

EFFECTS OF LIQUIDITY ON PROFITABILITY OF COMMERCIAL BANK IN NEPAL

A Thesis

Submitted By

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Submitted to

Office of the Dean

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In partial fulfillment of the requirements for the degree of
Master of Business Studies (MBS)

Kathmandu

June, 2022

DECLARATION

I hereby declare that the research work reported in the thesis entitled “**Effects of liquidity on profitability of commercial bank in Nepal**” submitted to Office of the Dean, Faculty Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Masters of Business Studies which is prepared under the supervision of respected supervisor **Mr. Rajendra Raya**, of People’s Campus, Paknajol, Kathmandu.

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RECOMMENDATION

This is to certify that the Thesis entitled

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has been prepared as approved by this department in the prescribed format of Faculty of Management. Thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the Viva -Voce examination of the thesis entitled

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and found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for the Degree of

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ABBREVIATIONS

%	: Percentage
CZBILL	: Citizen Bank International Limited
CBTDR	: Cash and Bank Balance to Total Deposit Ratio
EBL	: Everest Bank Limited
HBL	: Himalayan Bank Limited
i.e	: That is
JVBs	: Joint Venture Banks
KBL	: Kumari Bank Limited
LFTCLR	: Total Liquid Funds to Current Liabilities Ratio
LFTDR	: Total Liquid Funds to Total Deposit Ratio
MBL	: Machhapuhhre Bank Limited
MBS	: Master in Business Studies
NBL	: Nepal Bank Limited
NIBL	: Nepal Investment Bank Limited
NRB	: Nepal Rastrya Bank
NRBTDR	: NRB Balance to Total Deposit Ratio
NSBL	: Nepal SBI Bank Limited
RBBL	: Rastriya Banijya Bank Limited
ROA	: Return on Assets
ROE	: Return on Equity
S.D.	: Standard Deviation
SBNL	: Standard Chartered Bank Nepal Limited
TU	: Tribhuvan University
US	: United States
Viz	: It is permitted to see
VTDR	: Cash Vault to Total Deposit Ratio

CHAPTER I

INTRODUCTION

1.1 Background of the study

The health of the financial system has important role in the country (Das & Ghosh, 2007) as its failure can disrupt economic development of the country. The financial performance measure can be divided into traditional measures and market-based measures (Aktan & Bulut, 2008). During the 1980's and 1990's when the financial and banking crises became worldwide, new risk management banking techniques emerged. A bank is a commercial or state institution that provides financial services, including issuing money in various forms, receiving deposits of money, lending money and processing transactions and the creating of credit (Campbell, 2007).

Various studies Demetriades and Luintel (1996), Ferrari, Shrestha and Jaffrin, (2007), Khanal (2007) and Pokhrel (2006) related to financial and banking sector services, policies, liberalization and development has been done in the country.

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 (McKinnon, 1973; Levine, 1997) 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.

Bank liquidity refers to the ability of the bank to ensure the availability of funds to meet financial commitments or maturing obligations at a reasonable price at all times. Bank liquidity means a bank having money where they need it particularly to satisfy the withdrawal needs of the customers (Wasiuzzaman and Tarmizi, 2011). Liquidity is a financial term that means the amount of capital that is available for investment. Today, most of this capital is credit fund. Profitability and liquidity are effective indicators of the corporate health and performance of not only the commercial banks, but all profit-oriented ventures (Eljelly, 2004). These performance indicators are very important to the shareholders and depositors who are major publics of a bank. Profitability is another important component of bank management. It insures long term prospectus of the bank. There are not any unconditional theories explaining the exact association between liquidity and profitability of the banks. The general

understanding about the association between them is negative i.e., liquidity negatively impacts on profitability of the banks. Various studies have conducted till now to explain the empirical association between liquidity and profitability of the banks, but the findings are not symmetrical.

Through the financial inter-mediation role, the commercial banks reactivate the idle funds borrowed from the lenders by investing such funds in different classes of portfolios. The liquidity risk of banks arises from funding of long-term assets by short-term liabilities, thereby making the liabilities subject to rollover or refinancing risk. Liquidity risk is usually of an individual nature, but in certain situations may compromise the liquidity of the financial system.

The management of liquidity involves a daily analysis and detailed estimation of the size and timing of cash inflows and outflows to minimize the risk that savers will be unable to access their deposits in the moment of their need.

A Profitability analysis refers to an assessment of the viability, stability and profitability of a business, sub-business or project. Profitability is the ability of a business to earn profit for its owners. The objective of this study was overall profitability analysis of different banks in Nepal. Profitability is a measure of efficiency and control it indicates the efficiency or effectiveness with which the operations of the business are carried on. Profitability ratios provide different useful insights into the financial health and performance of a company. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Increasing profitability is one of the most important tasks of the business managers. Managers constantly look for ways to change the business to improve profitability. These potential changes can be analyzed with a support of annual reports of banks. A Banks Profitability tells investors about its general well-being. A study of it is essential for investor wanting to understand and value of banks properly (Edmister,1980).

1.2 Statement of problem

Bank should have ready access to immediately expendable funds at reasonable cost precisely at the time those funds are needed. (Rose, 1999) Bank should have sufficient liquidity to minimize both assets side liquidity risk and liability side liquidity risk of a commercial bank. Both the inadequate and excessive liquidity indicate the problem in

the financial health of a commercial bank. Excessive liquidity destroys the profitability of the commercial bank as it reduces the return on assets. Similarly inadequate liquidity deteriorates bank's credit standing that would lead to forced liquidation of bank's assets and affects the reputation of the banks. Therefore, the commercial banks should strike the tradeoff between the profitability and liquidity risk. Lack of strength and efficiency relating to the analysis of financial statement affects the financial performance of the bank. Commercial bank's cash and bank balance and cash reserve with NRB have a fluctuating and declining trend while various deposits have been increasing; it reflects inefficiency in liquidity management of the bank. The study is directed towards answering the following questions:

1. How does liquidity and bank's profitability is related?
2. What is the effect of liquidity on banks profitability in commercial banks in Nepal?

1.3 Objectives of the study

The general purpose of the study is to discuss, examine and evaluate the tradeoff between liquidity and profitability position of the concerned commercial banks in Nepal. The specific purposes of the study are:

1. To analyze relationship between liquidity and profitability of commercial banks.
2. To examine the effect of liquidity on profitability of commercial banks of Nepal.

1.4 Hypothesis of the study

The study was carried out based on certain hypothesis. With the help of hypothesis, the study is able to examine and evaluate the tradeoff between liquidity and profitability position of the commercial banks in Nepal. Following hypothesis made in order to study the effects between liquidity, Nepal Rastra Bank (NRB) balance to Total Deposit Ratio (NRBTDR), Cash Vault to Total Deposit Ratio (VTDR), Total Liquid Funds to Total Deposit Ratio (LFTDR), Cash and Bank balance to Total Deposit Ratio (CBTDR), Total Liquid Fund to Current Liabilities Ratio (LFTCLR) and Return on Assets (ROA), Return on Equity (ROE) of commercial banks. The major source for following hypothesis is through previous study. Following are the hypothesis generated.

H₀₁: There is no significant relationship between NRBTDR and ROA of commercial

banks.

