

# **IMPACT OF LIQUIDITY ON PROFITABILITY IN NEPALESE COMMERCIAL BANK**

A Dissertation submitted to the Office of the Dean, Faculty of Management, in partial  
fulfilment of the requirements for the Degree of Masters of Business Studies

**by**

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## **CERTIFICATE OF AUTHORSHIP**

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “**IMPACT OF LIQUIDITY ON PROFITABILITY IN NEPALESE COMMERCIAL BANK**” 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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## REPORT OF RESEARCH COMMITTEE

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Sunita Karki  
Researcher

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## ABBREVIATIONS

AD	:	Anno Domini
ATM	:	Automated Tailor Machine
BS	:	Bank Size
CABTDR	:	Cash and Bank Balance to Total Deposit Ratio
CHTDR	:	Cash in hand to Total Deposit Ratio
e.g.	:	Example
F/Y	:	Fiscal Year
i.e.	:	That is
LFTCLR	:	Liquid Fund to Current Liabilities Ratio
LFTDR	:	Total Liquid Fund to Total Deposit Ratio
Ltd	:	Limited
MBS	:	Master of Business Studies
NGOs	:	Nongovernmental Organisations
NRB	:	Nepal Rastra Bank
NRBTDR	:	NRB Balance to Total Deposit Ratio
ROA	:	Return on Assets
SD	:	Standard Deviation

## ABSTRACTS

This study aims to analyze determinants of liquidity of commercial banks and their relationship with the liquidity based on information available in Nepalese context. The study is based on two types of research design namely descriptive and casual comparative. To describe the nature and behavior of variables, descriptive design is used. To examine and analyze the relationships casual comparative research design has been used. The method of this study is quantitative approach. A casual comparative tools, descriptive statistics, model summary and ANOVA are used. As a analytical tools, correlation and regression are applied to analyze data collected from the annual reports of the sample taken banks for identifying direction and significance level of selected independent variables on determining liquidity level. The study was confined to the private commercial banks operating in Nepal. There were 20 commercial banks in operation in Nepal during the time of the study, with their branches located in different parts of the country. Out of the total population, five leading private commercial banks were selected based on their paid-up capitals which comprised 25.00 percent of the total population of commercial banks in Nepal. The correlation analysis provides insights into the relationships between ROA and various financial ratios. While some correlations are observed, it's crucial to note that correlation does not imply causation, and other factors not considered in this analysis may influence the bank's return on assets. Further investigation and multivariate analysis may be necessary to uncover the underlying factors affecting these correlations. While the model shows an overall good fit, further analysis is necessary to understand the individual contributions of each predictor and validate the assumptions of the regression model. Additionally, the significance of each predictor should be examined to determine which variables have a statistically significant impact on predicting ROA. Further analysis is necessary to assess the significance of individual predictors and validate the assumptions of the regression model for a more comprehensive understanding of the relationships between the variables. The coefficients provide information about the direction and magnitude of the relationships between each predictor variable and ROA.

*Key words: Liquid Fund to Current Liabilities Ratio, Total Liquid Fund to Total Deposit Ratio, NRB Balance to Total Deposit Ratio, Cash in hand to Total Deposit Ratio, Cash and Bank Balance to Total Deposit Ratio, Return on Assets*

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

Financial sector is the backbone of economy of a country. It works as a facilitator for achieving sustained economic growth through providing efficient monetary intermediation. A strong financial system promotes investment by financing productive business opportunities, mobilizing savings, efficiently allocating resources and makes easy the trade of goods and services. Several studies have reported that the efficacy of a financial system to reduce information and transaction costs plays an important role in determining the rate of savings, investment decisions, technological innovations and hence the rate of economic growth. There are various factors that positively or negatively affects to success of various organizations, so as to commercial banks, among of them managing appropriate level of liquidity level have core importance (Adhikari, 2020).

The liquidity of the Nepalese finance sector has historically faced challenges stemming from a variety of factors. Nepal's financial system is characterized by a dominance of commercial banks, limited diversification of financial instruments, and a relatively low level of financial inclusion. These factors have contributed to occasional liquidity constraints within the sector, with banks often struggling to meet the demands of their depositors and borrowers. However, efforts have been made by regulatory authorities to enhance liquidity management practices and promote financial stability. The central bank, Nepal Rastra Bank, has implemented policies to improve liquidity monitoring and management in the banking sector. Additionally, the introduction of new financial products and services, along with initiatives to expand access to digital banking, is gradually improving liquidity conditions and contributing to the overall growth and resilience of Nepal's finance sector. Liquid asset means the cash balance of a bank or financial institution, the balance remained in the current account, the balance maintained in Rastra Bank and such assets of a bank or financial institution specified as liquid assets by the Rastra Bank from time to time (BFIs Act, 2017).

Liquidity for a bank means the ability to meet its financial obligations as they come due. Bank lending finances investments in relatively illiquid assets, but it funds its loans with mostly short term liabilities. Thus one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. A bank's liquidity is determined by its ability to meet all its anticipated expenses, such as funding loans or making payments on debt, using only liquid assets. The attention has been paid by lender to the last resort to overcome the liquidity crisis (Aspachs et. al, 2005).

Bank for International Settlements defines liquidity as the ability of bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. The management of any firm should be able to identify its strength and weakness, likewise exploit opportunities and tackle threats as it is determined to make profits (Brumer, 2016)

Liquidity can be defined as the ability of a financial institution to meet all legitimate demands for funds. A bank needs to hold liquid assets to meet the cash requirements of its customers if the institution does not have the resources to satisfy its customers' demand, then it either has to borrow on the inter-bank market or the central bank. If bank unable to meet its customers' demands leaves itself exposed to a run and more importantly, a systemic lack of confidence in the banking system (Yeager & Seitz, 2019).

Liquidity means allocation of funds in close relation to their respective sources. Liquidity is the status and part of the assets which can be used to meet the obligation in the commercial banks. Liquidity can be viewed in terms of liquidity stored in the balance sheet and in terms of liquidity available through purchased funds. Liquidity is the ability of a bank to pay cash to depositors on demand. It is the arrangement and the allocation of funds in such a way that can be drawn immediately without any loss of principle. More specifically, the idle money does not make any return. Therefore, the high liquidity may cause of low profitability and inefficient performance of the overall Banking sector. It may cause failure of banking performance in long term (Pandey, 2020).

The intricate relationship between liquidity and profitability is a critical facet of the financial landscape, especially within the context of Nepalese commercial banks. As institutions entrusted with facilitating economic growth and financial stability,

commercial banks in Nepal navigate a dynamic landscape shaped by various internal and external factors. Liquidity, representing the ease with which assets can be converted into cash, emerges as a pivotal factor influencing a bank's operational resilience and financial health. This study delves into the nuanced interplay between liquidity and profitability, unraveling the implications and challenges faced by Nepalese commercial banks in maintaining a delicate equilibrium between these two vital dimensions. Through a comprehensive exploration of key indicators, financial metrics, and regulatory frameworks, this investigation aims to shed light on the impact of liquidity on the profitability dynamics of the banking sector in Nepal, offering valuable insights for both academia and practitioners in the field of finance.

### **1.2 Statement of the Problems**

One of the major investments of commercial banks is liquidity. On every investment there should be considerable return to investors, so as to the commercial banks' liquidity investment. Investment in liquidity cheap or expensive depends upon the carefulness of liquidity management. Liquidity investment is always essential and equally risky as well. If they know about the exact factors that influencing the liquidity level, they will invest in liquidity confidently. It is unpredictable to specify what factors determine the liquidity level. There should be consider the external and internal factors before determining the level of investment in liquidity (Pandey, 2020).

Banks and financial institutions should have to maintain balanced level of liquidity in efficient and effective manner and policymakers can affect their effort in constructive way. The management of bank and financial policy makers then needs to decide how they can do best to maintain balanced level of liquidity in their respective area. Study proposed that all managements of bank and policy makers should have to do close evaluation to the relationship between liquidity and its independent variable which may be inside the commercial banks or may be outside of the commercial banks. So they can find significance and direction of relation that will certainly helpful for proactive management of liquidity level and invest to the liquidity in beneficial way.

Vodova (2011) explored the determinants of liquidity of commercial banks by using the Czech republic's commercial bank data controlled by independent variables of capital adequacy, share of non-performing loans, interest rates on interbank

transaction, inflation rate, business cycle financial crisis and size of banks and explore significance positive relation between bank liquidity and capital adequacy, share of non-performing loans, interest rates on interbank loans transaction, negative influence of inflation rate, business cycle and financial crisis on liquidity. According to the findings, the relation between size of banks and their liquidity is ambiguous. In this context, this study will try to identify the determinants of liquidity and find out the degree of affection of those determinants and to know about liquidity behavior.

The connection between Nepal's commercial banks' profitability and liquidity. The study, which covered the years 2013 to 2019, involved ten of the twenty-seven listed commercial banks. The secondary data used in this study were taken from the annual reports of the chosen commercial banks and the Bank Supervision Reports issued by Nepal Rastra Bank. Return on equity (ROE) and return on assets (ROA) are the stand-ins for profitability, while the credit-deposit ratio (CDR), cash-deposit ratio (CADR), and assets quality (AQ) are the measures of liquidity. Asset quality (AQ) has a negative and significant association with return on assets (ROA), but a positive and substantial link with return on equity (ROE), according to the results of the Hausman test and the fixed effects method (Khatri, 2020). The return on equity (ROE) and return on assets (ROA) have a positive but negligible connection with the cash deposit ratio (CADR). Nonetheless, the research indicates that there is a negative and negligible correlation between credit-deposit (CDR) and return on equity (ROE), and a positive but small correlation between CDR and ROA. More specifically, this present study is carried out to answer the following research question:

- i. What is the status of liquidity and profitability of commercial banks in Nepal?
- ii. Is there any relationship between liquidity and profitability of commercial banks in Nepal?
- iii. What is the impact of liquidity on profitability of commercial banks in Nepal?

### **1.3 Objectives of the Study**

This study aims to analyze determinants of liquidity of commercial banks and their relationship with the liquidity based on information available in Nepalese context. The objectives of this study examine the impact of the determinants of the liquidity of Nepalese commercial bank. The specific objectives of the study are listed as below:

- i. To assess the status of liquidity and profitability of commercial banks in Nepal.
- ii. To examine the relationship between liquidity and profitability of commercial banks in Nepal.
- iii. To analyze the impact of liquidity on profitability of commercial banks in Nepal.

#### **1.4 Rationale of the Study**

The study deals with determinants of level of liquidity in commercial banks of Nepal. The study also significance lies mainly in identifying and comparing the determinants factors of liquidity. Banks can use recommendation of this study for proactive management. It provides the real picture of ongoing condition which is beneficial to potential as well as existing shareholders, about identifying risk return and make decisions of utilizing funds. The study is also useful for depositors, merchant bankers as well as other stakeholders; they can identify the overall performance and ongoing liquidity risk of the banks. It will be helpful to those who want to conduct further study in this field. Mainly, this study will be significance for the researchers, research group and academicians for the future in the view of review.

#### **1.5 Limitations of the Study**

The limitations of the study are:

- i. The study focuses solely on determinants of the level of liquidity in commercial banks in Nepal. This limited scope may not account for other relevant factors that could influence liquidity or may not be applicable to banks in other regions or contexts.
- ii. The secondary sources for data collection means that you may have missed out on valuable insights that could have been gathered from primary sources or stakeholders' perspectives. This could limit the depth and comprehensiveness of your analysis.
- iii. The sample size and time period taken for the study is only covering five banks (Nabil Bank Limited, Everest Bank Limited, Himalayan Bank Limited, Nepal Investment Mega Bank Limited, Nepal SBI Bank Limited) and ten years (2012/13 to 2021/22). A sample size of only five banks and a ten-year

time period may not be representative of the entire commercial banking sector in Nepal. It may not capture the full spectrum of variation in liquidity determinants across different banks and over time.

