction.

HBL ROA has shown fluctuations over the years, ranging from 1.30 in 2014/15 to 2.11 in 2017/18. Despite some variability, HBL generally maintained a moderate to high ROA throughout the period. However, similar to NABIL, HBL ROA also experienced a decline in the later years, dropping to 1.09 in 2022/23. This trend could be indicative of challenges or adjustments within HBL operations or the banking sector as a whole. EBL ROA trend appears to be the most volatile among the three banks. While it started relatively high at 2.24 in 2013/14, it showed significant fluctuations in subsequent years. EBL ROA experienced a noticeable decline in 2021/22, dropping to 0.84, which is substantially lower compared to its historical performance. However, it rebounded slightly to 1.10 in 2022/23. This fluctuating pattern suggests that EBL may have faced unique challenges or opportunities that influenced its profitability over the years.

The ROA trends of NABIL, HBL, and EBL indicate varying degrees of financial performance and efficiency in asset utilization. Understanding trends provide valuable insights for investors, stakeholders, and management to assess the banks' strategies, operational effectiveness, and future prospects. The table shows that the data related to Return on Assets (ROA) for different financial institutions over the years. ROA is a financial metric that measures a company's ability to generate profit from its assets. The table includes the values for each year, as well as the total, mean, SD, and CV for each financial institution. to compare the performance of different financial institutions over the years based on their ROA. Years (2013/14-2022/23): The data is presented for each year, and there's a row for the total, mean, SD, and CV. Return on Assets values for each financial institution ROA values are expressed as percentages. The ROA for each financial institution over the specified period. The SD row provides information about the variability or dispersion of ROA values. The CV expresses the SD as a percentage of the mean and is a measure of relative variability. ROA is a

financial ratio that indicates how efficiently a company is using its assets to generate profit.

4.1.2 Return on Equity (ROE)

The return on equity is the ratio of net income to common shareholder equity which measures the rate of return on common stockholders' investment. Management's objective is to generate the maximum return on shareholders' investment. Return on equity therefore, the best single measure of the company's success in fulfilling its goal

Table 2

Return on Equity

	NABIL	HBL	EBL
2013/14	72.85	32.57	76.57
2014/15	63.44	28.77	72.48
2015/16	44.04	24.72	57.40
2016/17	19.50	20.76	17.57
2017/18	22.17	18.50	15.19
2018/19	19.34	13.26	16.00
2019/20	18.28	17.28	17.33
2020/21	13.39	14.70	13.50
2021/22	13.37	14.89	8.56
2022/23	8.03	10.75	10.88

Source: Appendix-I

Return on Equity (ROE) provides for NABIL, HBL and EBL from 2013-14 to 2022-23 show the profitability of these banks with respect to shareholder equity over the years. ROE is an important financial ratio that measures how effectively a company uses its share capital to generate profits. Analyse the observed trends in 2013/14, NABIL started with a solid return on equity of 72.85%, reflecting high profitability relative to equity capital. However, over the years, NABIL ROE has declined significantly, falling to 8.03% in 2022/23. This downward trend suggests that it is having difficulty maintaining past levels of profitability relative to its own base. Factors such as changes in market dynamics, regulatory environment, or internal

strategies may have contributed to this decline. HBL ROE also showed a downward trend during this period. HBL, ROE started at 32.57% in 2013/14 and gradually decreased 10.75% in 2022/23. NABIL, this decline indicates difficulties in maintaining profitability relative to equity capital. HBL it have experienced industry issues or internal operating issues that have impacted its profitability and return on equity. EBL ROE has fluctuated over the years. EBL return on equity started at a relatively high level of 76.57% in 2013/14, but experienced significant fluctuations in subsequent years, falling to 8.56% in 2021/22 before recovering slightly to 10.88% in 2022/23. It is done. These volatile trends suggest that EBL may face unique challenges or opportunities that impact its profitability and ability to deliver value to shareholders. The ROE trends of NABIL, HBL and EBL highlight the different levels of profitability and capital efficiency of the banking sector. Understanding these trends is essential for investors, stakeholders, and management to evaluate a bank's financial performance, strategic direction, and potential areas for improvement.

The ROE values for different financial institutions over the years, along with total, mean, SD and CV for each institution. The ROE values over the years reflect the financial performance and profitability. The total, mean, SD, and CV provide a comprehensive view of the overall trend, consistency, and volatility in ROE. The ROE values for each financial institution from 2013/14 to 2022/23. There are variations in ROE across institutions and years, reflecting changes in profitability and financial performance. The Mean represents the average ROE for each institution. Institutions with higher mean ROE values are generally considered more profitable over the entire period. The standard deviation of ROE, indicating the extent of variability in annual ROE. A higher SD suggests greater volatility in annual returns.

4.1.3 Credit Deposit Ratio

The Credit Deposit Ratio (CDR) is a financial metric that measures the proportion of loan and advance to the total deposits held by financial institutions. It is an important indicator of liquidity and risk management for banks.

Table 3
Credit Deposit Ratio

	NABIL	HBL	EBL
2013/14	72.90	74.85	75.18
2014/15	72.55	70.07	76.60
2015/16	62.84	72.72	65.57
2016/17	71.56	79.77	72.50
2017/18	78.74	84.26	81.27
2018/19	84.28	87.04	81.53
2019/20	81.96	89.10	86.45
2020/21	80.65	85.20	82.95
2021/22	92.46	93.67	84.37
2022/23	95.20	92.02	89.76

Source: Appendix-I

The table shows that the Credit Deposit Ratio for various financial institutions over the years, along with total, mean, standard deviation and coefficient of variation. Credit deposit ratio is the ratio of outstanding credit to aggregate deposit levels of banks. A high CDR indicates two things, firstly the bank is issuing out more of its deposits in the form of interest-bearing loans; secondly the bank generates more income. Alternatively, a very low ratio means bank is at low risk, on the same time it is not using assets to generate income. An analysis of the observed trends is as follows. NABIL CDR has generally maintained a stable range over the years, fluctuating between approximately 70% and 95%.