H0₂: There is no significant relationship between VTDR and ROA of commercial banks.

H0₃: There is no significant relationship between LFTDR and ROA of commercial banks.

H0₄: There is no significant relationship between CBTDR and ROA of commercial banks.

H0₅: There is no significant relationship between LFTCLR and ROA of commercial banks.

H0₆: There is no significant effect between NRBTDR and ROE of commercial banks.

H0₇: There is no significant effect between VTDR and ROE of commercial banks.

H0₈: There is no significant effect between LFTDR and ROE of commercial banks.

H0₉: There is no significant effect between CBTDR and ROE of commercial banks.

H0₁₀: There is no significant effect between LFTCLR and ROE of commercial banks.

1.5 Rationale of the study

The study of the analysis of liquidity and profitability position of joint venture banks in Nepal plays vital role in the managerial decision. Every organization has to analyze its financial performance in every step of its operation, promotion, and expansion. There should be an appropriate equilibrium between the earning and non-earning assets. Commercial banks are always guided by the objective of profitability. All financial decisions of commercial banks are for the betterment of shareholders wealth. There should be an effective system of funds allocation in order to safeguard the banks from the danger of illiquidity. An appropriate level must be achieved between them. The significances of the study are:

1. This study will be helpful to enhance the financial performance of concern organization.
2. This study will be usable and valuable for academicians, students, teachers and practitioners in the field of accounting and finance.

This study enlightens the shareholders, financial agencies, stock exchange, stock

trader, customers, depositors and debtors who can objectively identify the better banks to deal with.

1.6 Limitations of the study

This study involves some limitations. Most of the data were collected from online. The result parts focused only statistical calculations. There are several indicators of liquidity and profitability, but limited indicators are analyzed in this study.

1. Only ten banks were selected as a sample, it has excluded more than a dozen of newer banks limiting its study area.
2. Historical data of only eleven years (i.e., from 2010/11 to 2020/21) have been collected and analyzed.
3. Only limited statistical and financial tools, including simple average, profitability ratio (i.e., ROA) and other five liquidity ratios as well as simple regression models were used for data analysis.

1.7 Chapter plan

The study has been divided into five chapter's viz. introduction, literature review, research methodology, analysis and discussion, summary and conclusion. The first chapter deals with introduction of the study. It includes orientation for readers to know about the basic information of the research area, focus of the study, problems of the study, objectives of the study and need or significance of the study and limitation of the study. The second chapter of the study assures readers that they are familiar with important research that carries out in similar areas. The third chapter deals research methodology which refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objectives in view. The fourth chapter describes about presentation and analysis of data which analysis the data related with study and presents the finding of the study and also comments briefly on them. The fifth chapter is concluded about the performance of the concerned organization for better improvement. Finally, bibliography, appendix and other supporting documents are incorporated at the end of the study.

CHAPTER II

LITERATURE REVIEW

A literature review is a survey of scholarly sources on a specific topic. It provides an overview of current knowledge, which allows identifying relevant theories, methods, and gaps in the existing research. A good literature review doesn't just summarize sources it analyzes, synthesizes, and critically evaluates to give a clear picture of the state of knowledge on the subject. It includes current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. It provides foundation of knowledge on topic. Literature surveys are secondary sources and do not report new or original experimental work. It consists of review of empirical literature and related theories of the research. It is useful in setting the purpose of the study and provides guidelines for determining the variables under study. It enables a researcher to find out about the existing bodies of knowledge on the topic of his/her interest. It helps to find out the areas yet to be studied in the concerned topic and need for additional research.

2.1 Theoretical review

The survival of the business organization is mainly dependent to the liquid assets, cash and the profitability. The theories that are reviewed in this study are: Liquidity and profitability in commercial banks and liquidity management theory in banks.

2.1.1 Liquidity and Profitability in Commercial Banks

The corporate health and efficiency of commercial bank can be determined by proactive parameters such as profitability and liquidity position. The bank plays an intermediary role which collects money from the depositors which are the surplus group and provide the deficit group with the fund from that collected deposits. Thus, banks are also known as financial intermediary unit. This process of bank brings the people together who have excess fund and who need money. Liquidity management is the crucial aspect in implementation of monetary policy (Botoe, 2012). This will aid to economic management and promotes the sustainable economic growth in long run. Banks keeping good mobilization of the monetary and liquid assets and sustainable credit expansion leads to step towards economy's noninflationary potential and liquidity management on time. The well manage form of liquidity and effective mobilization of the resources will always help in maintaining the health of the bank

and gain required profitability Liquidity and profitability are foundations of the organization which are always topic of concern to evaluating the financial position (Olagunju, 2011). The survival of any bank is determined by these issues. The short-term survival is depending upon the liquidity of the bank whereas; growth in profitability will make the survival of banks in long run. As the elementary function of the banks is to collect deposits and lend the credit facility. The banks should maintain the sufficient liquidity to cope the unseen risk. There is a huge risk for the financial institution if neglect in management of liquidity. However, increasing the liquidity adversely affect the profit of the banks. Hence, management and the balance in profitability and liquidity must be the topic of concern for mitigating the risk (Khokhar, 2015).

Liquidity position of bank denotes its ability to fulfill the immediate financial obligations. The bank's obligations comprise loaning, investment, maturity of liabilities and withdrawal of deposits happening in the ordinary course of the Bank actions. Liquidity can be stated as the degree of quickly convertibility asset to cash or near cash assets which can be easily sold at market and liquidated into cash. The two major purposes of working capital management (WCM) are to know about liquidity and profitability of the organization. It demonstrates on timely balancing of assets and liabilities movements. Banks are concerned about the working capital management and profitability position, as liquidity management plays significant role for their management. Inefficiency in maintaining liquidity position denotes the unnecessary use of liquid assets and storing excess of liquid assets which can reduce the ability to invest in productive resources and bearing loss. Thus, the efficient management of liquidity, working capital and profitability are the essential (Eric Kofi Boadi, 2013).

2.1.2 Liquidity Management Theory in Banks

The key goal of a commercial bank is to manage liquidity maintaining the sound health of financial. There are various measurement criteria of banks to control the hazard cause by unmanaged liquidity position (Shiphoo, 2011). However, there are numerous way banks in managing their liquidity risk. The efficient liquidity management theories had been encompassed for organizations to make the performance even (Khokhar, 2015). Liquidity management theories helps to prevent the issues regarding liquidity shortage and also monitor the liquid assets with safety measures. These contending theories include: Commercial Loan Theory, Shift ability

Theory and Anticipated Income and Theory of Liquidity.

2.1.3 The real bills doctrine

The term real bills doctrine was coined by Mints(1945) book, A History of Banking Theory. In 1988, economist James Parthemos, a former senior vice president and director of research at the Federal Reserve Bank of Richmond, wrote for the bank's economic quarterly, this so-called commercial loan theory or real bills doctrine was a basic principle underlying the money functions of the new system. The essential fallacy in the doctrine was that note issue would also vary with the price level as well as the real volume of trade. The doctrine was previously known as the commercial loan theory of banking. The real bills doctrine or the commercial loan theory states that a commercial bank should advance only short term self-liquidating productive loans to business firms. Self-liquidating loans are those which are meant to finance the production, and movement of goods through the successive stages of production, storage, transportation, and distribution. The theory states that when commercial banks make only short term self-liquidating productive loans, the central bank, in turn, should only lend to the banks on the security of such short-term loans. This principle would ensure the proper degree of liquidity for each bank and the proper money supply for the whole economy.