- iv. The model used in this study and analysis is limited on some quantitative methods. A more comprehensive approach that includes qualitative analysis or a wider range of quantitative methods could provide a more robust understanding of the topic.
- v. The results of your study may only apply to the specific context of Nepal and the time period you've chosen. They may not be generalizable to other countries or different time periods with different economic conditions and regulatory environments.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In this chapter, review of various related articles, books, research paper, journals and previous thesis similar to the research topic. This chapter includes the theoretical review, empirical review, meta-analysis and research gap. The review of various articles, research studies, journals and books are presented to have a clear understanding about the impact of liquidity risk on financial performance on the Nepalese development bank and its relevance in different part of the world. This chapter help to recall the theories and previous studies made by various researches in different part of the world. Literature review is basically a stock taking work of available literature. The purpose of literature review is thus to find out what principle were established and what research studies had been conducted in the field of study and what remained to be done.

#### **2.2 Theoretical Review**

##### **2.2.1 Contingent Claims Theory**

Contingent claims theory asserts that liquidity risk affects the valuation of financial contracts or claims, such as options or derivatives. The riskier the cash flows, the higher the liquidity risk, and consequently, the lower the value of the contracts. This theory was introduced by Merton (1974) in the seminal paper On the Pricing of Corporate Debt: The Risk Structure of Interest Rates (1974). Merton's work on contingent claims laid the foundation for understanding how uncertainty and risk affect the value of financial instruments. This theory suggests that liquidity risk arises due to the uncertainty surrounding future cash flows and the potential for adverse events. According to this theory, liquidity risk is a factor that affects the value of financial contracts or claims, such as options or derivatives. The riskier the cash flows, the higher the liquidity risk, and consequently, the lower the value of the contracts.

##### **2.2.2 Market Microstructure Theory**

Market microstructure theory focuses on the characteristics of financial markets and how they impact liquidity risk. It examines factors such as trading mechanisms,

information flow, and the behavior of market participants. A notable contribution to this theory is the book *Market Microstructure Theory* by Maureen O'Hara (1995). O'Hara provides an in-depth analysis of market microstructure and how it affects liquidity, price formation, and trading strategies. This theory focuses on the characteristics of financial markets and how they impact liquidity risk. It examines the structure and functioning of markets, including trading mechanisms, information flow, and the behavior of market participants. Market microstructure theory suggests that liquidity risk can arise from factors such as low trading volume, market fragmentation, information asymmetry, or market illiquidity, which can lead to wider bid-ask spreads and higher transaction costs.

### **2.2.3 Funding Liquidity Theory**

Funding liquidity theory emphasizes the importance of funding sources and cash flows in managing liquidity risk. The work of Douglas W. Diamond and Raghuram G. Rajan in their paper *Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking* (2000) is often cited in this context. They highlight the role of funding liquidity in banks and the potential for liquidity mismatches between short-term liabilities and illiquid assets. This perspective emphasizes the importance of funding sources and cash flows in managing liquidity risk. According to this theory, liquidity risk arises when a firm's liabilities become due before its assets can be liquidated to meet those obligations. Funding liquidity risk is particularly relevant for financial institutions that rely on short-term funding to finance long-term illiquid assets. A disruption in funding sources or a loss of market confidence can lead to liquidity problems.

### **2.2.4 Systemic Risk Theory**

Systemic risk theory views liquidity risk from a systemic perspective, considering its potential to spread and create broader financial instability. A seminal paper in this area is *Systemic Risk and the Financial Crisis: A Primer* by Gary B. Gorton (2010). Gorton discusses how interconnectedness and the amplification of liquidity risk within the financial system contributed to the global financial crisis of 2007-2008. Liquidity risk can also be viewed from a systemic perspective, where it is seen as a potential source of contagion that can spread throughout the financial system. Systemic liquidity risk arises when multiple institutions experience funding

difficulties simultaneously, leading to a broader liquidity crisis. This theory highlights the interconnectedness of financial institutions and the potential for liquidity problems to amplify and transmit across the financial system.

### **2.2.5 Behavioral Finance Theory**

Behavioral finance theories delve into the impact of psychological biases and investor conduct on liquidity risk. A significant contribution to this field is found in *Misbehavior of Markets: A Fractal View of Risk, Ruin, and Reward* authored by Mandelbrot and Hudson (2004). Within this work, the authors explore how behavioral biases exhibited by market participants, including tendencies such as herding behavior and overconfidence, can play a pivotal role in triggering liquidity crises and magnifying liquidity risk. In essence, these theories scrutinize the manner in which psychological biases and investor actions shape and intensify liquidity risk. For instance, during periods of market turbulence, the phenomenon of herding behavior or panic-driven selling can swiftly diminish market liquidity, exacerbating liquidity risk. Similarly, an excess of overconfidence or an inadequate consideration of liquidity risk may lead to liquidity mismatches and financial distress.

### **2.3 Empirical Review**

Bunda and Desquilbet (2008) investigated the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000. Collected secondary data were analyzed with panel data regression analysis method. It was found that there is positive and statistically significant effect of capital adequacy, lending interest rate, inflation, GDP growth on liquidity of banks. On the other hand, the presence of prudential regulation and financial crises showed negative and significant impact on bank liquidity position. However, the effect of bank size is insignificant.

Vodova (2011) studied the determinants of liquidity of commercial banks by using the Czech republic's commercial bank data over the period from 2001 to 2009. Study used panel regression model taking liquidity as dependent variables and controlled by independent variables of capital adequacy, share of non-performing loans, interest rates on interbank transaction, inflation rate, business cycle financial crisis and size of banks and explore significance positive relation between bank liquidity and capital

adequacy, share of non-performing loans, interest rates on interbank loans transaction, negative influence of inflation rate, business cycle and financial crisis on liquidity. Study found, the relation between size of banks and their liquidity is ambiguous.

Tseganes (2012) explored the impact of banks liquidity on financial performance using the data from 2000 to 2011 using non-performing loans, bank size capital adequacy ratio and loan growth rate as independent variables. Ordinary Least Squares (OLS), Augmented Dicker-Fuller (ADF) unit root test and Pearson's correlation analysis was adopted for the study. The study identified that non-performing loans are highly negatively correlated with banks liquidity but bank size, capital adequacy ratio and loan growth have the positive impact on banks' liquidity.

Tseganesh (2012) determined determinants of commercial banks' liquidity in Ethiopia. This study used document survey approach. It stated that capital adequacy, bank size, share of nonperforming loans in the total volume of loans, interest rate margin, inflation rate and short-term interest rate had positive and statistically significant impact on banks liquidity. Real GDP growth rate and loan growth had statistically insignificant impact on banks liquidity.

Subedi and Neupane (2013) examined the impact of bank's specific and macro economical variables' effects in their liquidity level in Nepalese commercial banks. Study has covered the period from 2002/03 to 2011/12. The data for the study was based on primary data collected by questionnaire method and quarterly publications of banks as a secondary source. Data were analyzed through different statistical tools such as descriptive statistics, correlation and multiple regressions with variance inflation factor. The result of regression analysis showed that bank size had positive and significant impact and inflation rate had positive and insignificant effect on bank's liquidity. Similarly, it showed that capital adequacy, bank size, share of non-performing loans in the total volume of loans and liquidity premium paid by borrowers had negative and statistically significant repress on banks liquidity. Growth rate of gross domestic product, short term interest rate and inflation rate had negative and statistically insignificant impact on banks liquidity. And, loan growth rate had positive and statistically insignificant impact on banks liquidity capital.

Lukorito (2014) analyzed the effect of internal factors on profitability of commercial banks in Kenya particularly the banks liquidity. The study employed a descriptive research design incorporating panel data. All the 43 Commercial banks in Kenya formed the population and a census was done over a period of 5 years from 2009 to 2013 due to availability of data. This study used secondary data obtained from the annual published financial statements which were analyzed using descriptive and inferential statistics. Internal factor was Liquidity, while Profitability was measured using ROA ratios. The findings of the study show that all the variables Liquidity, has statistically significant and positive relationship with banks' profitability. This study recommends that banks should invest heavily in assets if substantial gains have to be realized, maintain adequate liquidity levels though in the form of short term marketable securities in order to realize profits and aggressively identify viable investment opportunities and link such opportunities to customer deposits.

Gautam (2014) investigated the determinants of banks liquidity and their impact on financial performance with empirical study of commercial banks in Nepal of the period of 2005 to 2014. Various specific and macroeconomic variables are taken into consideration as the independent variables. Multiple regression models have been used for the study. The result shows bank size, capital adequacy and inflation rate had a positive impact on bank liquidity in contrary non-performing loans, profitability and GDP growth rate had negative impact on bank liquidity. In significance concept capital adequacy ratio, non-performing loan and profitability were significant but bank size, GDP growth rate and inflation rate have insignificant with liquidity.

Chagwiza (2014) examined the Zimbabwean commercial banks liquidity and its determinants. The research design used is Ex Post Facto design and data for the study were obtained from the NSE Factbook. The study revealed that there is a positive link between bank liquidity and capital adequacy, total assets, gross domestic product and bank rate, found that the adoption of multi-currency, inflation rate and business cycle have a negative impact on liquidity. It seems the banks size and their liquidity is positively correlated.

Moussa (2015) explored the factors which influence bank liquidity in Tunisian context. Study covered the period of 2000 to 2010, sampled 18 commercial banks and

collected data through annual reports of bank. The methodology have been used for the study were static panel and panel dynamic. Two measures of liquidity; liquid assets /total assets and total loan/total deposits were estimated. It was found that financial performance, capital/total assets, operating cost/total assets, growth rate of GDP, inflation rate, delayed liquidity have significant impacts on bank liquidity while size, total loan/total assets, financial cost/total credit, total deposit /total assets does not have significant impact on bank liquidity.

Al Nimer, Warrad and Al Omari (2015) analyzed the impact of liquidity on Jordanian banks profitability through return on assets. The study used the 2005-2011 financial reports of 15 Jordanian banks listed at Amman Stock Exchange (ASE). The study revealed that there is significant impact of independent variable quick ratio on dependent variable return on asset (ROA). That means profitability through return on assets (ROA) in Jordanian banks is significantly influenced by liquidity through quick ratio.

Ojha (2016) investigated the impact of bank-specific and macroeconomic determinants of liquidity of Nepalese commercial banks. The study used 5 commercial bank data of the period 2010/11 to 2015/16. Data were assessed mainly by secondary sources, annual financial reports and economic survey reports. This study has taken GDP, return on assets, return on equity, non-performing loans, capital adequacy ratio and inter-bank rate as independent variables. Collected data were analyzed by mean, standard deviation, correlation and the regression analysis. The study reveals that there is significant influence on liquidity by GDP, return on assets, return on equity, non-performing loans and Inter-bank rate.

Sheefeni and Nyambe (2016) examined the effects of macroeconomic determinants on commercial banks' liquidity in Namibia. Study selected the period of 2005 to 2016. This study took GDP, inflation rate and monetary policy as independent variables. Collected data were analyzed using the unit root, bound test for co-integration and error correction model. The finding of the study reveals that real gross domestic product is the main determinant of commercial banks' liquidity in Namibia. It was also found that monetary policy rate is positively related to banks' liquidity though statistically insignificant. On the contrary, the results revealed a negative relationship between inflation and commercial banks' liquidity.