NABIL continues to use a significant percentage of its deposits to provide loans to borrowers. Small fluctuations observed may reflect adjustments in NABIL credit strategy, market demand or regulatory requirements. NABIL relatively stable CDRs ensure the liquidity and stability of deposits while presenting a balanced approach to loan portfolio management. HBL CDR also shows a consistent pattern, fluctuating between 70% and 95% during this period. Like NABIL, HBL appears to have effectively leveraged its deposit base to support its lending activities. Fluctuations in HBL CDR may reflect changes in market conditions, economic cycles or internal policies to maintain an optimal balance between lending and deposit activities.

Despite these fluctuations, HBL CDRs represent a proactive approach to using deposits to meet credit demand while managing risk. EBL CDR Trend shows little volatility compared to NABIL and HBL. Overall, EBL CDR Ranges from approximately 65% to 90%, but shows more pronounced fluctuations in certain years. This volatility may be explained by factors such as changes in EBL lending priorities, market competition, or changes in deposit dynamics. However, EBL CDR has consistently remained within reasonable limits, reflecting efforts to maintain a balance between lending and deposit mobilization.

The CDR trends of NABIL, HBL and EBL highlight the approach of these banks in managing their loan portfolio in relation to their deposit base. A stable and optimal CDR represents efficient use of deposits for lending activities while maintaining liquidity and financial stability. Understanding these trends is important for evaluating a bank's risk management practices, lending strategies, and overall financial health.

4.1.4 Assets Quality

Assets quality is the ratio of non-performing loan (NPL) to total loan. The higher the NPL ratio, the poorer the credit quality and, therefore, the higher the risk that more loan loss will be charged against income.

Table 4

Assets Quality

	NABIL	HBL	EBL
2013/14	0.00101	0.00712	0.00636
2014/15	0.00102	0.00463	0.00988
2015/16	0.00102	0.00406	0.00850
2016/17	0.00097	0.00141	0.00388
2017/18	0.00096	0.00244	0.00256
2018/19	0.00045	0.00286	0.00017
2019/20	0.00179	0.00096	0.00049
2020/21	0.00328	0.00391	0.00098
2021/22	0.00343	0.00131	0.00033
2022/23	0.00638	0.00712	0.00034

Source: Appendix-I

The table shows that the Asset quality management is a critical aspect of a financial institution's risk management strategy, aiming to assess and mitigate the potential risks associated with its asset portfolio. The Asset Quality ratio, as reflected in the provided data, is a key metric used to evaluate the proportion of non-performing assets in relation to total assets. The asset quality (AQ) scores of NABIL, HBL and EBL from 2013/14 to 2022/23. The asset soundness ratio is an indicator that measures the quality of a bank's assets, especially its loans, and is calculated by dividing non-performing loans by total loans.

NABIL asset quality ratio has fluctuated over the years, but overall it remains relatively low, indicating good asset quality. In 2013/14, this ratio was 0.00101, and peaked at 0.00638 in 2022/23. Despite some changes, the NPL ratio appears to be well managed, with NABIL maintaining a relatively low level of non-performing loans compared to its overall loan book. HBL asset quality ratio is more volatile compared to NABIL. It starts at a relatively low level of 0.00712 in 2013/14, declines significantly over the next few years, and then fluctuates before increasing again in 2022/23. This indicates some fluctuation in asset quality over time, perhaps influenced by changes in the economic environment, lending practices or risk management strategies.

EBL asset quality ratio also fluctuates over time, but is generally lower compared to NABIL and HBL. EBL starts at a relatively low rate in 2013/14, fluctuates, peaks in 2020/21 and then declines again. This means that EBL maintains reasonably good asset quality, although there may be fluctuations reflecting changes in the composition of the loan portfolio or economic conditions. The three banks show fluctuations in their asset quality ratios over the years, but NABIL generally maintains low and stable ratios compared to HBL and EBL. Understanding these trends is important in assessing a bank's risk exposure and financial health.

4.1.5 Cash Deposit Ratio

The ratio of bank cash to total deposits is known as the cash deposit ratio. It indicates how much of a financial institution's funds are allocated to lending, which is the main function of banks.

Table 5
Cash Deposit Ratio

	NABIL	HBL	EBL
2013/14	9.25	6.87	19.43
2014/15	72.55	8.57	21.21
2015/16	62.84	11.40	30.23
2016/17	71.56	20.26	34.97
2017/18	78.74	18.57	2.83
2018/19	84.28	15.04	27.96
2019/20	81.96	13.50	24.40
2020/21	80.65	20.74	22.81
2021/22	92.46	14.33	25.06
2022/23	95.20	12.97	10.42

Source: Appendix-I

The table shows that the Cash Deposit Ratio (CADR) is a financial metric that represents the percentage of a bank's total deposits held in cash or deposited with the central bank. It indicates the proportion of a bank's assets that are in the form of cash or easily convertible into cash. A higher cash deposit ratio suggests a more liquid position for the bank but may also imply lower profitability since cash typically generates less income compared to other interest-earning assets. Cash Deposit Ratio (CDR) data provided for NABIL, HBL and EBL from 2013-14 to 2022-23 provides insight into the liquidity position of these banks by showing the percentage of deposits held in cash or cash equivalents. A higher CDR generally indicates a better ability to meet short-term obligations, while a lower CDR may indicate that the bank prefers to invest in other assets or lending activities. NABIL CDR is starting from a relatively low level of 9.25% as of 2013/14, indicating a preference for using deposits for other purposes rather than cash. NABIL CDR has fluctuated over the years but has generally remained modest, peaking at 95.20% in 2022/23. This represents a significant increase in cash reserves, reflecting a strategic shift in response to market conditions by increasing liquidity reserves or maintaining higher cash reserves. HBL, CDR shows greater volatility compared to NABIL. It started at 6.87%, lower than NABIL in 2013/14, but showed notable growth in subsequent years, peaking at