2.1.4 The shift ability theory

The shift ability theory of bank liquidity was propounded by Moulton (1918) who asserted that if the commercial banks maintain a substantial amount of assets that can be shifted on to the other banks for cash without material loss in case of necessity, then there is no need to rely on maturities. According to this view, an asset to be perfectly shift able must be immediately transferable without capital loss when the need for liquidity arises. This theory has certain elements of truth. Banks now accept sound assets which can be shifted on to other banks. Shares and debentures of large companies are accepted as liquid assets along with treasury bills and bills of exchange. This has encouraged term lending by banks.

2.1.5 The anticipated income theory

The anticipated income theory was developed by Prochnow (1949) on the basis of the practice of extending term loans by the United States commercial banks. According to

this theory, regardless of the nature and character of a borrower's business, the bank plans the liquidation of the term loan from the anticipated income of the borrower. A term loan is for a period exceeding one year and extending to less than five years. This theory is superior to the real bill's doctrine and the shift ability theory because it fulfills the three objectives of liquidity, safety and profitability. Liquidity is assured to the bank when the borrower saves and repays the loan regularly in instalments.

2.1.6 The liabilities management theory

This theory was developed in the 1960s. According to this theory, there is no need for banks to grant self-liquidating loans and keep liquid assets because they can borrow reserve money in the money market in case of need. A bank can acquire reserves by creating additional liabilities against it from different sources. These sources include the issuing of time certificates of deposit, borrowing from other commercial banks, borrowing from the central banks, rising of capital funds by issuing shares, and by ploughing back of profits.

2.2 Factors Influencing Bank Profitability

In accordance with the above theories and models, many studies have introduced some useful variables in the profit function of commercial banks to shed light on key factors that make a difference in bank profits. Such studies are not without ambiguity especially with regard to the measurement of the variables and the results reported thereafter. However there is general agreement that bank profitability is a function of internal and external factors. Koch (1995) observed that the performance differences between banks indicate differences in management philosophy as well as differences in the market served. Athanasoglou et al, (2006) concurred and argued that profitability is a function of internal factors that are mainly influenced by a bank's management decisions and policy objectives such as the level of liquidity, provisioning policy, capital adequacy, expense management and bank size, and the external factors related to industrial structural factors such as ownership, market concentration and stock market development and other macroeconomic factors. Though most of the studies on bank profitability are based on developed countries especially the USA and Europe, a couple of studies focusing on developing countries (Flamini et al (2009), Sufian and Chong (2009)) have also used more or less the same variables to study the determinants of bank profitability.

To identify the relevant factors influencing commercial bank profitability in Kenya, this study concentrated on bank specific factors based on the CAMEL framework and market structural factors; ownership and market concentration. CAMEL is a widely used framework for evaluating bank performance. The Central Bank of Kenya also uses the same to evaluate the performance of commercial banks in Kenya. Ownership and Market concentration are chosen because the ownership structure of banks in Kenya has somewhat changed over last decade. More foreign banks have expanded their operations in the country thus changing the structure of the banking industry.

2.2.1 Liquidity Management and its effect on Profitability

Another important decision that the managers of commercial banks take refers to the liquidity management and specifically to the measurement of their needs related to the process of deposits and loans. The importance of liquidity goes beyond the individual bank as a liquidity shortfall at an individual bank can have systemic repercussions. It is argued that when banks hold high liquidity, they do so at the opportunity cost of some investment, which could generate high returns (Kamau, 2009). The trade-offs that generally exist between return and liquidity risk are demonstrated by observing that a shift from short term securities to long term securities or loans raises a bank's return but also increases its liquidity risks and the inverse is true. Thus a high liquidity ratio indicates a less risky and less profitable bank (Hempel et al, 1994). Thus management is faced with the dilemma of liquidity and profitability. Myers and Rajan (1998) emphasized the adverse effect of increased liquidity for financial Institutions stating that, "although more liquid assets increase the ability to raise cash on short-notice, they also reduce management's ability to commit credibly to an investment strategy that protects investors" which, finally, can result in reduction of the "firm's capacity to raise external finance" in some cases (Uzhegova, 2010).

2.2.2 Review of literature on liquidity ratio and (ROA) & (ROE)

A liquidity ratio is a type of financial ratio used to determine a company's ability to pay its short-term debt obligations. The metric helps determine if a company can use its current, or liquid, assets to cover its current liabilities. Three liquidity ratios are commonly used – the current ratio, quick ratio, and cash ratio. In each of the liquidity ratios, the current liabilities amount is placed in the denominator of the equation, and the amount of the liquid assets are placed in the numerator. Liquidity is the ability to

convert assets into cash quickly and cheaply (Al-Tamimi and Obeidat 2013).

Gizaw *et al.* (2015) studied the impact of credit risk on the profitability performance of commercial banks in Ethiopia along with the data of 12 years period. The collected data were then analyzed using descriptive statics and a panel data regression model where the result showed there is an insignificant relationship between LQR and ROA & ROE since the value of the coefficient is -0.0005 whereas other variables like capital adequacy ratio and loan loss provision ratio showed a positive relationship with ROA and ROE.

Mohapatra (2018) conducted a study on the liquidity ratio and profitability of 37 commercial banks in India using the panel data analysis over the period of 14 years i.e. 2005 to 2018. Correlation and regression analyses were performed to examine the relationship among the dependent variables like ROA and ROE and independent variables like net interest margin, management efficiency, NPA, liquidity management, capital strength, operating efficiency, size, GDP, and the monetary policy interest rate. The study focuses also on liquidity management as an independent variable which is measured in terms of cash and cash equivalent and customer deposit. The study shows there exists a positively insignificant relationship between LQR and ROE. Thus the study concludes that the impact of liquidity management is not very large so it can be stated that the profits of Indian banks are not very much affected by the proportion of liquid assets. However, the impact is positive and thus, the availability of liquid assets can be seen as a positive sign for ROE.

2.3 Empirical review

The study will review some of the articles on related subject in order to have the detail analysis and identify the explanatory variables and outcome of variables related to the subject. The summary of major articles on this subject matter along with their major findings is presented in *Table 1*.

Sufian and Kamrudin (2013) investigated the lower needs for external funding, increasing safety for depositors during unstable macroeconomic conditions. On the one extreme, there is a positive relationship between total liquid funds to total deposit ratio and profitability measures. The traditional view of bank profitability suggests that excessively high capitalization is associated with both a decline in risk of equity

and tax subsidy provided by interest deductibility on debt. Therefore, a bank with a high capital to assets ratio might suggest that it is operating with overcautious policies.