Malik, Awais and Khursheed (2016) analyzed the determinants of bank liquidity: case of Tunisia. Secondary data was collected from annual report and multiple regression analysis used in the data analysis. Three models were specified and estimated using Ordinary Least Squares (OLS) technique. The empirical results revealed that there is a statistically significant relationship between bank liquidity measures and return on assets.

Ibrahim (2017) studied the influence of liquidity on the profitability of Iraqi commercial banks. Five banks based in Iraq namely: North bank, Iraqi Islamic bank, Sumer bank, Dar Es-Salam bank and Babylon bank randomly selected and analyzed for the current study over the period 2005 to 2013. Moreover, annual reports of these banks have studied and the main ratios of profitability and liquidity were calculated. These reports are available at Iraqi Stock Exchange site. The variables that were identified as independent for liquidity were, loan deposit ratio, deposit asset ratio and cash deposit ratio, while return on assets as dependent variable for profitability. The Ordinary Least Square (OLS) model used to examine the impact of liquidity on profitability. The study observes that any increase in liquidity ratios as above mentioned will lead return on asset to increase as well. Depending on this study it could be better for Iraqi banks to keep a balance between liquidity and profitability.

Bista (2018) examined the effects of bank's specific and macroeconomic variables on banks' liquidity in the case of Nepal. Study took the period of 2005 to 2016. This study has taken liquid asset /total asset and liquid asset/deposit and borrowing to measure the liquidity of Nepal by selecting the bank specific and macro-economic variables of Nepal. The multiple regressions model has adopted. The study concluded that, in relation to financial performance measured by liquid assets/total assets; CAR, real GDP and deposit have significant impact but inflation and bank size do have insignificant impact. Bank size, real GDP, deposit and inflation have positive coefficient, but CAR have negative coefficient. On the other hand, in determinants of liquidity measured by liquidity /deposit+ borrowing; CAR, real GDP and deposit have significant impact on the determining the liquidity but inflation and bank size had insignificant impact. Bank size, real GDP, deposit and inflation have positive correlation but CAR have negative correlation.

Khasharmeh (2018) examined liquidity influence profitability in Islamic banks of Bahrain: an empirical study. The liquidity model is built from four liquidity variables namely cash & due from banks to total assets (CDTA), cash & due from banks to total deposits (CDTD), investment to The results of the study show that CDTD and INVSTD are correlated positively with ROE. In addition, CDTD, INVSTA indicate a negative correlation with ROE. Total assets (INVSTA) and investment to total deposits (INVSTD).

Emeka, Prince and Fabian (2019) examined impact of Covid-19 pandemic on liquidity and profitability of firms in Nigeria. The research design used is Ex Post Facto design and data for the study were obtained from the NSE Factbook. The findings of the study show that COVID-19 Pandemic has significantly affected the Liquidity and Profitability of Firms in Nigeria at 5% level of significance.

Khanal (2019) analyzed the effect of bank's specific and macroeconomic variables on banks' liquidity and their impact on financial performance in case of Nepal. The study took the sampling period of 2005/06 to 2015/16. This study has taken liquid asset /total asset and liquid asset/deposit and borrowing to measure the liquidity of Nepal by selecting the bank specific and macro-economic variables of Nepal. Multiple regression model has used. The study concluded that ROA has positive significant impact whereas ROE, Size and inflation have negative and significant impact on liquidity. Similarly CAR and GDP has negative insignificant impact on loan to deposit ratio whereas, NPL has positive insignificant impact. This study concludes that ROA, ROE, bank size and inflation are major determinants of banks' liquidity.

Abbas, Iqbal and Aziz (2019) examined the impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia. Secondary data was collected from annual report and multiple regression analysis used in the data analysis. he findings show that bank capital and credit risk influence profitability in Asian developed economies similar to in the USA commercial banks, whereas the impact of liquidity on the profitability of the USA large commercial banks is negative and positive on Asian developed economies commercial banks in the postcrisis era.

Khatri (2020) investigated the relationship between the liquidity and the profitability of commercial banks in Nepal. Ten out of Twenty seven listed commercial banks were involved in the study covering the period from 2013 to 2019. This study is based on the secondary data, which are extracted from Bank Supervision Reports published by Nepal Rastra Bank and annual reports of the selected commercial banks. The liquidity indicators are credit-deposit ratio (CDR), cash-deposit ratio (CADR) and assets quality (AQ), while return on equity (ROE) and return on assets (ROA) are the proxies for profitability. By using Hausman test and thereafter fixed effects approach, the result showed that assets quality (AQ) has negative and significant relationship with return on assets (ROA) whereas it has positive and significant relationship with return on equity (ROE). Cash deposit ratio (CADR) has positive and insignificant relationship with return on assets (ROA) and return on equity (ROE). However, the study reveals that credit-deposit (CDR) has positive but insignificant relationship with ROA and has negative and insignificant relationship with return on equity (ROE).

Pandey (2020) analyzed the impact of liquidity on the profitability of the commercial banks of Nepal. The regression models are estimated to test the effect of bank liquidity on performance of Nepalese commercial banks. The study results reveal that investment ratios and liquidity ratios are negatively related to return on assets indicating that higher the investment ratios and liquidity ratios, lower would be the return on assets and vice versa.

Obim et al. (2020) examined the impact of liquidity on banks profitability. The study sought to examine the impact of liquid assets, bank deposit, and Treasury bills on Return on Asset. Secondary source of data was employed using Central Bank of Nigeria statistical bulletin. Ordinary least square multiple regression techniques was adopted to establish the impact of independent on dependent variables. Based on the results, the following findings were made; there was a positive and insignificant impact between bank deposit and return on asset, there was a negative and insignificant impact between liquid asset and return on asset, there was a positive and insignificant impact between treasury bills and return on asset. The study recommended that appropriate measures should be taken to prevent undesirable market development that may negatively impact on bank deposit. Also, recommended

that banks should engage competent and qualified personnel in order to ensure that right decisions are adopted with regard to the optimal level of liquidity.

Adhikari (2020) examined the impact of liquidity on profitability in Nepalese commercial banks. The cross-sectional secondary data of these banks were used. Descriptive and causal comparative research strategies were applied to analyse the data. Correlation analysis and multiple general linear regression analysis were applied to establish the association. This study has found that there is no statistically significant association between liquidity and profitability indicators in Nepalese commercial banking industry. The data were analyzed using statistical software mini tab.

Budhathoki et al. (2020) examined the impact of liquidity, leverage, and total assets size of the bank on profitability. This study employed bank scope data of all 28 commercial banks operating in Nepal during the period of 2010/11 – 2016/17. Altogether, the 168 observations were used in the study. Three ordinary-least-squares models were applied to analyze the impact of liquidity, leverage, and the total size on the bank's profitability. The first regression model reveals that the higher loan to deposit ratio (low level of liquidity) was observed to have the negative effect on the bank's ROA, ROE, and NIM; however, ROE and NIM were statistically insignificant. The result of the second regression model shows that higher equity to assets ratio (lower leverage) positively affected two profitability measures, ROA and NIM, and was statistically significant—but was negatively related to ROE and statistically insignificant. The result of the final regression model reveals that the higher bank size appeared favorable to the Nepalese commercial banks and was found to have positive effects on all three profitability measures: ROA, ROE, and NIM. The results of the study could help bankers and policymakers to take an effective action in order to improve banks' profitability.

Sundas and Butt (2021) analyzed on the liquidity and firm performance has been a contentious concern among the finance scholars. Former researches interpret that asset liquidity increases debt level while in some country's firms having more liquidity were less leveraged and were dependent on internal finance. This study reconnoiters the effect of liquidity ratios on profitability and performance of textile sector of Pakistan from 2005 to 2014. Fixed effect panel regression model is applied

to scrutinize the impact of liquidity ratios in presence of control variables like firm size and sales growth. Results interpret that current ratio has positive impact on profitability and performance while acid ratio has insignificant effect on the performance but has significant positive effect on profitability during the study period.

Dahiyat et al. (2021) analyzed the liquidity and solvency management and its impact on financial performance: empirical evidence from Jordan. This study correlation and multi regression analyses have been applied to analyze the data. The results show a statistically significant impact of independent and control variables on financial performance, while the detailed results of the hypotheses indicate that liquidity has an insignificant reverse impact on financial performance.

Paul et al. (2021) investigated the effect of banks' liquidity on its profitability; with the ordinary course of business and in the medium term (10 years). A quantitative analysis is performed on a statistical sample of forty (40) commercial banks in Bangladesh. Secondary data is used to evaluate the performance of the last ten years (2009-2018) of the annual report of the commercial banks in Bangladesh with 206 bank years of data gathered to consider all Bangladeshi commercial banks. Proposed variables are: LDR, DAR, CDR, LAR and CR as liquidity representation; on the other hand, ROE is the profitability representation. Five hypotheses have been established to assess the effect of liquidity on profitability. Following a correlation and regression analysis, it is observed that LDR, DAR and CDR had a substantial effect on the profitability measured as ROE, but LAR and CR proved insignificant. Therefore, it can be concluded that, in general, the impact of liquidity has a significant effect on the profitability in the commercial banking sector of Bangladesh. By relying on this report; Bangladeshi banks will be best positioned to keep equality between its liquidity and profitability.

Jihadi et al. (2021) analyzed the effect of liquidity, leverage, and profitability on firm value: empirical evidence from Indonesia. The data analysis method in this study used was the Multiple Linear Regression Analysis with the SPSS 18 Program. The results show that the ratios of liquidity, activity, leverage, and profitability are significant to firm value in accordance with the initial hypothesis of the study.

Kayzer et al. (2021) examined the application of canonical variate analysis to compare different groups of food industry companies in terms of financial liquidity and profitability. Secondary data was collected from annual report of food industry companies and multiple regression analysis used in the data analysis. The research results showed the existence of multidirectional relationships between liquidity and profitability. The research indicates that they depend on indicators describing financial dependencies and the industries in which they operate.

Teixeira et al. (2021) analyzed the effects of government bonds on liquidity risk and bank profitability in Cape Verde. The study employs models with lagged regressions, estimated by the ordinary least squares estimation method. The results show that government debt securities have no effect on bank liquidity risks, but they have an effect on bank profitability, with government debt securities having a positive impact on assets' profitability, in the long run.

Thinh et al. (2022) examined the relationship between liquidity and profitability of Vietnamese listed banks. Profitability is a matter of concern for all economic organizations, including banks. The economic problem always poses for banks in maintaining growth and ensuring sustainable stability. Liquidity is always a concern of banks in maintaining profitability. Data include 18 Vietnamese listed commercial banks for a period of 9 years from 2011 to 2019. The article uses the time series method with the ordinary least square. The results show that liquidity has a positive relationship with the profitability of listed banks including return on assets, return on equity, and net interest margin. As for net interest margin, the liquidity ratio of loans to deposit plus short-term borrowings and short-term bills payable has the opposite effect. To contribute to the stable and sustainable growth of the banking system, the article proposes the policies for the Vietnamese banking system by fully implementing the regulations on liquidity based on the Bank for International Settlements and should forecast the financial developments in the region and the world to have flexible responses to avoid uncertainties, as well as the need to form and maintain funds to timely support for liquidity in the entire banking system.

Horsfall (2022) examined the liquidity and financial performance of listed non-financial companies in Nigeria. Secondary data was collected from NGX and multiple

regression analysis used in the data analysis. The study revealed that liquidity positively affect the financial performance of non-financial companies listed at the NGX.