20.74% in 2020/21 before declining again. These fluctuations may indicate adjustments to HBL's liquidity management strategy, including periods of increasing cash holdings to reduce risk or capitalizing on investment opportunities, or deploying cash into other assets to optimize returns. EBL CDR also shows fluctuations over the years, but overall it is higher than NABIL and HBL. The EBL CDR fluctuates starting from 19.43% in 2013/14 before decreasing to 10.42% in 2022/23. This indicates EBL relatively conservative approach to liquidity management, with EBL maintaining a higher proportion of deposits in cash or cash equivalents than the other two banks. A reduction in CDR in 2022/23 could mean funds are strategically reallocated to other assets or lending activities. CDR trends of NABIL, HBL and EBL provide insight into their liquidity management strategies and risk appetite over the years. Although fluctuations are common and depend on a variety of factors, including market conditions, regulatory requirements, and internal policies, CDR monitoring helps banks assess their ability to maintain adequate levels of liquidity to meet obligations and take advantage of opportunities.

4.2 Descriptive statistics

Preliminary analysis was done on the determinants under the independent and dependent variables of the sample data. Finding missing data, estimating outliers, and estimating the mean, median, and standard deviation were all part of this preliminary investigation. After removing missing data 5% upper bound and 5% lower bound outliers were estimated. The information on ROA, ROE, CDR, CADR, and AQ has been made understandable through descriptive statistics. The descriptive information for the five variables affecting the minimum, maximum, standard deviation, and skewness of Nepalese commercial banks.

Table 6

Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
NPL	30	16	1982	293.57	395.39	156333.29
Valid N (listwise)	30					

The Non-Performing Loans (NPL) variable exhibits a wide range of values, from a minimum of 16 to a maximum of 1982, with a mean of 293.57 and a standard deviation of 395.390. The variance, at 156333.289, suggests considerable dispersion within the data. Additionally, a positive skewness value of 3.153 indicates that the distribution is right-skewed, meaning there are relatively few extreme high values compared to the rest of the data.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
ROE	30	8.03306846	76.5747007	26.5368174	20.6203762	425.2
Valid N (listwise)	30					

Return on Equity (ROE) ranges from 8.033 to 76.575, with a mean of 26.537 and a standard deviation of 20.620. The variance is notably high at 425.200, suggesting substantial variability within the dataset. The skewness of 1.549 indicates a moderate right-skew, similar to the NPL variable.

	N	Minimum	Maximum	Mean	Std. Deviation	Varian ce
CDR	30	62.8388879	95.2023469	80.6006124	8.35916639	69.876
Valid N (listwise)	30					

Credit deposit Rate (CDR) ranges from 62.839 to 95.202, with a mean of 80.601 and a standard deviation of 8.359. The variance is 69.876, implying relatively lower variability compared to the previous variables. The negative skewness value (-0.171) suggests a slight left-skew in the distribution.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
CADR	30	2.83298631	34.9741292	17.7278391	7.63633546	58.314
Valid N (listwise)	30					

Cash Deposit Ratio (CADR) has a range from 2.833 to 34.974, with a mean of 17.728 and a standard deviation of 7.636. The skewness of 0.287 indicates a slight right-skew, although less pronounced compared to the NPL and ROE variables.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
AQ	30	0.00016989	0.00987976	0.00298808	0.0026949	0
Valid N (listwise)	30					

Asset Quality (AQ) ranges from 0.0001699 to 0.0098798, with a mean of 0.0029881 and a standard deviation of 0.0026949. The variance is zero, suggesting no variability within the dataset. The skewness value of 1.062 indicates a moderately right-skewed distribution. These statistics provide insights into the central tendency, variability, and distributional characteristics of each financial metric, aiding in understanding the underlying data structure and potential patterns.

Descriptive statistics provide insights into various financial indicators based on 30 observational data sets. Non-performing loans range from a low of 16 to a high of 1982, with a mean of 293.57 and a standard deviation of 395.39, indicating a significant level of average volatility. This represents the change in the number of non-performing loans in the data set. Return on Assets shows a moderate level of

volatility, with values ranging from 0.84% to 3.03%. The average return on assets is 1.78% and the standard deviation is 0.51%, indicating relatively stable performance across all assets. Return on equity ranges from 8.03% to 76.57%, with a mean of 26.54% and a standard deviation of 20.62%, which are significant and indicate a wide variety of returns on stock investments. Credit default rate and composite annual default rate show moderate levels of volatility. The CDR ranges from 62.84% to 95.20%, with a mean of 80.60% and a SD of 8.36%. CADR ranges from 2.83% to 34.97%, with an average of 17.73% and SD of 7.64%. These measures show base rates and cumulative effects over time, with noticeable but manageable volatility.

Asset Quality (AQ) exhibits very low levels of volatility, with values ranging from 0.00017 to 0.00988, with a mean of 0.00299 and a very small standard deviation of 0.00269. This means a high level of consistency in asset quality across datasets, even if lack of variance (0) raises questions about the uniformity or resolution of the data. Some metrics show significant variability, while others show greater consistency across datasets. Understanding these descriptive statistics can help it understand the distribution and characteristics of financial performance indicators. These descriptive statistics provide valuable insights into the central tendency, variability, and skewness of each financial metric, aiding in the understanding of the dataset's characteristics.

Correlation Analysis Between study variables

Variables	NPL	ROA	ROE	CDR	CADR	AQ
NPL	1					
ROA	-.422*	1				
ROE	-0.161	.580**	1			
CDR	.398*	-0.321	-.628**	1		
CADR	-0.221	0.093	-0.012	-0.222	1	
AQ	.590**	-0.230	.375*	-0.152	-0.086	1

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

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

Source: SPSS v26

The table represent the correlation of each variable which is always 1. The correlation coefficients between pairs of variables. A positive correlation coefficient indicates a

positive linear relationship, while a negative correlation coefficient indicates a negative linear relationship. The correlation analysis between the study variables reveals several noteworthy associations within the dataset. These correlations provide valuable insights into the relationships among financial metrics. NPL exhibits a significant negative correlation with Return on Assets (ROA) ($r = -0.422^*$), suggesting that as ROA increases, the number of non-performing loans tends to decrease. ROA demonstrates a strong positive correlation with Return on Equity (ROE) ($r = 0.580^{**}$), indicating that higher returns on assets are associated with higher returns on equity.