Dietrich and Wanzenried (2015) argued that the conventional risk-return hypothesis would thus imply a negative relationship between the cash and bank balance to total deposit ratio, total liquid funds to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability. However, a lower risk should increase a bank's creditworthiness and reduce the funding cost. A high capital adequacy ratio may reduce the risk of the banks, but at the same time they would not benefit from the leverage effect. Though there are two conflicting arguments and empirical evidence, it can be expected that the high liquidity ratios reduce the bank's funding cost and increases profitability, and public confidence, in the overall banking system.

Messai, Gallali and Jouini (2016) found liquidity as sources of funds, more expensive than deposits increased liquidity may increase cost capital of the bank, which needs to establish a higher margin, the mounting pressure on banks to reduce costs encourages them to engage in riskier income generating activities for the larger profitability. In general, we can define liquidity as the ability to invest and finance in increasing assets and meet short term liabilities without any unexpected losses. For efficient organizations managing liquidity will help in the smooth operation of the organization, meet the requirement of cash or quick assets to pay the incurred short-term liabilities.

Sinha and Sharma (2017) analyze business opportunities by investing in various securities and portfolios of risky assets and has more time, and flexibility, to deal with problems arising from expected losses, thereby eventually leading to earning higher profits. The liquidity indication of organization depends upon the relation between cash assets with addition of various assets which can quickly turned into cash and payment to the awaited short-term liabilities. Investment and liquidity are two counterparts of the company. For more earning, more investments are made which may result in less degree of liquidity which may lead to different types of loss penalty. In the case of banks, cash is available from deposit received straight from public, institutions, companies in the form of demand deposits and term deposits.

Table 1

Review of empirical studies

Study	Major findings
Sufian and Kamrudin (2013)	<ul style="list-style-type: none"> Identified positive relationship between total liquid funds to total deposit ratio and profitability measures. Identified negative relationship between the cash and bank balance to total deposit ratio, total liquid funds to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability.
Dietrich and Wanzenried (2015)	<ul style="list-style-type: none"> Observed that the high liquidity ratios reduce the bank's funding cost and increases profitability, and public confidence, in the overall banking system.
Messai, Gallali and Jouini (2016)	<ul style="list-style-type: none"> Identified liquidity as sources of funds, more expensive than deposits increased equity, may increase cost capital of the bank.
Sinha and Sharma (2017).	<ul style="list-style-type: none"> Identified positive, and statistically significant, relationship with ROA suggesting that higher liquidity ratios at larger banks operate at a more efficient level than smaller banks and exploit all economies of scale to reap the higher benefit. Observed and found a positive, but statistically insignificant, relationship of liquidity with ROA, ROE.
Menicucci and Paolucci (2017)	<ul style="list-style-type: none"> Identified high cash and bank balance to total deposit ratio and total liquid fund to current liabilities ratio has a positive impact on the bank's profitability (ROE) because it reduces the funding cost, increases bank's creditworthiness. Identified higher capital with an appropriate institutional environment can drive the investment strategies of larger banks towards more careful lending activities, prudent risk management, and better supervision.
Bitar, Saad and Benlemlin (2017)	<ul style="list-style-type: none"> Identified shareholders will have a greater incentive to monitor management performance and ensure that the bank is efficient. Identified that management might be willing to convey information to the market about its future prospects and capacity to generate profits, which leads to increase bank's profitability.
Saona (2017)	<ul style="list-style-type: none"> Observed highly conservative management might not benefit from market opportunities, triggering lower profitability. Identified the decline rate of return to new incoming shareholders and saver units will reduce the bank's profitability and increase the probability of bankruptcy. Identified liquidity to have an insignificant negative relationship with ROA but an insignificant positive relationship with ROE.
Tan (2018)	<ul style="list-style-type: none"> Observed that large banks could have more serious asymmetric information problems and that the increase in the cost of monitoring the lending activities could reduce bank profitability.
Ahamed (2018)	<ul style="list-style-type: none"> Identified larger banks may have better opportunities for income diversification because they can reach out to new markets and reduce income volatility.
Bitar Pukthuanthong and Walker (2019)	<ul style="list-style-type: none"> Observed that higher liquidity ratios can align the interests of bank shareholders with depositors thereby mitigating agency problems, ultimately decreasing costs, and improving efficiency.
Gwachha (2020)	<ul style="list-style-type: none"> Identified the evidence of the economics of scale theory, negative impact of credit portfolio volume and weak asset quality, and positive impact of greater bank activity diversification with bank profitability measured by ROA.

The question may arise as to whether banks are able to make a larger profit as a result of an increase in the liquidity ratio. There are distinct arguments and empirical evidences on the relationship between liquidity and profitability. First, Larger banks

could benefit from economies of scale and greater diversification, which reduces risk and cost, and increases banks' profitability showed a positive, and statistically significant, relationship with ROA suggesting that higher liquidity ratios at larger banks operate at a more efficient level than smaller banks and exploit all economies of scale to reap the higher benefit.

Menicucci and Paolucci (2017) found a positive, but statistically insignificant, relationship of liquidity with ROA and ROE. The high cash and bank balance to total deposit ratio and total liquid fund to current liabilities ratio has a positive impact on the bank's profitability (ROE) because it reduces the funding cost, increases bank's creditworthiness. The aim of the study was to examine the impact of liquidity on bank's profitability.

Bitar, Saad and Benlemlin (2017) investigated higher capital with an appropriate institutional environment can drive the investment strategies of larger banks towards more careful lending activities, prudent risk management, and better supervision. This results in a better alignment of interests between bank owners and depositors, reducing agency costs and ameliorates bank performance. Shareholders will have a greater incentive to monitor management performance and ensure that the bank is efficient. Specifically, holding buffers capital makes bank owners and bank managers more prudent with regard to their investment choices.

Saona (2017) identified that management might be willing to convey information to the market about its future prospects and capacity to generate profits, which leads to increase bank's profitability. Highly conservative management might not benefit from market opportunities, triggering lower profitability. According to trade-off theory, the greater use of debt, or less equity capital, in the financial statement poses greater interest expenses and raises the probability that the bank will be unable to meet its financial duties; consequently, the declining rate of return to new incoming shareholders and saver units will reduce the bank's profitability and increase the probability of bankruptcy.

Tan (2018) investigated liquidity to have an insignificant negative relationship with ROA but an insignificant positive relationship with ROE. It is argued that large banks could have more serious asymmetric information problems and that the increase in the cost of monitoring the lending activities could reduce bank profitability. A higher value of this ratio indicates lower liquidity, and vice versa. There are conflicting facts

regarding the relationship between the loan to deposit ratio and banks' profitability. On the other side, total liquid funds to total deposit ratio is expected to be positively related to profitability measures such as ROA and ROE because the main sources of income come from the loan assets. A higher volume of deposit collection-and lending it to quality assets-therefore, generate more interest income to the commercial banks. Larger volumes of liquid assets educe the bank's ability to generate interest income.

Ahamed (2018) found that larger banks may have better opportunities for income diversification because they can reach out to new markets and reduce income volatility. Liquidity is an important determinant of bank performance. A lower level of liquidity (higher loan to deposit ratio) is likely to increase the banks' profitability because traditional bank business is mainly concerned with the loan business, and it generates interest income to the commercial banks. But the high volume of loan to deposit ratio can create a liquidity risk and larger non-performing loans to the commercial banks, eventually leading to lower profitability to the commercial banks. In this paper, therefore, we have attempted to establish the relationship of liquidity with profitability measures ROA and ROE in the context of Nepalese banking sectors.