Abbas et al. (2023) explored the role of economic growth to influence the inter-relationship between capital, liquidity and profitability of commercial banks in selected Asian emerging economies. To achieve the research purpose, an empirical model was constructed to examine the role of economic growth in the inter-relationship between banks' capital, liquidity and profitability. The empirical model was tested through two stage least square (2SLS) regression analysis using annual data of Asian commercial banks ranges from 2011 to 2019. The findings indicate that bank capital and liquidity are interdependent and determined simultaneously. The outcome demonstrates that the strength of the inter-relationship between banks' capital, liquidity, and profitability improves when economic growth is taken into account in the analysis. The results report that market funding, loan ratio, credit risk, bank size and bank efficiency are significant indicators to influence commercial banks' liquidity, profitability and capital in Asian emerging economies. The findings are heterogeneous across large, medium and small-sized banks in emerging economies of Asia.

Eldi et al. (2023) analyzed the effect of liquidity and profitability on financial performance. Data collection techniques are documentation in the form of financial reports. The data analysis performed was multiple linear regression analysis, classical assumption test and basic statistical test using the SPSS program. Based on the results liquidity partially has a negative and not significant effect on financial performance with a value of  $0.249 > 0.05$ , profitability partially has a positive and significant effect on financial performance with a value of  $0.001 < 0.05$ . Simultaneously liquidity and profitability affect financial performance with a value of  $0.004 < 0.05$ .

Shrestha and Chaurasiya (2023) investigated the Impact of Liquidity Management and Profitability of Joint Venture Commercial Banks in Nepal. Data analysis was done using descriptive statistics, Pearson correlation, regression analysis, and t-test. The data used to analyze five (5) samples size, out of 27 which has found to be covering period 2012-2021 of joint venture commercial Banks in Nepal. The Liquidity management represents the variables of the Credit Deposit Ratio (CDR),

Capital adequacy ratio (CAR), Current Reserve ratio (CRR), Total deposit to total ratio (TDTAR), Total loan to total assets ratio (TLTAR) and the profitability including Return on Assets (ROA). The findings of the study have a R square value of 0.615 meaning that 61.5% of the variation in the dependent variable is explained by the independent variables while 38.5% is explained by other variables outside the model and also showed that there is a strong positive correlation between the dependent variable and the set of independent variables. The result showed that there is significant impact of TLTAR on ROA and there is insignificant impact of CDR, CAR, CRR and TDTAR on ROA of joint venture commercial banks in Nepal.

#### 2.4 Meta Table

Author	Title	Methodology	Major Findings	Journal
Abbas et al. (2023)	Does economic growth affect the relationship between banks' capital, liquidity and profitability: empirical evidence from emerging economies.	The Regression Analysis	The findings indicate that bank capital and liquidity are interdependent and determined simultaneously.	Journal of Economic and Administrative Sciences
Eldi et al., (2023)	Analysis of the Effect of Liquidity and Profitability on Financial Performance at PT.	Data collection techniques are documentation in the form of financial reports. The data analysis performed was multiple linear regression analysis,	Based on the results liquidity partially has a negative and not significant effect on financial performance with a value of $0.249 > 0.05$ , profitability partially has a positive and	International Journal of Commerce and Finance

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		classical assumption test and basic statistical test using the SPSS program.	significant effect on financial performance with a value of 0.001 <0.05. Simultaneously liquidity and profitability affect financial performance with a value of 0.004 <0.05.	
Thinh et al. (2022)	The impact of liquidity on profitability—evidence of Vietnamese listed commercial banks.	ordinary least square	The results show that liquidity has a positive relationship with the profitability of listed banks including return on assets, return on equity, and net interest margin. As for net interest margin, the liquidity ratio of loans to deposit plus short-term borrowings and short-term bills payable has the opposite effect.	Banks and Bank Systems

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Horsfall (2022).	Liquidity and Financial Performance of Listed Non-Financial Companies in Nigeria.	Secondary data was collected from NGX and multiple regression analysis used in the data analysis.	The study revealed that liquidity positively affect the financial performance of non-financial companies listed at the NGX.	Global Economy Journal
Sundas and Butt (2021)	Impact of liquidity on profitability and Performance: A Case of Textile Sector of Pakistan.	Fixed effect panel regression model	Results interpret that current ratio has positive impact on profitability and performance while acid ratio has insignificant effect on the performance but has significant positive effect on profitability during the study period.	International Journal of Commerce and Finance
Dahiyat, Weshah, Aldahiyat (2021)	Liquidity and Solvency Management and Its Impact on Financial Performance: Empirical Evidence	Correlation and multi regression analyses have been applied to analyze the data.	The results show a statistically significant impact of independent and control variables on financial performance,	Global Economy Journal

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	from Jordan		while the detailed results of the hypotheses indicate that liquidity has an insignificant reverse impact on financial performance.	
Jihadi, Vilantika, Hashemi, Arifin, Bachtiar & Sholichah (2021).	The Effect of Liquidity, Leverage, and Profitability on Firm Value: Empirical Evidence from Indonesia	The data analysis method in this study used was the Multiple Linear Regression Analysis with the SPSS 18 Program.	The results show that the ratios of liquidity, activity, and leverage, and profitability are significant to firm value in accordance with the initial hypothesis of the study.	IOSR Journal of Economics and Finance
Kayzer, Florek, Staniszewski and Kayzer (2021)	Application of Canonical Variate Analysis to Compare Different Groups of Food Industry Companies in Terms of Financial Liquidity and Profitability.	Secondary data was collected from annual report of food industry companies and multiple regression analysis used in the data analysis.	The research results showed the existence of multidirectional relationships between liquidity and profitability. The research indicates that they depend on indicators describing	Nepal Journal of Multidisciplinary Research

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			financial dependencies and the industries in which they operate.
Teixeira, Vieira and Ferreira (2021).	The Effects of Government Bonds on Liquidity Risk and Bank Profitability in Cape Verde.	The study employs models with lagged regressions, estimated by the ordinary least squares estimation method.	The results show that government debt securities have no effect on bank liquidity risks, but they have an effect on bank profitability, with government debt securities having a positive impact on assets' profitability, in the long run.
Khatri (2020)	Impact of liquidity on profitability of Nepalese commercial banks	Hausman test and thereafter fixed effects approach	The result showed that assets quality (AQ) has negative and significant relationship with return on assets (ROA) whereas it has positive and significant relationship with return on equity (ROE).

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Pandey (2020).	Impact of Liquidity on the Profitability of the Commercial Banks of Nepal	The regression models are estimated to test the effect of bank liquidity on performance of Nepalese commercial banks.	Study results reveal that investment ratios and liquidity ratios are negatively related to return on assets indicating that higher the investment ratios and liquidity ratios, lower would be the return on assets and vice versa.	Journal of Management and Development Review
Adhikari (2020)	Impact of Liquidity on Profitability in Nepalese Commercial Banks	The cross- sectional secondary data of these banks were used. Descriptive and causal comparative research strategies were applied to analyse the data. Correlation analysis and multiple general linear regression analysis were	This study has found that there is no statistically significant association between liquidity and profitability indicators in Nepalese commercial banking industry. The data were analysed using statistical software mini tab.	Global Economy Journal

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		applied to establish the association.	
Budhathoki et al. (2020)	The Impact of Liquidity, Leverage, and Total Size on Banks' Profitability: Evidence from Nepalese Commercial Banks.	The first regression model reveals that the higher loan to deposit ratio (low level of liquidity) was observed to have the negative effect on the bank's ROA, ROE, and NIM; however, ROE and NIM were statistically insignificant.	The result of the International second regression economic model shows that journal. higher equity to assets ratio (lower leverage) positively affected two profitability measures, ROA and NIM, and was statistically significant—but was negatively related to ROE and statistically insignificant.
Khanal, (2019)	Determinants of Banks Liquidity and Their Impact on Financial Performance: Empirical Study on Commercial Banks in Nepal	The Regression Analysis	Results revealed Nepal Journal of that ROA has Multidisciplinary positive significant Research impact whereas ROE, size and inflation have negative significant impact on liquidity. Similarly CAR and GDP has

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			negative insignificant impact on loan to deposit ratio whereas, NPL has positive insignificant impact. This study concludes that ROA, ROE, bank size and inflation are major determinants of Bank liquidity	
Abbas, Iqbal and Aziz (2019).	The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia.	Secondary data was collected from annual report and multiple regression analysis used in the data analysis.	The findings show that bank capital and credit risk influence profitability in Asian developed economies similar to in the USA commercial banks, whereas the impact of liquidity on the profitability of the USA large commercial banks is negative and positive on Asian	Global Economy Journal

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			developed economies commercial banks in the postcrisis era.
Emeka, Prince and Fabian (2019).	Impact of Covid-19 Pandemic on Liquidity and Profitability of Firms in Nigeria.	The research design used is Ex Post Facto design and data for the study were obtained from the NSE Factbook.	The findings of South Asian Journal of Social Studies and Economics has significantly affected the Liquidity and Profitability of Firms in Nigeria at 5% level of significance.
Bista (2018)	Determinants of Banks Liquidity and their Impact on Financial Performance: Empirical Study on Commercial Banks in Nepal	The Regression Analysis	deposit, capital Tribhuvan University, Kathmandu, Nepal. bank size are determinants of bank liquidity of the commercial bank out of which deposit is prevalent to increase bank liquidity and capital adequacy is key to decrease it

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Khasharmeh Does Liquidity (2018). Influence Profitability in Islamic Banks of Bahrain: An Empirical Study?	The liquidity model is built from four liquidity variables namely cash & due from banks to total assets (CDTA), cash & due from banks to total deposits (CDTD), investment to total assets (INVSTA) and investment to total deposits (INVSTD).	The results of the study show that CDTD and INVSTD are correlated positively with ROE. In addition, CDTD, INVSTA indicate a negative correlation with ROE.	International Journal of Management and Development Review
Ojha (2016) Macroeconomics And Bank-Specific Factors Affecting Liquidity: A Study Of Nepali Commercial Banks	The Regression Analysis	The results reveal that there is significant influence on liquidity by GDP, Return on assets, Return on equity, Non-performing loans, Capital adequacy ratio and Inter-bank rate	Journal of Management and Development Review

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<p>Sheefeni and Nyambe (2016)</p>	<p>Macro-economic Determinants of Commercial Banks' Liquidity in Namibia</p>	<p>Unit root, bound test for co integration and error correction model were employed</p>	<p>Results revealed that real gross domestic product is the main determinant of commercial banks' liquidity in Namibia. It was also found that monetary policy rate is positively related to banks' liquidity though statistically insignificant. On the contrary, the results revealed a negative relationship between inflation and commercial banks' liquidity.</p>	<p>Global Economy Journal</p>
<p>Malik, Awais &amp; Khursheed (2016).</p>	<p>Impact of Liquidity on Profitability: A Comprehensive Case of Pakistan's Private Banking Sector.</p>	<p>Three models were specified and estimated using Ordinary Least Squares (OLS) technique.</p>	<p>The empirical results revealed that there is a statistically significant relationship between bank liquidity measures and return on assets.</p>	<p>Research Journal for Engineering, Technology, and Sciences</p>

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Moussa (2015)	The Determinants of Bank Liquidity: Case of Tunisia	The Regression Analysis	Study found that International financial performance, capital adequacy ratio operating costs, growth rate of GDP, inflation rate, delayed liquidity have significant impact on bank liquidity while bank size, total loans, financial costs, total deposits does not have a significant impact on bank liquidity.	International economic journal.
Al Nimer, Warrad & Al Omari (2015).	The Impact of Liquidity on Jordanian Banks Profitability through Return on Assets.	The study used the 2005-2011 financial reports of 15 Jordanian banks listed at Amman Stock Exchange (ASE).	The study revealed that there is significant impact of independent variable quick ratio on dependent variable return on asset (ROA). That means profitability through return on	Journal of System and Management Sciences

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			assets (ROA) in Jordanian banks is significantly influenced by liquidity through quick ratio.	
Chagwiza (2014)	Zimbabwean Commercial Banks Liquidity and Its Determinants	The Regression Analysis	The study revealed that there is a positive link between bank liquidity and capital adequacy, total assets, gross domestic product and bank rate, found that the adoption of multi- currency, inflation rate and business cycle have a negative impact on liquidity. It seems the banks size and their liquidity is positively correlated.	International journal of empirical finance
Gautam (2014)	Determinants of Banks Liquidity and Their Impact on Financial	The Regression Analysis	It has found bank size, capital adequacy and inflation rate had a positive	South Asian Journal of Social Studies and Economics

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	Performance: Empirical Study on Commercial Banks in Nepal		impact on bank liquidity but non- performing loans, profitability and GDP growth rate had negative impact on bank liquidity of the commercial banks.
Subedi & Neupane (2013)	Determinants of Banks 'Liquidity and Their Impact on Financial Performance in Nepalese Commercial Banks	The Regression Analysis	Study found capital adequacy and share of non- performing loans had a negative and statistically significant effect on the bank liquidity of the commercial banks whereas loan growth, GDP growth rate, liquidity premium and short term interest rates had a negative and statistically insignificant effect on the bank liquidity of the commercial bank.