ROE displays a substantial negative correlation with both Credit Default Rate (CDR) ($r = -0.628^{**}$) and Asset Quality (AQ) ($r = 0.375^*$). This implies that higher ROE is linked to lower credit default rates and better asset quality. CDR shows a positive correlation with NPL ($r = 0.398^*$) and a negative correlation with ROA ($r = -0.321$), suggesting that higher non-performing loans and lower returns on assets are associated with higher credit default rates. CADR exhibits a negligible correlation with other variables, indicating that its relationship with the rest of the metrics is minimal or non-existent in this dataset. AQ demonstrates a strong positive correlation with NPL ($r = 0.590^{**}$) and a moderate positive correlation with ROE ($r = 0.375^*$), suggesting that higher asset quality is associated with fewer non-performing loans and higher returns on equity. This correlation analysis highlights the interplay between various financial metrics, providing valuable insights for decision-making within the context of financial management and risk assessment in financial sectors.

4.3 Regression Analysis

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.770 ^a	0.592	0.507	0.3607467	0.778

a. Predictors: (Constant), AQ, CADR, CDR, ROE, NPL

b. Dependent Variable: ROA

Source: SPSS v26

The regression model under consideration shows a relatively strong relationship between the predictor variables (AQ, CADR, CDR, ROE, NPL) and the dependent variable (ROA), as indicated by the R-squared value of 0.592. This means that approximately 59.2% of the variation in ROA can be explained by the combination of predictors included in the model. The adjusted R-squared, taking into account the number of predictors and sample size, is 0.507. This adjusted value indicates that after adjusting for the number of predictors and sample size, approximately 50.7% of the variance in ROA can be attributed to the predictors.

The standard error of the estimate, which measures the average distance that observations deviate from the regression line, is 0.3607467. This indicates the degree of volatility, or spread, of the observed values around the predicted values of the regression model. The Durbin-Watson statistic is 0.778. This statistic is used to detect the presence of autocorrelation in the residuals (errors) of a regression analysis. A value close to 2 means no significant autocorrelation. In this case, the value of 0.778 may indicate a potential autocorrelation problem, but further diagnostics would be needed to confirm this. Therefore, regression models provide valuable information about the relationship between predictor variables (AQ, CADR, CDR, ROE, NPL) and dependent variable (ROA), explaining a significant portion of the variance in ROA. However, additional analysis, including diagnostic tests for assumptions such as autocorrelation, may be required to ensure that the model is robust.

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.538	5	0.908	6.975	.000 ^b
	Residual	3.123	24	0.13		
	Total	7.662	29			

a. Dependent Variable: ROA

b. Predictors: (Constant), AQ, CADR, CDR, ROE, NPL

Source: SPSS v26

The regression sum of squares indicates the amount of variance in the dependent variable (ROA) that is explained by the predictors included in the model. In this case, the regression sum of squares is 4.538. The residual sum of squares represents the

amount of variance in the dependent variable that is not explained by the predictor variables and is due to random error or unobserved factors. Here the residual sum of squares is 3.123. The total sum of squares is the sum of the regression sum of squares and the residual sum of squares. It represents the total variance of the dependent variable. In this case, the total sum of squares is 7.662.

The degrees of freedom and residuals of a regression model represent the number of independent pieces of information that can be used to estimate the model's parameters and errors, respectively. Here, the regression model has 5 degrees of freedom and the residual model has 24 degrees of freedom. The mean square is the sum of squares divided by the degrees of freedom. Indicates the average variance explained by the model (regression mean square) or the average variance unexplained (residual mean square). The F statistic is the ratio of the regression mean square and the residual mean square. Test the overall significance of the regression model. Here the F-statistic is 6.975. The significance value (Sig.) associated with the F statistic represents the probability of observing the value of the F statistic if the null hypothesis (all regression coefficients are equal to 0) is true. In this case, the significance value is 0.000, which indicates that the regression model is statistically significant at typical significance levels (typically $\pm=0.05$). Therefore, through the ANOVA table, we can confirm that the regression model including the predictor variables (AQ, CADR, CDR, ROE, NPL) is statistically significant in explaining the variance of the dependent variable (ROA).

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.409	1.062		0.386	0.703
NPL	-5.29-05	0	-0.041	-0.193	0.848
ROE	0.022	0.005	0.886	4.731	0
CDR	0.012	0.012	0.196	1.02	0.318
CADR	0.006	0.009	0.095	0.687	0.498
AQ	-95.518	39.397	-0.501	-2.425	0.023

a. Dependent Variable: ROA

Source: SPSS v26

The constant term represents the intercept of the regression equation when all predictors are set to zero. In this model, the constant term is 0.409, with a standard error of 1.062. However, it is not statistically significant ($p = 0.703$), suggesting that the intercept is not significantly different from zero. The coefficient for NPL is $-5.29E-05$, indicating that for each unit increase in non-performing loans, the ROA decreases by $-5.29E-05$ units. However, this coefficient is not statistically significant ($p = 0.848$), suggesting that non-performing loans do not have a significant linear relationship with ROA in this model. The coefficient for ROE is 0.022, with a standard error of 0.005. This suggests that for each unit increase in return on equity, the ROA increases by 0.022 units. The coefficient is statistically significant ($p = 0$), indicating that return on equity has a significant positive linear relationship with ROA.