Bitar Pukthuanthong and Walker (2019) investigated on higher liquidity ratios can align the interests of bank shareholders with depositors thereby mitigating agency problems, ultimately decreasing costs, and improving efficiency.

Gwachha (2020) investigated the evidence of the economics of scale theory, negative impact of credit portfolio volume and weak asset quality, and positive impact of greater bank activity diversification with bank profitability measured by ROA.

2.3 Research Gap

The review of above relevant literature has contributed to enhance the fundamental understanding and knowledge, which is required to make this study meaningful and purposeful. The past researchers in measuring the profitability of bank have focused on the limited independent variables, data of only 11 fiscal years and between only ten commercial banks, which are incapable of solving the problems. Actually the profitability of banks is affected by various factors, so in this research majority and importance factor which highly affect the bank's profitability's are taken to systematic analysis and generalization of sample banks. Liquidity and profitability analysis, other financial ratio and correlation variable such a different net profit, total deposit and loan and advances.

As previous research evaluate the profitability of commercial bank in Nepal using the data upto 2020. So those studies might not able to depict the present scenarios of profitability of the commercial bank in Nepal. Similarly no studies try to find out the impact of only bank specific variables on profitability of commercial banks, so under present scenarios, there is dire need to carry out the study of comparative profitability analysis of commercial bank in Nepal Unlike previous researches, it covers six fiscal year's data upto 2021with data of ten sample banks. The result obtained from the different research is providing different results. Thus, this study is conducted to measure profitability based on two variables i.e., return on assets and return on equity. Along with this, the study also focuses on the current state of total liquidity fund to total deposit ratio through the latest data collection of the sampled commercial banks. The latest data of sampled commercial banks have been taken for the study using an econometric method to analyze the data collected.

Further, the research for the analysis of the effect of liquidity on the profitability of commercial banks has not been conducted using the econometric method of data analysis in developing countries like Nepal. Also, the random sampling method of data collection is used where the research fails to evaluate the adequacy of sample size. So, to overcome this gap the study aims at evaluating the adequacy of sample size using the calculation tools developed by Daniel W.W in 1999.

CHAPTER III

RESEARCH METHODOLOGY

The research methods section describes actions to be taken to investigate a research problem and the rationale for the application of specific procedures or techniques used to identify, select, process, and analyze information applied to understanding the problem, thereby, allowing the reader to critically evaluate a study's overall validity and reliability. This section of a research paper answers how was the data collected or generated and how was it analyzed. It may include both present and historical information. It consists of six different sections. First section includes the description of research design under the first sub-topic. Second section is about the population and sample of the research and section three consists of the explanation of nature and sources of data used in the research.

3.1 Research design

The main objectives of this study were to analyze liquidity management of the banks, all the indicators that shows the credit management of the banks were calculated using data obtained will have sample period of ten years spanning from 2010/11 to 2020/21. The study will be based on quantitative descriptive research design depending on the secondary data. Various financial parameters and effective research techniques are employed to evaluate the research. Furthermore, various descriptive as well as analytical techniques will be used. The study will be designed as to give a clear picture of the Bank's financial circumstances with the help of available data with useful suggestions and recommendation. Research design is the specification of methods and procedures for acquiring the information needed. This study will follow analytical research design.

Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables. Unlike in experimental research, the researcher does not control or manipulate any of the variables, but only observes and measures them.

Causal research, also known as explanatory research is conducted in order to identify the extent and nature of cause-and-effect relationships. Causal research can be conducted in order to assess impacts of specific changes on existing norms, various processes etc. Causal studies focus on an analysis of a situation or a specific problem to explain the patterns of relationships between variables. Experiments are the most popular primary data collection methods in studies with causal research design.

Profitability and liquidity are important aspects of financial performance of any business organization. Banks mainly deal with the money of people, so they need liquidity to win trust of depositors at the time they need profitability to continue the business. The main problem is that what kind of empirical relationship exists between liquidity and profitability in case of Nepalese commercial banks. This study aims to analyze the empirical relationship between some profitability indicators and liquidity indicators. In the modern world, research has become an indispensable in all spheres of human activity. Research is fundamentally systematic analysis pursuing facts through objectives certifiable methods in order to ascertain the relationship among them and to deduce extensive principles or laws from them. It is actually a technique of analytically thinking by describing and redesigning problems, articulating hypothesis or recommended solution, gathering, consolidating and estimating data, creating presumptions and concludes with acceptance or rejection of hypothesis.

3.2 Population and sample, and sampling design

There are altogether 27 commercial banks in Nepal. The commercial banks of Nepal can be categorized into two type's namely public sector and private sector. Public sector banks include two old banks Nepal Bank Limited (NBL) and Rastrya Banijya Bank Limited (RBBL) whereas private sector banks comprise remaining banks. Out of total population ten banks are only selected as sample for this study by using judgmental sampling method. By using random sampling method, it is easier to find and analyze the data of liquidity and profitability of commercial banks and the annual reports of 10 commercial banks out of 27 banks. The criteria for selection of judgmental sampling are because it provides real time results, consumes minimum time for execution, allows researchers to communicate directly with the target audiences of their choices and produce desired results. From the annual reports of the banks the relevant data of liquidity and profitability can be easily found so these banks are chosen as sample from 2011 to 2021. Cause of selecting those banks is

more effecting by liquidity position and its impact on various sector like net profit, loan lending procedure, deposit repayment capacity, loan loss provisioning.

Pooled data regression model has been used in the analysis. The technique of pooled data estimation takes care of the problem of heterogeneity in the ten banks selected for the study. The collected panel data were analyzed, using descriptive statistics, Pearson correlation coefficient, and multiple regression models. Therefore, this research employed a descriptive and explanatory research design.

Table 2

List of commercial banks selected for the study

S.N.	Name of Banks	Study period	Observations
1	Nabil Bank Limited	2010/11 - 2020/21	11
2	Nepal Investment Bank Limited	2010/11 – 2020/21	11
3	Standard Chartered Bank Limited	2010/11 - 2020/21	11
4	Himalayan Bank Limited	2010/11 - 2020/21	11
5	Nepal SBI Bank Limited	2010/11 - 2020/21	11
6	Everest Bank Limited	2010/11 – 2020/21	11
7	Machapuchhre Bank Limited	2010/11 – 2020/21	11
8	Kumari Bank Limited	2010/11 – 2020/21	11
9	Laxmi Bank Limited	2010/11 - 2020/21	11
10	Citizens Bank International Ltd.	2010/11 – 2020/21	11
Total			110

Note. From Annual reports of banks

3.3 Nature and sources of data collection

The objective of the research is to explore and describe the liquidity management of commercial bank in Nepal from the research point of view. However, with regard to the availability of the financial information, two samples were identified purposively from the banking sector, which comprise of nineteen among the listed.

Here, the total 27 commercial banks shall constitute the population of the data and two banks under the study constitute the sample under the study. Here ten commercial banks have been selected as sample for the present study. Likewise, financial statements of ten years are selected as samples for the purpose of it.