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Tseganesh (2012)	Determinants of Commercial Banks' Liquidity in Ethiopia	Document survey appro ach	Result stated that capital adequacy, bank size, share of nonperforming loans in the total volume of loans, interest rate margin, inflation rate and short term interest rate had positive and statistically significant impact on banks liquidity. Real GDP growth rate and loan growth had statistically insignificant impact on banks liquidity.	Research Journal for Engineering, Technology, and Sciences
Vodova, (2011)	Liquidity of Czech Commercial Banks and Its' Determinants,	The Regression Analysis	Found positive link between bank liquidity and capital adequacy, share of non-performing loans and interest rates on loans and on interbank transaction, negative influence	Journal of System and Management Sciences

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of inflation rate,  
business cycle  
and financial  
crisis on liquidity,  
the relation  
between size of  
banks and their  
liquidity is  
ambiguous.

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From above literature review it can be concluded that in some study area researcher's conclusions are contradictory based on researcher's study time and context especially on bank size and profitability effect on liquidity level of banks. Collectively, all researchers found positive relation between bank liquidity and capital adequacy, share of non-performing loans and interest rates on loans and on interbank transaction and negative relation with inflation rate, business cycle and financial crisis on liquidity level.

## **2.5 Research Gap**

Research gap is the difference between previous work done and the present research work. There has been lot of research works and studies undertaken to examine the variables that affect to liquidity level with sampling various bank and financial institutions. However, the purpose of study is quite different from the previous studies in terms of the time it covers from 2012/13 to 2021/22. Samples are taken based on stratified sampling methods considering firstly types of commercial bank and secondly the bank size. It was found most of the researchers used convenience sampling method. In this study micro environment variables, capital adequacy ratio, share of non-performing loan, deposits amount and bank size, macro environment variables, GDP and inflation rate, has taken. In this ground this study is different from previous studies titled determinants of liquidity level in Nepalese commercial banks.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

Research methodology refers to the numerous processes adopted by the researchers during the research period. It is the techniques used during the research problem solving in systematic manner. This includes many techniques and is crucial for every research work.

The research design is specification of methods and procedures for acquiring the needed information to solve the problem. Research methodology is the process of assigning at solution of the problem through systematic way for dealing with data inputs, data presentation and analysis, and research output. In this study descriptive research design will use.

The study is based on two types of research design namely descriptive and casual comparative. To describe the nature and behavior of variables, descriptive design is used. To examine and analyze the relationships casual comparative research design has been used. The method of this study is quantitative approach. A casual comparative tools, descriptive statistics, model summary and ANOVA are used. As a analytical tools, correlation and regression are applied to analyze data collected from the annual reports of the sample taken banks for identifying direction and significance level of selected independent variables on determining liquidity level.

#### **3.2 Population and Sample, and Sampling Design**

The study was confined to the private commercial banks operating in Nepal. There were 20 commercial banks in operation in Nepal during the time of the study, with their branches located in different parts of the country. Out of the total population, five leading private commercial banks were selected based on their paid-up capitals which comprised 25.00 percent of the total population of commercial banks in Nepal. The samples are also chosen according to the availability of data. As a carefully chosen sample can be used to represent the population, the sample reflects the

characteristics of the population from which it is drawn. The top five commercial banks were selected based on their paid-up capital. The data was mostly collected from secondary sources such as the published Annual Report and Basel-III disclosures report for the period year 2012/13 to 2021/22 (i.e., ten years). The sample banks selected for this research are Nabil Bank Limited, Himalayan Bank Limited, Everest Bank Limited, Nepal Investment Mega Bank Limited and Nepal SBI Bank Limited.

### **3.3 Nature and Sources of Data and the Instrument of Data Collection**

The data necessary to conduct the research were mainly collected from secondary sources. The required financial statements for this study such as balance sheet, profit and loss account etc. were collected from the published annual reports and accounts of the four banks from fiscal year 2012/13 to 2021/22. In other words, all the necessary data were collected from various sources includes annual reports of respective banks, Nepal Rastra Bank official sites, Security Board of Nepal, Ministry of Finance, Nepal Stock Exchange, professional associations and different publications and online database of the selected banks were taken for the purpose of this study.

Analysis is an important part of the study under which data are presented and analyzed in useful format. Here the collected data are classified, edited, and presented in the appropriate tables for analysis and interpretation and made up-to-date. The obtained secondary data are calculated using SPSS for desire results. In SPSS software, used descriptive and analytical tools for achieving the objectives of the study. Basically, simple analytical statistical tools such as tabling, covariance and regression are adopted in this study. Especially descriptive analysis method is used for the study.

### **3.4 Methods of Analysis**

The collected data were systematically entered into the SPSS software and analysis of descriptive, Pearson's correlation coefficient, and multiple regression was done as per the framework of study.

### 3.4.1 Descriptive Statistic

#### Arithmetic Mean

Mean is the value, which represent the group of value and gives an idea about the concentration of value in the central part of the distribution. An average gives a point, which is most representative of the data. It depicts the characteristics of the whole group. The value of arithmetic mean lies in between the two extreme observation of the entire data. It is an envoy of the mass homogeneous data.

The value of the AM is obtained by adding together all the items by dividing this total by the number of items.

Mathematically,

Arithmetic Means (AM) is given by,

$$\bar{X} = \frac{\sum x}{n}$$

Where,

$\bar{X}$ =Arithmetic Mean

$\sum X$ = Sum of all the values of the variable X

n= Number of observation

#### Standard Deviation

The standard Deviation ( $\sigma$ ) measure the absolute dispersion. The greater the standard deviation, greater will be magnitude of the deviations of the values form their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series and vice versa.

### 3.4.2 Inferential Analysis

#### Correlation Coefficient (r)

When the relationship is of quantitative nature, the appropriate statistical tools for discovering and measuring the relationship and expressing it, in a brief formula is known as correlation. If the values of the variables are directly proportional than, the correlation is said to be positive. On the other hand, if the values of the variable

are inversely proportional, the correlation is said to be negative, but the correlation coefficient always remains within the limit of +1 to -1 by Karl Pearson, the simple correlation coefficient (between two variables, say X and Y) is given by,

When 'r' = +1, there is perfect positive correlation.

When 'r' = -1, there is perfect negative correlation.

When 'r' = 0, there is no correlation.

When 'r' lies between 0.7 to 0.999 (or -0.7 to -0.999) there is high degree of positive or negative correlation.

When 'r' lies between 0.5 and 0.699, there is a moderate degree of correlation.

When 'r' is less than 0.5, there is low degree of correlation.

### **Regression Analysis**

Multiple regression will be used as the econometric model. An analysis where more than one independent variable is jointly regressed against the dependent variable is known as multiple regressions. The regression coefficient describes how the changes in the independent variables affect the value of the dependent variable estimate. In other words, the regression coefficient of each independent variable indicates the marginal relationship between that variable and the value of the dependent variable, the effect of all other independent variables in the regression model holding constant. For the analysis of the performance of ten leading commercial banks, it requires various financial and statistical tools which help the researcher to reach the conclusion by evaluating financial statements such as balance sheet, profit and loss accounts etc.

The functional form:

$$ROA_{it} = \beta_0 + \beta_{xit} + e_{it} \dots \dots \dots (i)$$

$$ROE_{it} = \beta_0 + \beta_{xit} + e_{it} \dots \dots \dots (ii)$$

With subscript 'i' that denotes observation of each bank at the point in time and 't' representing the time-series dimension. The left-hand variable  $L_{it}$  is the dependent variable,  $\beta_0$  is the intercept term,  $\beta$  is a  $k \times 1$  vector of parameters to be estimated on

the explanatory variables, and  $x_{it}$  is a  $1 \times k$  vector of observations on the explanatory variables,  $t = 1, \dots, T$ ;  $i = 1, \dots, N$ .

Our regression models can be represented by the following equations:

$$ROA_{it} = f(LFTCLR, LFTDR, NRBTD, CHTDR, CABTD)$$

$$ROA_{it} = \beta_0 + \beta_1 LFTCLR_{it} + \beta_2 LFTDR_{it} + \beta_3 NRBTD_{it} + \beta_4 CHTDR_{it} + \beta_5 CABTD_{it} + e_{it}$$

$$ROE_{it} = f(LFTCLR, LFTDR, NRBTD, CHTDR, CABTD)$$

$$ROE_{it} = \beta_0 + \beta_1 LFTCLR_{it} + \beta_2 LFTDR_{it} + \beta_3 NRBTD_{it} + \beta_4 CHTDR_{it} + \beta_5 CABTD_{it} + e_{it}$$

Where,

$$\beta_0 = \text{Constant}$$

$$ROA_{it} = \text{Return on Assets Ratio}$$

$$ROE_{it} = \text{Return on Equity Ratio}$$

$$LFTCLR_{it} = \text{Liquid Fund to Current Liabilities Ratio of } i^{\text{th}} \text{ bank on the year } t.$$

$$LFTDR_{it} = \text{Total Liquid Fund to Total Deposit Ratio of } i^{\text{th}} \text{ bank on the year } t.$$

$$NRBTD_{it} = \text{NRB Balance to Total Deposit Ratio of } i^{\text{th}} \text{ bank on the year } t.$$