The coefficients for CDR and CADR are 0.012 and 0.006, respectively. Both coefficients are not statistically significant ($p > 0.05$), suggesting that credit default rate and cumulative annual default rate do not have significant linear relationships with ROA in this model. The coefficient for AQ is -95.518 , indicating that for each unit increase in asset quality, the ROA decreases by 95.518 units. This coefficient is statistically significant ($p=0.023$), suggesting that asset quality has a significant negative linear relationship with ROA. The regression analysis suggests that return on equity and asset quality are significant predictors of return on assets, while non-performing loans, credit default rate, and cumulative annual default rate do not have significant linear relationships with return on assets in this model.

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.0813209	2.85375	1.77632	0.3956001	30
Residual	-0.90261233	0.63931	0	0.3281777	30
Std. Predicted Value	-1.757	2.724	0	1	30
Std. Residual	-2.502	1.772	0	0.91	30

a. Dependent Variable: ROA

Source: SPSS v26

The predicted values of ROA range from 1.081 to 2.854, with a mean of 1.776. This indicates that the average predicted value of ROA across the dataset is 1.776. The residuals range from -0.903 to 0.639, with a mean of 0. This suggests that, on average, the residuals (errors) in the model balance out to zero, indicating that the model is unbiased. The standardized predicted values (Std. Predicted Value) range from -1.757 to 2.724. These standardized values allow for comparison of the predicted values across different models or datasets. The standardized residuals (Std. Residual) range from -2.502 to 1.772, with a mean of 0. This indicates that the residuals have been standardized to have a mean of 0 and a standard deviation of 1, facilitating the assessment of outliers or influential data points in the model. The residuals statistics provide information about the accuracy and reliability of the regression model, helping to assess the goodness of fit and identify any potential issues such as heteroscedasticity or influential observations.

4.4 Correlation results (ROE)

The Pearson co-efficient of correlation examines the relationship between ratio of net income divisible by total equity and credit deposit ratio, cash deposit ratio and assets quality of the bank. It shows the magnitude and direction of the linear relationship of the sample commercial banks at 1% and 5% level of significance over the study period. The Pearson correlation analysis results are presented in table.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.866 ^a	0.749	0.697	11.351243	0.924

a. Predictors: (Constant), ROA, CADR, AQ, CDR, NPL

b. Dependent Variable: ROE

The multiple correlation coefficients (R) represent the strength and direction of the linear relationship between the predictors and the dependent variable. In this model, the value of R is 0.866, indicating a strong positive correlation between the predictors and the dependent variable. The coefficient of determination (R-square) measures the proportion of variance in the dependent variable (ROA) that is explained by the predictors included in the model. Here, R-square is 0.749, indicating that

approximately 74.9% of the variance in ROA can be accounted for by the predictors. The adjusted R-square adjusts the R-square value for the number of predictors in the model and the sample size. In this case, the adjusted R-square is 0.697, which provides a more conservative estimate of the proportion of variance explained by the predictors. The standard error of the estimate measures the average distance between the observed values of the dependent variable and the predicted values from the regression model. Here, the standard error of the estimate is 11.351243, indicating the typical magnitude of prediction errors in the model. The Durbin-Watson statistic tests for the presence of autocorrelation in the residuals of the regression model. A value close to 2 suggests no significant autocorrelation. In this model, the Durbin-Watson statistic is 0.924, which indicates potential autocorrelation in the residuals.

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9238.38	5	1847.676	14.34	.000 ^b
	Residual	3092.42	24	128.851		
	Total	12330.8	29			

a. Dependent Variable: ROE

b. Predictors: (Constant), ROA, CADR, AQ, CDR, NPL

The regression sum of squares indicates the amount of variance in the dependent variable (ROE) that is explained by the predictor variables included in the model. In this case, the regression sum of squares is 9238.38. The residual sum of squares represents the amount of variance in the dependent variable that is not explained by the predictor variables and is due to random error or unobserved factors. Here the residual sum of squares is 3092.42. It represents the total variance of the dependent variable. In this case, the total sum of squares is 12330.8. Here, the regression model has 5 degrees of freedom and the residual model has 24 degrees of freedom. The mean square is the sum of squares divided by the degrees of freedom. The F statistic is the ratio of the regression mean square and the residual mean square. Test the overall significance of the regression model. Here the F-statistic is 14.34. The significance value (Sig.) associated with the F statistic represents the probability of observing the value of the F statistic if the null hypothesis (all regression coefficients are equal to 0) is true. In this case, the significance value is 0.000, which indicates that the regression model is statistically significant at typical significance levels (typically

$\pm=0.05$). The ANOVA table confirms that the regression model including the predictor variables (ROA, CADR, AQ, CDR, and NPL) is statistically significant in explaining the variance in the dependent variable (ROE).

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	55.401	31.54		1.757	0.092
NPL	-0.006	0.009	-0.111	-0.676	0.506
CDR	-0.887	0.333	-0.36	-2.667	0.013
CADR	-0.334	0.286	-0.124	-1.167	0.255
AQ	3830.68	1140.93	0.501	3.358	0.003
ROA	21.858	4.62	0.545	4.731	0

a. Dependent Variable: ROE

The constant term represents the intercept of the regression equation when all predictor variables are set to zero. In this model, the constant term is 55.401, with a standard error of 31.54 and a t-value of 1.757. The significance level (Sig.) of 0.092 suggests that the constant term is not statistically significant at the conventional significance level (typically $\alpha = 0.05$). The coefficient for NPL is -0.006, indicating that for each unit increase in non-performing loans, the ROE decreases by 0.006 units. However, this coefficient is not statistically significant ($p = 0.506$). The coefficient for CDR is -0.887, indicating that for each unit increase in credit default rate, the ROE decreases by 0.887 units. This coefficient is statistically significant ($p = 0.013$), suggesting that credit default rate has a significant negative linear relationship with ROE. The coefficient for CADR is -0.334, indicating that for each unit increase in cumulative annual default rate, the ROE decreases by 0.334 units. However, this coefficient is not statistically significant ($p = 0.255$). The coefficient for AQ is 3830.68, indicating that for each unit increase in asset quality, the ROE increases by 3830.68 units. This coefficient is statistically significant ($p = 0.003$), suggesting that asset quality has a significant positive linear relationship with ROE. The coefficient for ROA is 21.858, indicating that for each unit increase in return on assets, the ROE increases by 21.858 units. This coefficient is statistically significant ($p = 0$),

suggesting that return on assets has a significant positive linear relationship with ROE. The regression analysis suggests that credit default rate, asset quality, and return on assets are significant predictors of return on equity, while non-performing loans and cumulative annual default rate do not have significant linear relationships with return on equity in this model.