1. Annual reports of commercial banks.

2. Related articles published in newspapers, journals, magazines, and other publications.
3. Annual reports published by NRB and quarterly economic bulletin.
4. Various related websites: www.nrb.org.np, <http://internet/newsnevents.php>, www.nepalnews.com, <https://scholar.google.com.au/>, www.investopedia.com

3.4 Methods of analysis

Before analyzing the data, the data and information are shown in tables and graphs and later on, they are analyzed and interpret. Various financial, accounting, and statistical tools have been used to obtain the objectives of the study. The study will employ various statistical tools. Following are the statistical tools that will be used:

3.4.1 Descriptive statistics

Descriptive statistics is concerned with measures of central tendency and measures of variability. Measures of central tendency include mean, median, and mode while measures of variability include standard deviation or variance, the minimum and maximum variables.

3.4.1.1 Arithmetic mean

Arithmetic mean or simply a ‘mean’ of asset of observation is the sum of all observations divided by the number of observations. The study will use mean for obtaining results derived from variables like NRBTDR, VTDR, LFTDR, CBTDR, LFTCLR for ROA and ROE in order to find out average of liquidity fund employed for profitability among all sample banks. Arithmetic mean is calculated by using formula.

$$Mean = \frac{\sum fx}{N}$$

Where, $\sum fx$ = Sum of x series

N= Number of years

3.4.1.2 Standard Deviation

Standard deviation is a measure of dispersion of a set of data from its mean. It is calculated as the square root of variance by determining the variation between each point relative to the mean. The study will use standard deviation for obtaining results

derived from variables like NRBTD, VTDR, LFTDR, CBTDR, LFTCLR for ROA and ROE in order to measure risk of liquidity fund employed for profitability among all sample banks.

$$\text{Standard deviation}(S.D) = \sqrt{\frac{\sum d^2}{N}}$$

Where, $d = (X - \bar{X})$

3.4.1.3 Coefficient of variation

Coefficient of variation is the relative measure of measure of dispersion, comparable across distribution, which is defined as the ratio of the standard deviation to the mean expressed in percent. The study will use coefficient of variation for obtaining results derived from variables like NRBTD, VTDR, LFTDR, CBTDR, LFTCLR, ROA and ROE in order to measure variation of liquidity fund employed for profitability among all sample banks. It can be calculated as follows:

$$\text{Coefficient of variation} = \frac{S.D.}{\text{Mean}}$$

3.4.1.4 Correlation analysis

Correlation analysis is the degree of relationship between two variables by using statistical tools. Pearson r correlation is the most widely used correlation statistic to measure the degree of the relationship between linearly related variables. It is developed by Karl Pearson. The study will use correlation analysis for obtaining results derived from variables like NRBTD on ROE, VTDR on ROE, LFTDR on ROE, CBTDR on ROE, LFTCLR on ROE, NRBTD on ROA, VTDR on ROA, LFTDR on ROA, CBTDR on ROA, LFTCLR on ROA in order to measure coefficient of correlation of liquidity fund employed for profitability among all sample banks.

The correlation coefficient can range from -1.00 to +1.00. A value of -1.00 indicates a perfect negative correlation, which means that as the value of one variable increases, the other decreases. While a value of +1.00 represents a perfect positive relationship, meaning that as one variable increases in value, so does the other. As the correlation coefficient value goes towards 0 that represents between variable being tested. The formula used to calculate the Pearson r correlation can be shown below:

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

Where,

n = Number of variables

x = Value of independent variable

y = Value of dependent variable

3.4.1.5 Regression analysis

Simple regression is the relation between mean value of one variable and corresponding value of other variables. The study will use simple regression in order to explore the effect of liquidity on profitability among all simple banks. It is used to find the relationship between two variables. The study will use regression analysis for obtaining results derived from variables like NRBTDR, VTDR, LFTDR, CBTDR, LFTCLR on ROA and ROE in order to determine which factors matter most, which factors can be ignored, and how these factors influence each other of liquidity fund employed for profitability among all sample banks. It is a technique to discover a mathematical relationship between two variables. The equation model is as:

$$ROA_{it} = \beta_0 + \beta_1 CBTDR_{it} + \beta_2 LFTCLR_{it} + \beta_3 LFTDR_{it} + \beta_4 NRBTDR_{it} + \beta_5 VTDR_{it} + e_{it} \dots \dots \dots i$$

$$ROE_{it} = \beta_0 + \beta_1 CBTDR_{it} + \beta_2 LFTCLR_{it} + \beta_3 LFTDR_{it} + \beta_4 NRBTDR_{it} + \beta_5 VTDR_{it} + e_{it} \dots \dots \dots ii$$

Where,

ROA_{it}=Return on assets (ratio of earnings after taxes to total assets) of bank i in year t

ROE_{it}=Return on equity (ratio of net income after tax to shareholder's equity) of bank i in year t

β₀ = the intercept (constant)

β₁CBTDR_{it} = cash and bank balance to total deposit ratio of i th bank in year t

β₂LFTCLR_{it} = total liquid fund to current liabilities ratio of ith bank in year t

β₃LFTDR_{it} = total liquid fund to total deposit ratio of ith bank in year t

β₄NRBTDR_{it} = NRB balance to total deposit ratio of ith bank in year t

β₅VTDR_{it} = cash vault to total deposit ratio of ith bank in year t

e_{it} = error component

3.5 Research framework and definition of variables

The research framework is developed from the review of literature discussed above. It

shows the relationship between the dependent and independent variables.

Where,

ROA= Return on Assets, ROE= Return on Equity, NRBTDR = NRB Balance to Total Deposit Ratio, VTDR = Cash Vault to Total Deposit Ratio, LFTDR = Total Liquid Fund to Total Deposit Ratio, CBTDR = Cash and Bank Balance to Total Deposits Ratio & LFTCLR= Total Liquid Fund to Current Liabilities Ratio. The definition of each variable is presented below.