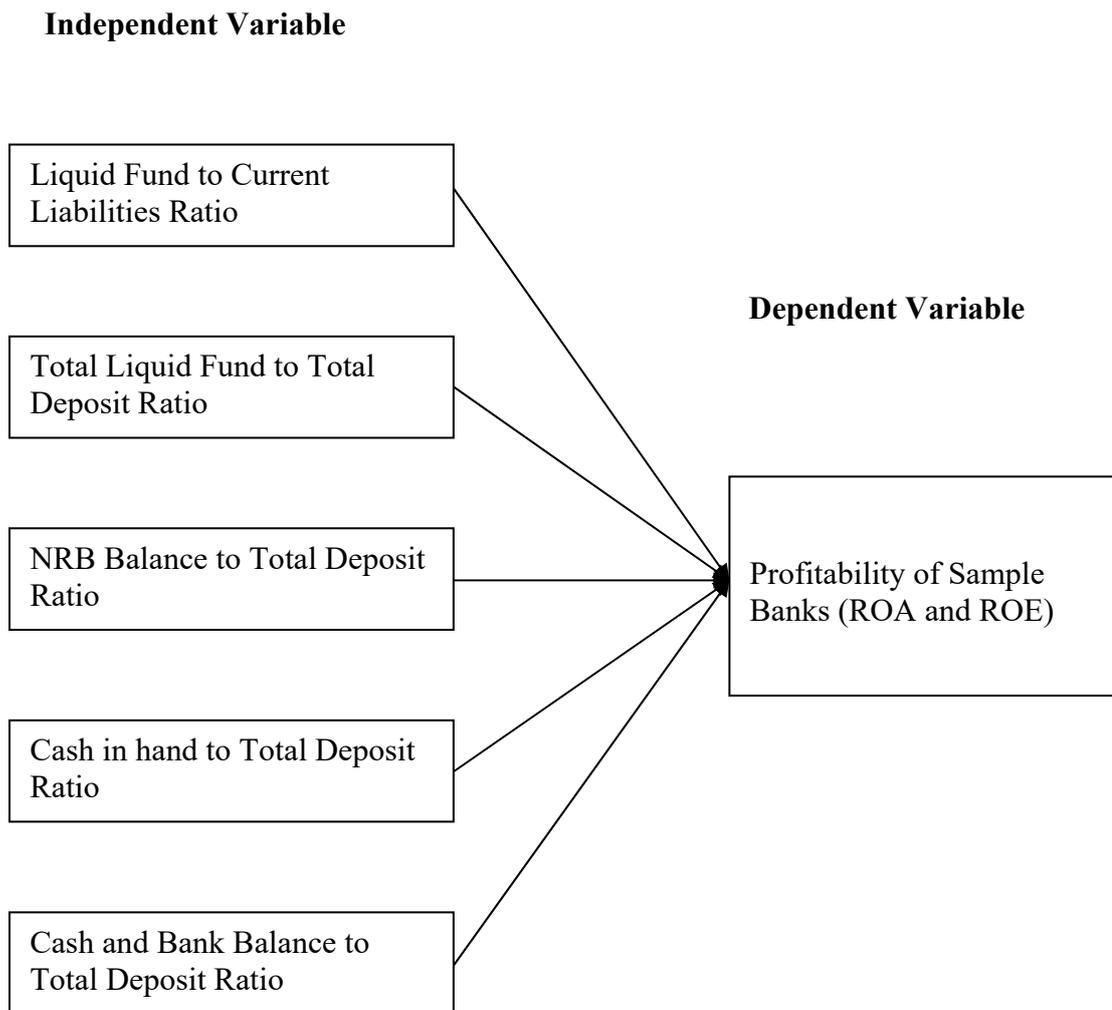
$$CHTDR_{it} = \text{Cash in hand to Total Deposit Ratio of } i^{\text{th}} \text{ bank on the year } t.$$

$$CABTD_{it} = \text{Cash and Bank Balance to Total Deposit Ratio of } i^{\text{th}} \text{ bank on the year } t.$$

$$e_{it} = \text{Error/ Stochastic term}$$

### 3.5 Research Framework and Definition of Variables

The conceptual framework is developed from the review of literature discussed above. It shows the relationship between the independent variables such as bank specific and macroeconomic and dependent variables such as bank liquid assets to total assets ratio and liquid assets to deposit plus borrowing. The following figure shows the dependent and independent variables.



*Figure 3.1* Research Framework

*Source: Sthapit and Maharjan (2012)*

### 3.5.1 Definitions of Variables

#### **Independent Variables:**

#### **Liquid Fund to Current Liabilities Ratio (LFTCLR)**

It indicates that the ratio total liquid fund on current liabilities (i.e., Sum of Current Deposits, Saving Deposits, Bills payables and Creditors) as per given in balance sheets of the commercial banks. Higher ratio shows the higher liquidity position of the banks that is beneficial for new investment opportunity.

### **Total Liquid Fund to Total Deposit Ratio (LFTDR)**

It shows that the ratio between total liquid fund (i.e., cash balance plus outside bank balance and money at call) and total deposits collection by the commercial banks. Higher ratio indicates more sound liquidity position of the banks.

### **NRB Balance to Total Deposit Ratio (NRBTDR)**

It indicates ratio of the amount deposited in Nepal Rastra Bank and total deposits collected by the commercial banks. Higher ratio means that there is a high liquidity position in the banks.

### **Cash in hand to Total Deposit Ratio (CHTDR)**

It is the ratio of cash balance on total deposit collection by the commercial banks. Higher ratio indicates there is a sufficient cash balance to pay creditors of the banks.

### **Cash and Bank Balance to Total Deposit Ratio (CABTDR)**

It shows the ratio of cash and bank balance on total deposits per given in balance sheets of the commercial banks. Higher ratio shows the higher liquidity position of the banks that gives more useful for new investment opportunity.

### **Dependent Variables:**

#### **Profitability of Sample Banks (ROA)**

It shows the ratio of net profit after tax as per given in profit and loss account to total assets as shown in balance sheets of the NABIL and SCBN. Higher ratio shows the higher profitability position of the banks that gives the strength of the banks. Though different indicators can be used to measure the profitability of banks, return on assets (ROA) is used in this study as per given in annual reports of the NABIL and SCBN.

#### **Profitability of Sample Banks (ROE)**

The profitability of the sample banks, as measured by Return on Equity (ROE), illustrates the ratio of net profit after tax, as reported in the profit and loss account, to the total assets depicted in the balance sheets of NABIL and SCBN. A higher ROE ratio signifies an elevated profitability position, indicating the strength of the banks. While various indicators can be employed to gauge a bank's profitability, this study

specifically utilizes Return on Assets (ROA) as per the information provided in the annual reports of NABIL and SCBN.

## **CHAPTER IV**

### **RESULTS AND DISCUSSION**

This chapter will present the data on table & figure. The main objective of the study is to present data and analyze them with the help of various financial and statistical tools. This chapter consists of analysis and presentation of empirical data. The important variables are very sensitive and taken into consideration, so this chapter will present the analysis of components of credit risk and its effect on financial performance.

So that the strength and weakness, historical performance and present financial condition of the sample banks will be determined by this analysis. The financial tools included graphical presentation as well as correlation and regression analysis between variables. Moreover, the variables affecting to the financial performance is also considered in the study. The analysis is made through the data presentations and various financial tools reflecting the relationship among variables affecting financial performance.

#### **4.1 Results**

##### **4.1.1 Descriptive Statistics**

The below table shows the descriptive statistics for dependent and independent variables of selected five Nepalese commercial banks for the study period of 2012/13 to 2021/22.

**Table 4.1***Descriptive Statistics*

	Minimum	Maximum	Mean	Std. Deviation
ROA	0.70	2.89	1.7652	0.41827
ROE	15.79	30.74	23.4305	5.88696
LFTCLR	8.29	50.37	23.0322	7.33046
LFTDR	6.57	35.14	17.0272	7.50629
NRBTDR	0.12	7.25	2.4596	2.03426
CHTDR	0.08	5.35	1.5966	1.14642
CABTDR	3.01	50.58	15.4324	9.99057

*Source: NRB (2012/13-2021/22)*

Table 4.1 shows descriptive statistics provided offer a comprehensive overview of various financial ratios for a sample of 50 banks. The first ratio, Return on Assets (ROA), measures the efficiency of an institution in generating profits relative to its total assets. The statistics reveal a minimum ROA of 0.70, a maximum of 2.89, a mean of 1.7652, and a standard deviation of 0.41827. These values suggest a moderate level of variation around the average, with some banks achieving higher returns on assets.

The average value of the bank return on equity (ROE) is 23.4305% indicating that during the study period, on average, the total ROE of sample commercial banks in Nepal produce 23.4305% return on total equity. The standard deviation of the ROE is 5.88696. The minimum return on equity ratio is 15.79% that means the bank had return only 15.79% of total revenue to total equity. The maximum return on total equity ratio is 30.74% that means the bank had return their 30.74% of total equity.

Moving to the liquidity ratios, the Liquid Fund to Current Liabilities Ratio (LFTCLR) reflects the ability of banks to cover short-term obligations with liquid assets. The statistics indicate a diverse range, with a minimum of 8.29, a maximum of 50.37, a mean of 23.0322, and a standard deviation of 7.33046. This implies variability in the

liquidity positions of the sampled banks, with some displaying higher liquidity reserves compared to others.

The Total Liquid Fund to Total Deposit Ratio (LFTDR) assesses the proportion of liquid assets to total deposits, providing insights into the liquidity management of banks. The minimum of 6.57, maximum of 35.14, mean of 17.0272, and standard deviation of 7.50629 suggest a diverse range of liquidity management strategies across the sample.

The NRB Balance to Total Deposit Ratio (NRBTDR), indicating the reliance on non-resident balances, displays a minimum of 0.12, maximum of 7.25, mean of 2.4596, and standard deviation of 2.03426. This reveals varying degrees of dependence on non-resident balances among the sampled banks.

Cash-related ratios, including Cash in hand to Total Deposit Ratio (CHTDR) and Cash and Bank Balance to Total Deposit Ratio (CABTDR), measure the bank's cash holdings in relation to total deposits. The statistics show a range of cash management strategies, with varying minimums, maximums, means, and standard deviations.

#### **4.1.2 Correlation Analysis**

Correlation Analysis between variables was studied to find relations among the different variables. Pearson's Correlation analysis is used to determine the relation between various independent and dependent variables associated with the research. It measures the linear correlation between any two variables.

Table 4.2 presents the bivariate Pearson's correlation coefficients between different variables used in the study. The correlation coefficients are based on the data from of selected five commercial banks with 50 observations for the period of 2012/13 to 2021/22.

**Table 4.2***Correlation Analysis*

	ROA	ROE	LFTCLR	LFTDR	NRBTDR	CHTDR	CABTDR
ROA	1						
ROE0	0.741 0.214	1					
LFTCLR	0.026 0.858	0.782** 0.000	1				
LFTDR	0.082 0.573	0.905** 0.000	0.484** 0.000	1			
NRBTDR	0.299* 0.035	0.879** 0.000	0.151 0.295	-0.008 0.956	1		
CHTDR	0.023 0.874	0.884** 0.000	0.132 0.359	-0.032 0.827	0.152 0.293	1	
CABTDR	-0.030 0.838	-0.347 0.417	-0.083 0.568	0.069 0.635	0.469** 0.001	-0.104 0.474	1

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

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

The correlation analysis in Table 4.2 examines the relationships between Return on Assets (ROA) and other financial ratios for a sample of banks. Starting with the correlation between ROA and Liquid Fund to Current Liabilities Ratio (LFTCLR), a very weak positive correlation of 0.026 is observed. This implies a minimal positive relationship between the bank's return on assets and its ability to cover short-term liabilities with liquid funds. The correlation is too small to draw strong conclusions about the impact of LFTCLR on ROA.

Moving to the correlation between ROA and Total Liquid Fund to Total Deposit Ratio (LFTDR), a weak positive correlation of 0.082 is found. This suggests a slight positive association between the bank's return on assets and the proportion of liquid funds to total deposits. However, the correlation is not strong, indicating that factors beyond liquidity ratios may play a more significant role in influencing ROA.

The correlation between ROA and NRB Balance to Total Deposit Ratio (NRBTDR) is moderate, with a coefficient of 0.299. This suggests a meaningful positive relationship between a bank's return on assets and its reliance on non-resident balances relative to total deposits. A higher NRBTDR is associated with a higher ROA, indicating that non-resident balances may contribute positively to a bank's profitability.