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-8.5628071	63.5461	26.5368	17.848385	30
Residual	-13.62222099	22.6934	0	10.326426	30
Std. Predicted Value	-1.967	2.074	0	1	30
Std. Residual	-1.2	1.999	0	0.91	30

a. Dependent Variable: ROE

The predicted values of ROE range from -8.5628071 to 63.5461, with a mean of 26.5368. This indicates that the average predicted value of ROE across the dataset is 26.5368. The residuals range from -13.62222099 to 22.6934, with a mean of 0. This suggests that, on average, the residuals (errors) in the model balance out to zero, indicating that the model is unbiased. The standardized predicted values (Std. Predicted Value) range from -1.967 to 2.074. These standardized values allow for comparison of the predicted values across different models or datasets. The standardized residuals (Std. Residual) range from -1.2 to 1.999, with a mean of 0. This indicates that the residuals have been standardized to have a mean of 0 and a standard deviation of 1, facilitating the assessment of outliers or influential data points in the model. The residuals statistics provide information about the accuracy and reliability of the regression model, helping to assess the goodness of fit and identify any potential issues such as heteroscedasticity or influential observations.

The liquidity position and profitability of Nepalese commercial banks are critical indicators of their financial health and sustainability. Analyzing the relationship between liquidity and profitability is crucial for understanding the operational efficiency and risk management practices of these banks. In examining the liquidity position, it is essential to assess the adequacy of liquid assets to meet short-term obligations. Banks with strong liquidity positions typically have sufficient cash

reserves and marketable securities to cover withdrawals and unforeseen funding requirements. Another side, banks facing liquidity challenges may resort to borrowing at higher costs or liquidating assets at discounted prices, potentially impacting profitability.

Profitability, on the other part, reflects the ability of banks to generate earnings from their core operations and investments. Key profitability metrics include net interest margin, return on assets, and return on equity. A profitable bank can enhance shareholder value, attract investors, and support future growth initiatives.

The relationship between liquidity and profitability is intricate and can vary based on several factors, including market conditions, regulatory requirements, and management strategies. Generally, a balanced approach is crucial, as excessively focusing on liquidity may result in missed profit opportunities, while prioritizing profitability without adequate liquidity can expose banks to solvency risks.

In the context of Nepalese commercial banks, the relationship between liquidity and profitability may exhibit unique dynamics influenced by factors such as the country's economic environment, regulatory framework, and banking industry structure. Empirical studies and data analysis specific to the Nepalese banking sector can provide valuable insights into this relationship.

Addressing the impact of liquidity on profitability requires a comprehensive understanding of how liquidity management practices, such as cash reserves, liquidity risk management frameworks, and funding strategies, influence the earnings potential of commercial banks in Nepal. By striking a balance between maintaining adequate liquidity buffers and optimizing profitability, banks can navigate uncertainties effectively and sustain long-term growth and stability.

The further research and analysis incorporating both quantitative and qualitative methodologies can deepen our understanding of the interplay between liquidity and profitability in the context of Nepalese commercial banks. This holistic approach will facilitate informed decision-making by bank management, regulators, and stakeholders.

4.5 Discussion

- The data relates to the return on assets (ROA) of various financial institutions in various years.
- ROA is a financial ratio that measures a company's ability to generate profits from its assets. CV is the standard deviation expressed as a percentage of the mean and is a measure of relative volatility.
- ROA is a financial ratio that shows how effectively a company uses its assets to generate profits. The standard deviation of return on equity indicates the degree of variation in return on equity from year to year.
- A higher standard deviation means more volatility in annual returns. The CDR trends of NABIL, HBL and EBL highlight the approach of these banks in managing their loan portfolio based on their deposit base.
- These three banks have shown fluctuations in their asset quality scores over the years, NABIL has generally maintained low and stable performance compared to HBL and EBL.
- CDR trends of NABIL, HBL and EBL provide insight into their liquidity management strategies and risk appetite over the years. These descriptive statistics help you understand the characteristics of your data set by providing valuable information about the underlying trend, volatility, and skewness of each financial measure.
- This correlation analysis highlights the interactions between various financial indicators, providing useful information for decision-making in the context of financial management and risk assessment in the financial sector.
- The regression model provides valuable information about the relationship between the predictor variables (AQ, CADR, CDR, ROE, and NPL) and the dependent variable (ROA), explaining a significant portion of the variation in ROA.
- Regression analysis shows that credit default rate, asset quality, and return on assets are significant predictors of return on equity, while non-performing loans and annual cumulative default rate do not have a significant linear relationship with return on equity in this model.

- Using the ANOVA table, you can confirm that the regression model including the predictor variables (AQ, CADR, CDR, ROE, NPL) is statistically significant in explaining the variance of the dependent variable (ROA).
- Regression analysis shows that return on equity and asset quality are significant predictors of return on assets, while non-performing loans, credit default rate, and annual cumulative default rate do not have a significant linear relationship with return on assets in this model.
- A regression model that helps to assess goodness of fit and identify potential problems such as influential observations.
- A value close to 2 means no significant autocorrelation. The Durbin-Watson statistic for this model is 0.924, indicating potential autocorrelation in the residuals.
- The ANOVA table, you can confirm that the regression model including the predictor variables (ROA, CADR, AQ, CDR, NPL) is statistically significant in explaining the variance of the dependent variable (ROE).
- Regression analysis shows that credit default rate, asset quality, and return on assets are significant predictors of return on equity, while non-performing loans and annual cumulative default rate do not have a significant linear relationship with return on equity in this model.
- Residual statistics provide information about the accuracy and reliability of a regression model, helping to evaluate fit and identify potential problems such as heteroscedasticity or influential observations.
- The residuals range from -13.62222099 to 22.6934, with a mean of 0.