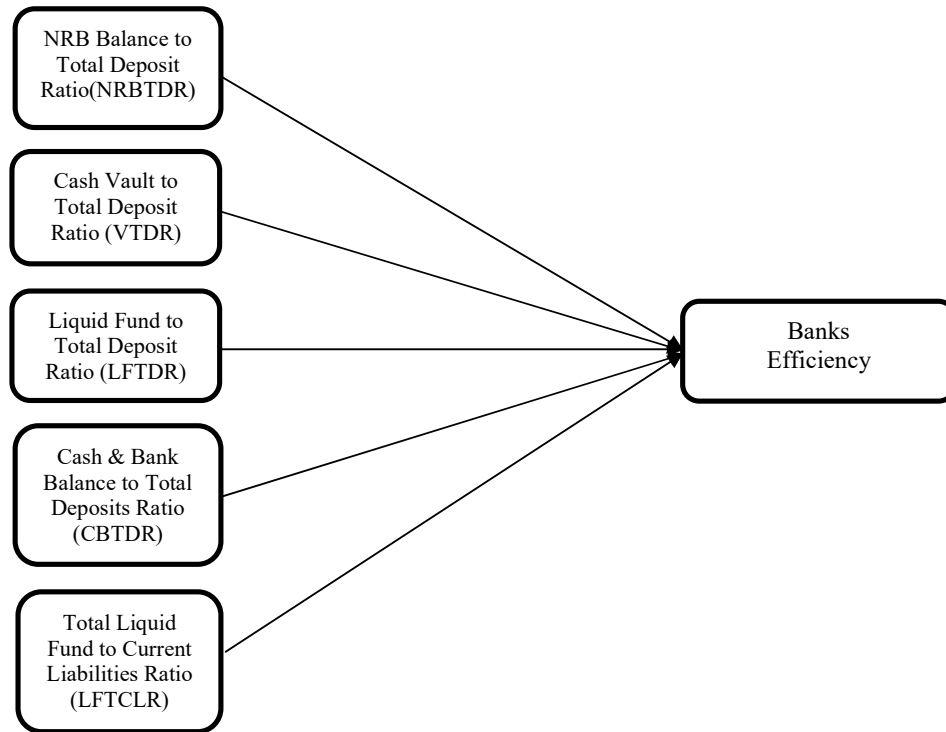


Figure 1. Research framework of the study

The study has used the following financial tools to measure the liquidity position of commercial banks as directed by annual report of NRB. The study uses a panel data while estimating the relationship between determinants of liquidity on profitability of commercial banks in Nepal.

3.5.1 NRB balance to total deposit ratio (NRBTDR)

NRBTDR indicates ratio of the amount deposited in Nepal Rastrya Bank and total deposits collected by the commercial banks. Higher ratio means that there is a high liquidity position in the banks. The formula is set as follows:

$$\text{NRBTDR} = \frac{\text{NRB Balance}}{\text{Total Deposits}}$$

3.5.2 Cash vault to total deposit ratio (VTDR)

VTDR 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. The formula for the ratio is as follows:

$$\text{VTDR} = \frac{\text{Cash Vault}}{\text{Total Deposits}}$$

3.5.3 Total liquid fund to total deposit ratio (LFTDR)

LFTDR 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. The formula is as follows:

$$\text{LFTDR} = \frac{\text{Total Liquid Fund}}{\text{Total Deposits}}$$

3.5.4 Cash and bank balance to total deposits ratio (CBTDR)

CBTDR which 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.

$$\text{CBTDR} = \frac{\text{Cash and Bank Balance}}{\text{Total Deposits}}$$

3.5.5 Total liquid fund to current liabilities ratio (LFTCLR)

LFTCLR indicates that the ratio total liquid fund on current liabilities (Deposits, Bills payables plus 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.

$$\text{LFTCLR} = \frac{\text{Total Liquidity Fund}}{\text{Current Liabilities}}$$

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

In modern world, banks play a very significant role for the growth and development of various sectors such as trade, industry, service, etc. Moreover, banks play a role of financial intermediary, which transfer funds from surplus facing unit to deficit facing units. Profitability is the major reason behind every one to take greater amount of risk and make business successful. The bank profitability is largely determined by liquidity management factor that relate to the internal organization of banking firms.

The study attempts at examining the impact of liquidity management on bank profitability of Nepalese commercial banks. The study is based on secondary data of ten commercial banks for the period of 2010/11 to 2020/21 leading to a total of 110 observations. It employs various statistical tools and techniques to determine the effects of liquidity and profitability in commercial banks of Nepal.

4.1 Analysis of data

Profitability and liquidity positions have been analyzed using statistical as well as financial tools with past eleven years data of sample banks. Analysis of data is shown by deriving the formula of trend analysis. The term "trend analysis" refers to one of the most useful analytical tools employed for financial analysis of statements which compares the movement in each line item across time periods in order to draw actionable insights. It basically indicates the change either in terms of amount or as percentage change year over year. The formula for trend analysis (percentage change) can be derived by dividing the difference between year amount and base year amount. Since average of ten commercial banks of eleven years with 110 observations is used, so trend analysis is drawn by using average of dependent and independent variables.

4.1.1 Trend analysis of ROA

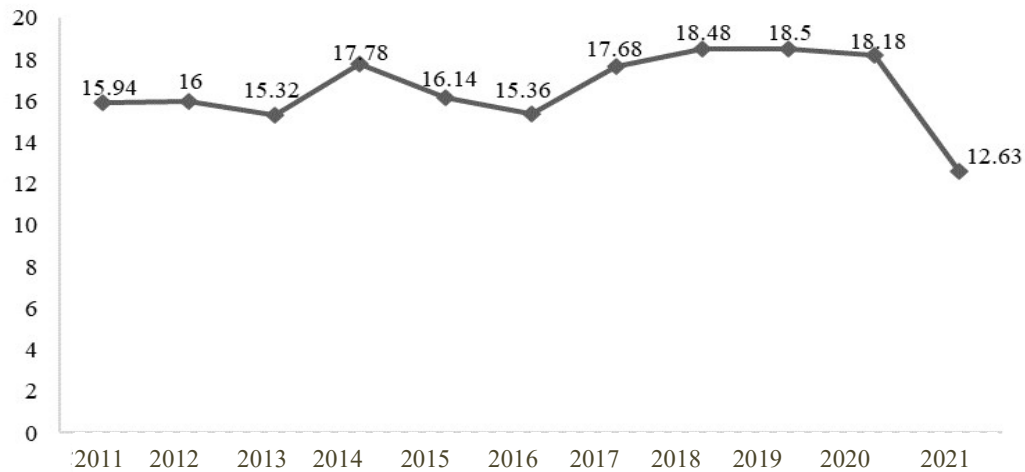


Figure 2. Trend analysis of ROA

The return on assets ratio measures how effectively a company can earn a return on its investment in assets. In other words, ROA shows how efficiently a company can convert the money used to purchase assets into net income or profits. A positive ROA ratio usually indicates an upward profit trend as well. It only makes sense that a higher ratio is more favorable to investors because it shows that the company is more effectively managing its assets to produce greater amounts of net income. Trend analysis of ROA is shown in the *Figure 2*.

The trend analysis of ROA has been shown in *Figure 2* is the percentage of 11 years data with 10 sample commercial banks of Nepal. In the fiscal year 2010/11 ROA is 15.94 percent. Similarly in fiscal year 2011/12 the percentage value of ROA increases in decreasing trend and reaches up to 16 percent. Likewise in fiscal year 2019/20 ROA is 18.50 percent which is at highest and afterwards it starts to decline reaches to 12.63 percent in fiscal year 2020/21 which is lowest. This shows that the value of ROA is at increasing to decreasing trend during the observation period. The decreasing trend of ROA is due to liquidity crises and lower interest rate provided by banks and financial institutions.