In the case of Cash in hand to Total Deposit Ratio (CHTDR), the correlation with ROA is very weak (0.023). This implies a minimal positive association between the cash in hand to total deposit ratio and return on assets. The correlation is too small to make significant conclusions about the impact of CHTDR on ROA.

Finally, the Cash and Bank Balance to Total Deposit Ratio (CABTDR) shows a very weak negative correlation with ROA, with a coefficient of -0.030. This suggests a minimal negative relationship between the ratio of cash and bank balances to total deposits and a bank's return on assets. However, the correlation is too small to indicate a substantial impact on ROA.

#### **4.1.3 Regression Analysis**

While correlation analysis assumes no causal relationship between variables, regression analysis assumes causal relationship between two or more variables. Simple linear regression shows the effect of an independent variable on single dependent variable while multiple linear regressions show the effects of multiple independent variables on single dependent variable. Correlation analysis only provides the degree of relationship between two variables. Thus, regression analysis is done to have better understanding of the strength of relationship between two or multiple variables. Multiple regression analysis is used to analyze the impact of multiple independent variables on single dependent variable. Thus, multiple regression analysis is used to analyze the impact of various independent variables.

Multiple linear regression analysis is used to predict the impact of independent variables of interest on deposit. The equation for impact of independent variables is expressed in the following equation:

$$ROA_{it} = \beta_0 + \beta_1 LFTCLR_{it} + \beta_2 LFTDR_{it} + \beta_3 NRBTDR_{it} + \beta_4 CHTDR_{it} + \beta_5 CABTDR_{it} + e_i$$

Where,

$\beta_0$  = Constant

ROA<sub>it</sub> = Return on Assets Ratio

LFTCLR<sub>it</sub> = Liquid Fund to Current Liabilities Ratio of  $i^{\text{th}}$  bank on the year  $t$ .

LFTDR<sub>it</sub> = Total Liquid Fund to Total Deposit Ratio of  $i^{\text{th}}$  bank on the year  $t$ .

NRBTDR<sub>it</sub> = NRB Balance to Total Deposit Ratio of  $i^{\text{th}}$  bank on the year  $t$ .

CHTDR<sub>it</sub> = Cash in hand to Total Deposit Ratio of  $i^{\text{th}}$  bank on the year  $t$ .

CABTDR<sub>it</sub> = Cash and Bank Balance to Total Deposit Ratio of  $i^{\text{th}}$  bank on the year  $t$ .

$e_i$  = Error/ Stochastic term

The results of model summary, analysis of variance (ANOVA) and beta coefficients analyzed the impact of independent variables on interest on deposit of Nepalese commercial bank.

**Table 4.3**

*Model Summary of ROA*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.831 <sup>a</sup>	0.690	0.442	0.34403

a. Predictors: (Constant), CABTDR, NRBTDR, CHTDR, LFTDR, LFTCLR

Table 4.3 presents a model summary for a regression analysis aimed at predicting Return on Assets (ROA) using a combination of independent variables, including Cash and Bank Balance to Total Deposit Ratio (CABTDR), NRB Balance to Total Deposit Ratio (NRBTDR), Cash in hand to Total Deposit Ratio (CHTDR), Total Liquid Fund to Total Deposit Ratio (LFTDR), and Liquid Fund to Current Liabilities Ratio (LFTCLR).

The model's overall fit is evaluated through key statistics. The multiple correlation coefficient (R) is 0.831, indicating a strong positive correlation between the combined set of predictors and the dependent variable, ROA. The coefficient of determination (R Square) is 0.690, suggesting that approximately 69% of the variance in ROA is

explained by the included independent variables. However, the Adjusted R Square, which takes into account the number of predictors in the model, is 0.442, signifying that about 44.2% of the variance is explained when adjusting for the number of predictors.

**Table 4.4**

*ANOVA of ROA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.794	5	0.359	3.329	0.048 <sup>b</sup>
	Residual	6.779	44	0.154		
	Total	8.572	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), CABTDR, NRBTDR, CHTDR, LFTDR, LFTCLR

Table 4.4 presents the results of an Analysis of Variance (ANOVA) for a regression model designed to predict Return on Assets (ROA) using various independent variables, including the constant term, Cash and Bank Balance to Total Deposit Ratio (CABTDR), NRB Balance to Total Deposit Ratio (NRBTDR), Cash in hand to Total Deposit Ratio (CHTDR), Total Liquid Fund to Total Deposit Ratio (LFTDR), and Liquid Fund to Current Liabilities Ratio (LFTCLR).

The F-statistic, a ratio of mean squares, is 3.329, and its associated p-value (Sig.) is 0.048. The p-value is below the conventional significance level of 0.05, indicating that the overall regression model is statistically significant. This suggests that at least one of the predictors in the model has a significant impact on ROA, providing evidence that the model as a whole contributes valuable information in explaining the variance in ROA.

**Table 4.5***Coefficients of ROA*

Model		Unstandardized Coefficients			
		B	Std. Error	t	Sig.
1	(Constant)	1.764	0.233	2.582	0.013
	LFTCLR	-0.008	0.010	-1.087	0.283
	LFTDR	0.010	0.009	2.662	0.011
	NRBTDR	0.094	0.034	2.747	0.009
	CHTDR	-0.018	0.053	2.178	0.035
	CABTDR	-0.011	0.007	-0.257	0.798

## a. Dependent Variable: ROA

Table 4.5 presents the coefficients of the variables in the regression model, offering insights into the strength and direction of their relationships with the dependent variable, Return on Assets (ROA). The constant term represents the intercept of the regression equation when all predictor variables are zero. In this case, the constant is 1.764 with a standard error of 0.233. The t-statistic is 2.582, and the associated p-value is 0.013, indicating that the intercept is statistically significant.

The unstandardized coefficient (B) for LFTCLR is -0.008, indicating that for a one-unit increase in LFTCLR, there is a decrease of 0.008 units in the predicted ROA. However, the standardized coefficient (Beta) is -0.142, suggesting a weak negative relationship. The t-statistic is -1.087, and the associated p-value is 0.283, indicating that LFTCLR is not statistically significant. The unstandardized coefficient for LFTDR is 0.010, indicating that for a one-unit increase in LFTDR, there is an increase of 0.010 units in the predicted ROA. The standardized coefficient is 0.171, suggesting a positive relationship. The t-statistic is 2.662, and the associated p-value is 0.011, indicating that LFTDR is statistically significant.

The unstandardized coefficient for NRBTDR is 0.094, suggesting that for a one-unit increase in NRBTDR, there is an increase of 0.094 units in the predicted ROA. The standardized coefficient is 0.458, indicating a relatively strong positive relationship. The t-statistic is 2.747, and the associated p-value is 0.009, signifying that NRBTDR is statistically significant. The unstandardized coefficient for CHTDR is -0.018,

indicating that for a one-unit increase in CHTDR, there is a decrease of 0.018 units in the predicted ROA. The standardized coefficient is -0.051, suggesting a weak negative relationship. The t-statistic is -2.178, and the associated p-value is 0.035, indicating that CHTDR is statistically significant.

The unstandardized coefficient for CABTDR is -0.011, suggesting that for a one-unit increase in CABTDR, there is a decrease of 0.011 units in the predicted ROA. The standardized coefficient is -0.273, indicating a moderate negative relationship. However, the t-statistic is -0.257, and the associated p-value is 0.798, signifying that CABTDR is not statistically significant.

Multiple linear regression analysis is used to predict the impact of independent variables of interest on deposit. The equation for impact of independent variables is expressed in the following equation:

$$ROE_{it} = \beta_0 + \beta_1 LFTCLR_{it} + \beta_2 LFTDR_{it} + \beta_3 NRBTD_{it} + \beta_4 CHTDR_{it} + \beta_5 CABTDR_{it} + e_i$$

Where,

$\beta_0$  = Constant

$ROE_{it}$  = Return on Equity Ratio

$LFTCLR_{it}$  = Liquid Fund to Current Liabilities Ratio of  $i^{th}$  bank on the year t.

$LFTDR_{it}$  = Total Liquid Fund to Total Deposit Ratio of  $i^{th}$  bank on the year t.

$NRBTD_{it}$  = NRB Balance to Total Deposit Ratio of  $i^{th}$  bank on the year t.

$CHTDR_{it}$  = Cash in hand to Total Deposit Ratio of  $i^{th}$  bank on the year t.

$CABTDR_{it}$  = Cash and Bank Balance to Total Deposit Ratio of  $i^{th}$  bank on the year t.

$e_i$  = Error/ Stochastic term

The results of model summary, analysis of variance (ANOVA) and beta coefficients analyzed the impact of independent variables on interest on deposit of Nepalese commercial bank.

**Table 4.6***Model Summary of ROE*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.966 <sup>a</sup>	0.933	0.879	2.04778

a. Predictors: (Constant), CABTDR, NRB TDR, CHTDR, LFTDR, LFTCLR

Table 4.6 presents a model summary for a regression analysis aimed at predicting Return on Equity (ROE) using a combination of independent variables, including Cash and Bank Balance to Total Deposit Ratio (CABTDR), NRB Balance to Total Deposit Ratio (NRBTDR), Cash in hand to Total Deposit Ratio (CHTDR), Total Liquid Fund to Total Deposit Ratio (LFTDR), and Liquid Fund to Current Liabilities Ratio (LFTCLR).

This value, 0.933, represents the proportion of the dependent variable's variance that can be explained by the independent variables. In other words, about 93.3% of the variability in ROE is explained by the predictors in the model. The adjusted R-squared is a modified version of the R-squared that adjusts for the number of predictors in the model. It helps account for the possibility of overfitting. Here, the adjusted R-squared is 0.879.

**Table 4.7***ANOVA of ROE*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.939	5	72.735	17.345	0.004 <sup>b</sup>
	Residual	20.967	44	4.193		
	Total	311.906	49			

a. Dependent Variable: ROE

b. Predictors: (Constant), CABTDR, NRB TDR, CHTDR, LFTDR, LFTCLR

Table 4.7 presents the results of an Analysis of Variance (ANOVA) for a regression model designed to predict Return on Equity (ROE) using various independent variables, including the constant term, Cash and Bank Balance to Total Deposit Ratio

(CABTDR), NRB Balance to Total Deposit Ratio (NRBTDR), Cash in hand to Total Deposit Ratio (CHTDR), Total Liquid Fund to Total Deposit Ratio (LFTDR), and Liquid Fund to Current Liabilities Ratio (LFTCLR).

The significance level (p-value) associated with the F-statistic tests the null hypothesis that all the regression coefficients are equal to zero (i.e., the model has no explanatory power). The p-value is .004b, indicating that the overall regression model is statistically significant at a significance level of 0.004. This suggests that at least one of the predictors in the model has a significant impact on ROE, providing evidence that the model as a whole contributes valuable information in explaining the variance in ROE.

**Table 4.8**

*Coefficients of ROE*

Model		Unstandardized Coefficients			
		B	Std. Error	t	Sig.
1	(Constant)	125.664	53.398	2.353	0.065
	LFTCLR	2.913	2.958	0.985	0.370
	LFTDR	-2.562	0.969	-0.643	0.546
	NRBTDR	-0.403	0.319	-1.963	0.262
	CHTDR	4.465	0.000	0.618	0.564
	CABTDR	-0.064	0.167	-0.381	0.719

a. Dependent Variable: ROE

Table 4.8 presents the coefficients of the variables in the regression model, offering insights into the strength and direction of their relationships with the dependent variable, Return on Equity (ROE). The "Table 4.8 Coefficients of ROE" presents the coefficients and related statistics of a regression model investigating the factors influencing Return on Equity (ROE). The constant term, representing the intercept when all predictor variables are zero, is 125.664 with a standard error of 53.398. The t-value of 2.353 and a significance level of 0.065 suggest borderline significance for the constant, indicating a potential impact on ROE.