CHAPTER-V

SUMMARY AND CONCLUSION

5.1 Summary

Institutions engaged in financial and monetary activities are known as commercial banks. Commercial banks are financial intermediaries that collect deposits from surplus units (depositors) and provide credit to deficit units (borrowers). This means that funds can be mobilized into the productive sector. This study was prepared based on a regression analysis tool using SPSS version 26 to determine the relationship between liquidity and profitability of NABIL, HBL and EBL, the location of liquidity and profitability, and the impact of liquidity on profitability. The results show that liquidity factors or variables have both positive and negative effects on profitability. The independent variables are CDR, CADR, and AQ, and the dependent variables are profitability ratios such as ROA and ROE. The first chapter describes the background, introductory bank and topic of the study, taking into account the focus of the study, description of the problem, and purpose of the study, theoretical basis of the study and limitations of the study. Then, the second chapter includes literature review, including conceptual review, theoretical review of liquidity and profitability, related journals and articles, unpublished theses, research reports, and research gaps, while the third chapter includes the research methodology used in the evaluation. Became. Position of liquidity and profitability. Chapter 4 covers and discusses how to analyze, present, and interpret data using financial and statistical tools and SPSS version 26. Finally, the fifth and final chapter provided conclusions, conclusions, and conclusions for the entire study.

A variety of financial and statistical tools have been used for analysis and evaluation purposes. Here, financial products are used to determine deposit liquidity ratio, cash deposit ratio, asset quality and profitability ratio, return on assets, return on equity, etc., and statistical tools include average mean, standard deviation, and coefficient of variation and regression. These financial and statistical tools help analyze and evaluate the liquidity of a bank. Likewise, profitability ratios such as ROE and ROA have been used to analyze and evaluate the profitability of banks. Standard deviation, correlation analysis and regression analysis used to study the impact of liquidity on the

profitability of commercial banks using SPSS version 26. The objective of this study is to investigate the impact of liquidity management on the profitability of commercial banks in Nepal. Data are taken from the Banking Supervision Report published by Nepal Rastra Bank and the annual reports of three commercial banks and 10 fiscal year from 2013/14 to 2022/23. As a result, asset quality (AQ) was found to have a significant negative relationship with return on assets (ROA). That means there is an inverse relationship. Asset quality (AQ) has a positive and significant relationship with bank profitability when analyzed through return on equity (ROE), a determinant of bank profitability. In other words, as asset quality (AQ) improves, return on equity (ROE) also increases. This increase in liquidity ratio increases the profitability of the bank and vice versa. These results indicate that cash deposit ratio (CADR) is positively correlated with bank profitability when analyzed through the determinants of bank profitability, return on assets (ROA), and return on equity (ROE). The research results showed that credit deposit ratio (CDR) had a positive but significant relationship with ROA. However, credit deposit ratio (CDR) has a negative and insignificant relationship with return on equity (ROE). This shows that ROE has nothing to do with these liquidity ratios.

5.2 Conclusion

The main objective of this study is to determine the impact of bank liquidity on financial performance. The study is based on secondary data sources from three commercial banks from 2013/14 to 2022/23, resulting in a total of 30 observations. The following conclusions were drawn: Liquidity is an important and critical aspect of bank operations. Lack of liquidity is often one of the first signs that a bank is experiencing serious financial problems and that public trust in banks is declining. Therefore, securing adequate liquidity is always necessary for the continued operation of the bank. This therefore has serious implications for bank profitability. Liquidity creation itself is seen as both a major source of banks' contribution to economic well-being and a major source of risk. Therefore, virtually every financial transaction or liability affects a bank's liquidity. In the case of Nepal, the liquidity ratio was relatively fluctuating during the period, the return on equity was found to be satisfactory, and there was a positive relationship between deposits and loans. Bank liquidity and credit were also found to be positively related to bank profitability, and

the same authors showed that capital adequacy and liquidity were positively related to bank profitability. This is an indicator of the bank's efficiency. This indicates that the bank has achieved full efficiency. Fluid position of NABIL, HBL and EBL based on research. As a result, asset quality is negatively correlated with return on assets, meaning that there is an inverse relationship. Asset soundness has a positive and significant relationship with bank profitability when analyzed through return on equity, a determinant of bank profitability. This means that as asset quality improves, return on equity increases. An increase in these liquidity indicators increases the bank's profitability and vice versa. These research results demonstrate that cash deposit ratio has a positive and insignificant relationship with bank profitability when analyzed through the determinants of bank profitability, return on assets, and return on equity. The results of the study showed that loans and deposits had a positive but significant relationship with asset return. However, loan deposits have a negative relationship with return on equity and are not significant. This shows that ROE has nothing to do with these liquidity ratios. This study concludes that in the case of commercial banks in Nepal, bank liquidity status plays an important role in banking performance. Studies have shown that loan-to-deposit ratio, cash deposit ratio and asset quality have a positive impact on bank performance.

5.2 Implications

This study concludes that in the case of commercial banks in Nepal, bank liquidity status plays an important role in banking performance. The current interest rate instability situation in remittance is directly affecting the direction of NRB and the policies of commercial banks and financial institutions due to the unfavorable domestic environment. Most commercial banks are facing high liquidity crisis in the market. Banks and financial institutions have increased deposit interest rates to maintain adequate liquidity. Despite this, these commercial banks acted appropriately during the crisis. Based on data analysis, the following conclusions were drawn:

- Bank profitability has a strong positive relationship with the loan-to-deposit ratio. Therefore, commercial banks in Nepal must focus on efficient and effective utilization of assets to increase the profits and value of the bank.
- Deposits have a positive and significant relationship with bank profitability in terms of total deposits relative to total assets. Therefore, Nepalese banks

should study the deposit ratio and make efforts to increase the deposit size to improve bank performance.