Among the predictor variables, LFTCLR demonstrates an unstandardized coefficient (B) of 2.913 with a standard error of 2.958. However, the t-value of 0.985 and a significance level of 0.370 suggest that LFTCLR lacks statistical significance in predicting ROE.

In contrast, LFTDR exhibits a significant impact on ROE with a coefficient of -2.562 and a standard error of 0.969. The negative t-value (-2.643) and a significance level of 0.046 indicate a statistically significant negative relationship, implying that an increase in LFTDR is associated with a decrease in ROE.

NRBTDR, CHTDR, and CABTDR, on the other hand, do not appear to be statistically significant predictors of ROE. NRBTDR has a coefficient of -0.403 with a t-value of -1.263 and a significance level of 0.262. CHTDR has a coefficient of 4.465 with an extremely low standard error of 0.000, raising concerns about its reliability. The t-value of 0.618 and a significance level of 0.564 suggest a lack of statistical significance for CHTDR. Finally, CABTDR has a coefficient of -0.064 with a t-value of -0.381 and a significance level of 0.719, indicating no significant impact on ROE.

In summary, LFTDR emerges as the only variable with a statistically significant influence on ROE in this model, while the other variables, including the constant term, exhibit varying degrees of significance or lack thereof. Interpretation should be approached with caution, and further analysis may be warranted to validate these findings.

## **4.2 Discussion**

The findings of the study shows that the liquid fund to current liabilities ratio has negative and insignificant impact on return on assets. This results has consistence with the study of Khati (2020) who found that that the liquid fund to current liabilities ratio has negative and insignificant impact on return on assets. But this findings inconsistence with the results of Khasharmeh (2018) who found liquid fund to current liabilities ratio has positive and significant impact on return on assets.

Similarly, the findings of the study shows that total liquid fund to total deposit ratio has positive and significant impact on return on assets. But this results has inconsistence with the study of Abbas, Iqbal and Aziz (2019) who found that that total liquid fund to total deposit ratio has negative and insignificant impact on return on assets. This findings consistence with the results of Pandey (2020) who found total

liquid fund to total deposit ratio has positive and significant impact on return on assets.

Likewise, the findings of the study shows that NRB balance to total deposit ratio has positive and significant impact on return on assets. This findings consistence with the results of Bista (2018) who found NRB balance to total deposit ratio has positive and significant impact on return on assets. But this results has inconsistency with the study of Sheefeni and Nyambe (2016) who found that that NRB balance to total deposit ratio has negative and insignificant impact on return on assets.

In the same way, the findings of the study shows that the cash in hand to total deposit ratio has negative and insignificant impact on return on assets. This results has consistence with the study of Khati (2020) who found that that the cash in hand to total deposit ratio has negative and insignificant impact on return on assets. But this findings inconsistency with the results of Khasharmeh (2018) who found cash in hand to total deposit ratio has positive and significant impact on return on assets.

Lastly, the findings of the study shows that the cash and bank balance to total deposit ratio has negative and insignificant impact on return on assets. This results has consistence with the study of Adhikari (2020) who found that that the cash and bank balance to total deposit ratio has negative and insignificant impact on return on assets. But this findings inconsistency with the results of Sundas and Butt (2021) who found cash and bank balance to total deposit ratio has positive and significant impact on return on assets.

## CHAPTER V

### SUMMARY AND CONCLUSION

#### 5.1 Summary

This study aims to analyze determinants of liquidity of commercial banks and their relationship with the liquidity based on information available in Nepalese context. The objectives of this study was to examine the impact of the determinants of the liquidity of Nepalese commercial bank. The study is based on two types of research design namely descriptive and casual comparative. The study was confined to the private commercial banks operating in Nepal. There were 20 commercial banks in operation in Nepal during the time of the study, with their branches located in different parts of the country. Out of the total population, five leading private commercial banks were selected. The required financial statements for this study such as balance sheet, profit and loss account etc. were collected from the published annual reports and accounts of the four banks from fiscal year 2012/13 to 2021/22. The descriptive statistics provide a nuanced understanding of the financial health and management strategies of the sampled banks, allowing for comparisons and insights into the variability of key financial ratios.

The correlation analysis provides insights into the relationships between ROA and various financial ratios. While some correlations are observed, it's crucial to note that correlation does not imply causation, and other factors not considered in this analysis may influence the bank's return on assets. Further investigation and multivariate analysis may be necessary to uncover the underlying factors affecting these correlations. While the model shows an overall good fit, further analysis is necessary to understand the individual contributions of each predictor and validate the assumptions of the regression model. Additionally, the significance of each predictor should be examined to determine which variables have a statistically significant impact on predicting ROA.

The ANOVA results support the statistical significance of the regression model, indicating that the included predictors collectively contribute to explaining the variability in ROA. Further analysis is necessary to assess the significance of individual predictors and validate the assumptions of the regression model for a more comprehensive understanding of the relationships between the variables. The

coefficients provide information about the direction and magnitude of the relationships between each predictor variable and ROA. While LFTCLR and CABTDR are not statistically significant, LFTDR, NRBTD, and CHTDR show significant relationships with ROA, each with its unique impact on the predicted values.

## **5.2 Conclusion**

This study aimed to investigate the influence of various factors on the liquidity of Nepalese commercial banks, with a specific focus on their impact on Return on Assets (ROA). The analysis revealed that the Liquid Fund to Total Deposit Ratio (LFTDR), NRB Balance to Total Deposit Ratio (NRBTDR), and Cash in hand to Total Deposit Ratio (CHTDR) significantly contribute to predicting ROA. A positive association was observed for LFTDR, indicating that an increase in the ratio of liquid funds to total deposits corresponds to a higher predicted ROA. Similarly, NRBTDR demonstrated a positive impact, signifying that a greater reliance on non-resident balances relative to total deposits is associated with an elevated predicted ROA. In contrast, CHTDR displayed a negative relationship, suggesting that an increase in the ratio of cash in hand to total deposits is linked to a decrease in the predicted ROA. Conversely, the ratios of Liquid Fund to Current Liabilities (LFTCLR) and Cash and Bank Balance to Total Deposit (CABTDR) did not exhibit statistically significant relationships with ROA, implying their limited role in explaining variability in the financial performance of the sample banks.

It is crucial to interpret these findings within the specific context and dynamics of the banking industry. While the identified predictors play a role in forecasting ROA, other unobserved factors may also contribute to overall financial performance. Further research, including an in-depth examination of individual predictors, potential interactions, and model assumptions, is necessary to bolster the robustness of these conclusions. The overall statistical significance of the regression model underscores the collective contribution of included predictors in explaining variations in ROA for the sampled banks, highlighting the significance of liquidity and balance-related metrics. Specifically, LFTDR, NRBTDR, and CHTDR emerged as notable predictors, each influencing ROA in distinct ways. These findings underscore the importance of specific liquidity and balance-related metrics in understanding and predicting the

financial performance of banks, while also emphasizing the need for continued exploration of industry-specific nuances.

### **5.3 Implications**

This study offers the following implication based on the findings from the empirical analysis.

#### **5.3.1 Managerial Implications**

- Banks should focus on optimizing their Total Liquid Fund to Total Deposit Ratio (LFTDR) as it positively influences Return on Assets (ROA). Efficient management of liquid assets can enhance overall financial performance.
- Recognizing the positive impact of Non-Resident Balances to Total Deposit Ratio (NRBTDR) on ROA, banks may strategically leverage non-resident deposits to improve profitability.
- Careful consideration of Cash in hand to Total Deposit Ratio (CHTDR) is crucial. While holding cash provides security, excessive cash holdings may negatively impact ROA. Banks should strike a balance to optimize returns.

#### **5.3.2 Future Research Implications**

- Further research should delve into the specific mechanisms through which liquidity ratios influence ROA. Understanding the intricacies of these relationships can provide nuanced insights for both academics and practitioners.
- Given the specificity of banking operations, future studies could explore how these findings vary across different banking segments or in response to regulatory environments, offering a more granular understanding.
- Conducting longitudinal analyses would allow researchers to assess how these relationships evolve over time, providing a dynamic perspective on the impact of liquidity and balance-related variables on bank performance.

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## APPENDIX

### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	50	.70	2.89	1.7652	.41827
ROE	15.79	30.74	23.4305	5.88696	15.79
LFTCLR	50	8.29	50.37	23.0322	7.33046
LFTDR	50	6.57	35.14	17.0272	7.50629
NRBTDR	50	.12	7.25	2.4596	2.03426
CHTDR	50	.08	5.35	1.5966	1.14642
CABTDR	50	3.01	50.58	15.4324	9.99057
Valid N (listwise)	50				

### Correlations

		ROA	ROE	LFTCLR	LFTDR	NRBTDR	CHTDR	CABTDR
ROA	Pearson Correlation	1	.741	.026	.082	.299*	.023	-.030
	Sig. (2-tailed)		.214	.858	.573	.035	.874	.838
ROE	Pearson Correlation	.741	1	.782**	.905**	.879**	.884**	-.347
	Sig. (2-tailed)	.214		.000	.000	.000	.000	.417
LFTCLR	Pearson Correlation	.026	.782**	1	.484**	.151	.132	-.083
	Sig. (2-tailed)	.858	.000		.000	.295	.359	.568
LFTDR	Pearson Correlation	.082	.905**	.484**	1	-.008	-.032	.069
	Sig. (2-tailed)	.573	.000	.000		.956	.827	.635
NRBTDR	Pearson Correlation	.299*	.879**	.151	-.008	1	.152	.469**
	Sig. (2-tailed)	.035	.000	.295	.956		.293	.001
CHTDR	Pearson Correlation	.023	.884**	.132	-.032	.152	1	-.104
	Sig. (2-tailed)	.874	.000	.359	.827	.293		.474
CABTDR	Pearson Correlation	-.030	-.347	-.083	.069	.469**	-.104	1
	Sig. (2-tailed)	.838	.417	.568	.635	.001	.474	

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

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

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457 <sup>a</sup>	.209	.119	.39250

a. Predictors: (Constant), CABTDR, NRBTDR, CHTDR, LFTDR, LFTCLR

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.794	5	.359	3.329	.048 <sup>b</sup>
	Residual	6.779	44	.154		
	Total	8.572	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), CABTDR, NRBTDR, CHTDR, LFTDR, LFTCLR

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.764	.233		2.582	.013
	LFTCLR	-.008	.010	-.142	-1.087	.283
	LFTDR	.010	.009	.171	2.662	.011
	NRBTDR	.094	.034	.458	2.747	.009
	CHTDR	-.018	.053	-.051	2.178	.035
	CABTDR	-.011	.007	-.273	-.257	.798

a. Dependent Variable: ROA

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.966 <sup>a</sup>	.933	.879	2.04778

a. Predictors: (Constant), CABTDR, NRBTDR, CHTDR, LFTDR, LFTCLR

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.939	5	72.735	17.345	.004 <sup>b</sup>
	Residual	20.967	44	4.193		
	Total	311.906	49			

a. Dependent Variable: ROE

b. Predictors: (Constant), CABTDR, NRBTD, CHTDR, LFTDR, LFTCLR

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	125.664	53.398		2.353	.065
	LFTCLR	2.913	2.958	.205	.985	.370
	LFTDR	-2.562	.969	-.692	-.643	.546
	NRBTD	-.403	.319	-.397	-1.263	.262
	CHTDR	4.465	.000	.230	.618	.564
	CABTDR	-.064	.167	-.358	-.381	.719

a. Dependent Variable: ROE