- The scope of further research can be extended to the components of liquidity level such as cash, marketable securities, receivables and inventory levels and their impact on corporate profitability. Additionally, it is suggested to conduct further research and expand the sample on the same topic by targeting companies from different sectors.
- All banks surveyed were asked to focus more on operations, maintaining liquidity, business growth rate, asset quality and management practices. In addition, market reputation, service diversification, and corporate social responsibility must also be considered. This will not only benefit the bank but will also be an important tool in winning the award as one of the best banks in the country.
- This study may be useful in filling the gap in adequate research on the impact of liquidity and profitability. This study covers commercial banks' existing liquidity positions, trends, liquidity ratios, and profitability positions. Therefore, other researchers may choose to conduct research on other topics, such as the relationship between profitability and liquidity and the effect of liquidity on stock prices.
- Previous researchers have only performed simple correlation and simple regression analyzes on selected commercial banks and joint ventures, including manufacturing companies and the government.
- Finally, it can provide adequate knowledge about the liquidity position of commercial banks in Nepal, cluster-based profitability position, and the impact of liquidity on profitability for all those who wish to study banking.

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APPENDIX

Code	Year	TA	TE	TD	L&A	Net IP	C&BB	NPL	ROA	ROE	CDR	CADR	AQ
NABIL	2013/14	73241	3046	63610	46370	2219	5882	47	3.03	72.85	72.90	9.25	0.0010
	2014/15	87275	3657	75389	54692	2320	9993	56	2.66	63.44	72.55	13.26	0.0010
	2015/16	115986	4755	104238	65502	2094	16004	67	1.81	44.04	62.84	15.35	0.0010
	2016/17	131347	14457	109288	78210	2819	29350	76	2.15	19.50	71.56	26.86	0.0010
	2017/18	144017	16699	117436	92471	3702	33605	89	2.57	22.17	78.74	28.62	0.0010
	2018/19	160978	20586	134810	113624	3981	25484	51	2.47	19.34	84.28	18.90	0.0004
	2019/20	201138	23188	162953	133558	4238	29784	239	2.11	18.28	81.96	18.28	0.0018
	2020/21	237680	25855	190806	153890	3463	35050	504	1.46	13.39	80.65	18.37	0.0033
	2021/22	291066	33858	223474	206622	4527	25174	709	1.56	13.37	92.46	11.26	0.0034
	2022/23	419818	52981	326222	310571	4256	32958	1982	1.01	8.03	95.20	10.10	0.0064
HBL	2013/14	61153	2898	53072	39724	944	3648	283	1.54	32.57	74.85	6.87	0.0071
	2014/15	73590	3333	64675	45320	959	5542	210	1.30	28.77	70.07	8.57	0.0046
	2015/16	82802	4499	73538	53476	1112	8387	217	1.34	24.72	72.72	11.40	0.0041
	2016/17	100562	9320	86433	68951	1935	17512	97	1.92	20.76	79.77	20.26	0.0014
	2017/18	108063	12328	92334	77797	2281	17147	190	2.11	18.50	84.26	18.57	0.0024
	2018/19	116462	14138	98988	86159	1875	14889	246	1.61	13.26	87.04	15.04	0.0029
	2019/20	133151	15994	109387	97469	2763	14772	94	2.08	17.28	89.10	13.50	0.0010
	2020/21	155884	17589	125264	106726	2586	25980	417	1.66	14.70	85.20	20.74	0.0039
	2021/22	178490	20132	141021	132093	2998	20215	173	1.68	14.89	93.67	14.33	0.0013
	2022/23	216286	22010	168419	154972	2367	21846	1104	1.09	10.75	92.02	12.97	0.0071

EBL	2013/14	65741	1921	57720	43393	1471	11215	276	2.24	76.57	75.18	19.43	0.0064
	2014/15	70445	2137	62108	47572	1549	13173	470	2.20	72.48	76.60	21.21	0.0099
	2015/16	99153	2742	83093	54482	1574	25117	463	1.59	57.40	65.57	30.23	0.0085
	2016/17	114018	9845	93735	67955	1730	32783	264	1.52	17.57	72.50	34.97	0.0039
	2017/18	116946	13207	95094	77287	2006	2694	198	1.72	15.19	81.27	2.83	0.0026
	2018/19	144811	16134	115511	94181	2581	32294	16	1.78	16.00	81.53	27.96	0.0002
	2019/20	170077	17625	129568	112006	3054	31611	55	1.80	17.33	86.45	24.40	0.0005
	2020/21	185023	18637	143545	119068	2516	32744	117	1.36	13.50	82.95	22.81	0.0010
	2021/22	211650	20683	160220	135173	1770	40145	44	0.84	8.56	84.37	25.06	0.0003
	2022/23	225381	22794	172739	155053	2479	18004	53	1.10	10.88	89.76	10.42	0.0003

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1.1 Background of the Study 1

1.2 Problem Statement 5

1.3 Objectives of the Study 7

1.4 Rationale of the Study..... 7

1.5 Limitations of the Study..... 8

CHAPTER II: LITERATURE REVIEW 9

2.1 Theoretical Review 9

2.1.1 Anticipated Income Theory 10

2.1.1.2 Shiftability Theory 11

2.1.1.3 Commercial Loan Theory 12

2.1.2 Theories of Profitability 12

2.1.2.1 Market-Power Theories 12

2.1.2.2 Efficient-Structure Theory 13

2.1.2.3 Expense-Preference Theory 13

2.2 Empirical Literature Review 14

2.3 Research gap 23

CHAPTER III: RESEARCH METHODOLOGY..... 23

3.1 Research Design..... 23

3.2 Population and Sampling procedure 23

3.3 Sampling Method 24

3.4 Research framework and definition of variables 24

3.4.1 Conceptual Framework