4.1.2 Trend analysis of ROE

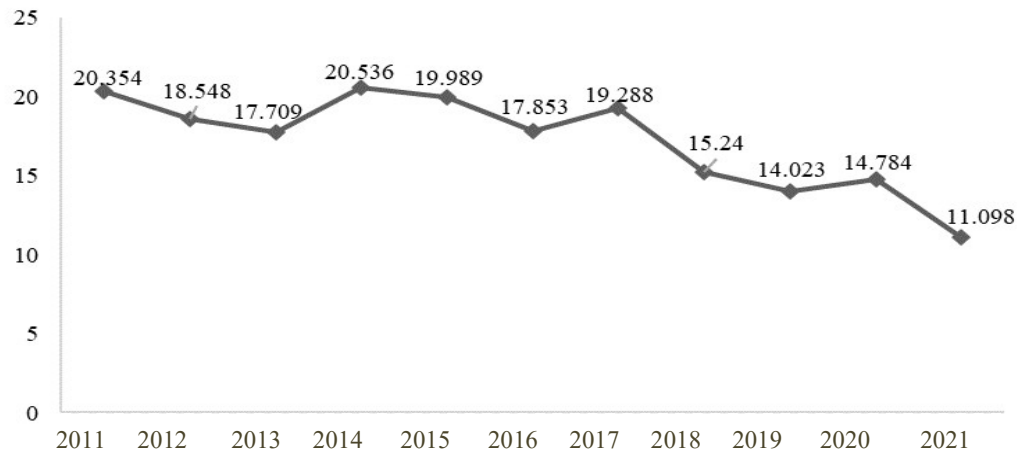


Figure 3. Trend analysis of ROE

Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE could be thought of as the return on net assets. ROE is expressed as a percentage and can be calculated for any company if net income and equity are both positive numbers. The trend analysis of ROE is shown in the Figure 3.

The trend analysis of ROE has been shown in Figure 3 is the percentage of 11 years data with 10 sample commercial bank of Nepal. In fiscal year 2010/11 percentage value of ROE is 20.35 percent. Similarly in fiscal year 2011/12 percentage value of ROE declines to 18.55 percent and then it trends to decrease in increasing trend till 2013/13 reaches to 20.54 ROA which is highest during the period, trends to decline rapidly afterwards and reaches to 11.10 percentage in fiscal year 2020/21 which is lowest. The figure clearly shows that ROE is in decreasing trend which indicates decreasing number of shareholder than previous year.

4.1.3 Trend analysis of NRBTDR

NRBTDR 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. The trend analysis of NRBTDR is shown in the Figure 4.

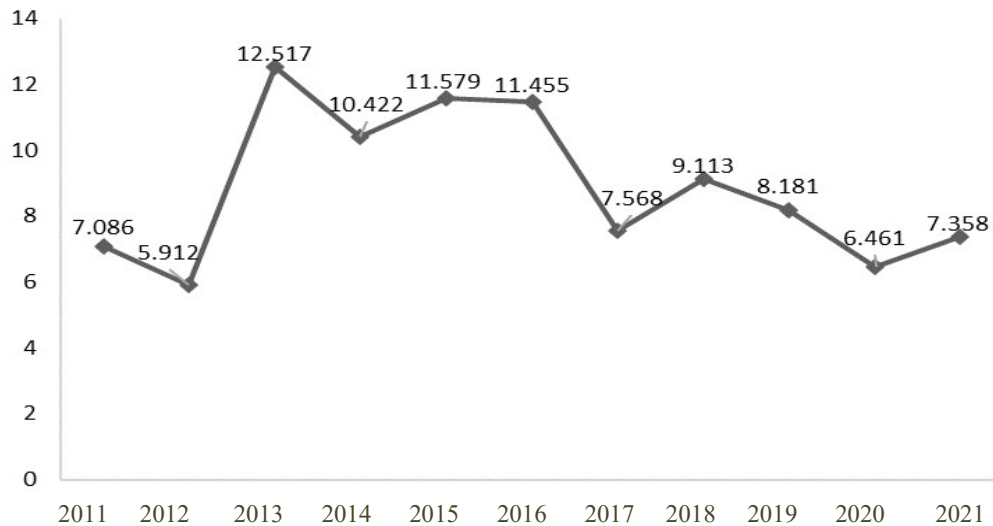


Figure 4. Trend analysis of NRBTDR

The trend analysis of NRBTDR has been shown in *Figure 4* is the average percentage of 11 years data having 10 sample commercial bank of Nepal. *Figure 4* shows that NRBTDR of Nepalese commercial bank is 7.09 percent in fiscal year 2010/11 slightly decreases and increases at increasing trend, reaches up to 12.52 percentage in fiscal year 2013/13 which is highest. Afterwards NRBTDR decreases at increasing trend and reaches to 7.57 percentage in fiscal year 2017/18, then after it increases at decreasing trend and reaches at 7.36 percentage in fiscal year 2020/21. This shows that the NRB balance of commercial banks is highest till fiscal year 2015/16 due to higher interest rate and maximum number of commercial banks till that period. But due to merger of commercial banks and lower interest rates from fiscal year 2016/17 the NRBDTR of Nepalese commercial banks declines.

4.1.4 Trend analysis of VTDR

VTDR 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. The trend analysis of VTDR is shown in *Figure 5*.

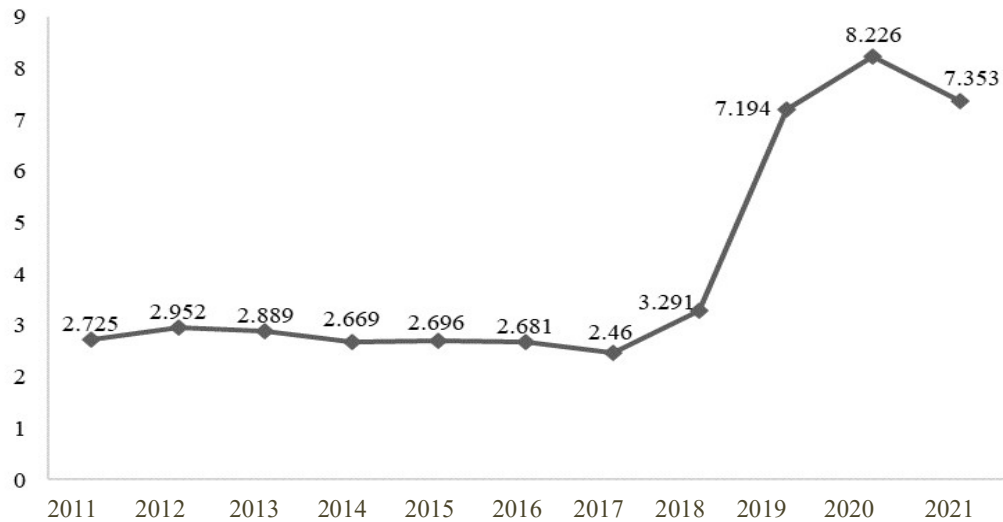


Figure 5. Trend analysis of VTDR

The trend analysis of VTDR has been shown in *Figure 5* is the average percentage of 11 years data having 10 sample commercial banks of Nepal. *Figure 5* shows that VTDR of Nepalese commercial bank is in average rate from fiscal year 2010/11 to 2016/16 which is 2.73 to 2.46 percent respectively. Afterwards in fiscal year 2017/18 percentage value of VTDR rises at 3.29 percent, increases rapidly and reaches up to 8.23 percentage in fiscal year 2019/20 which is highest and declines to 7.35 percentage in fiscal year 2020/21. This shows that cash vault to total deposit ratio is in increasing trend due to increase in financial institutions and lower interest rate in commercial banks.

4.1.5 Trend analysis of LFTDR

LFTDR 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. The trend analysis of LFTDR is shown in *Figure 6*.

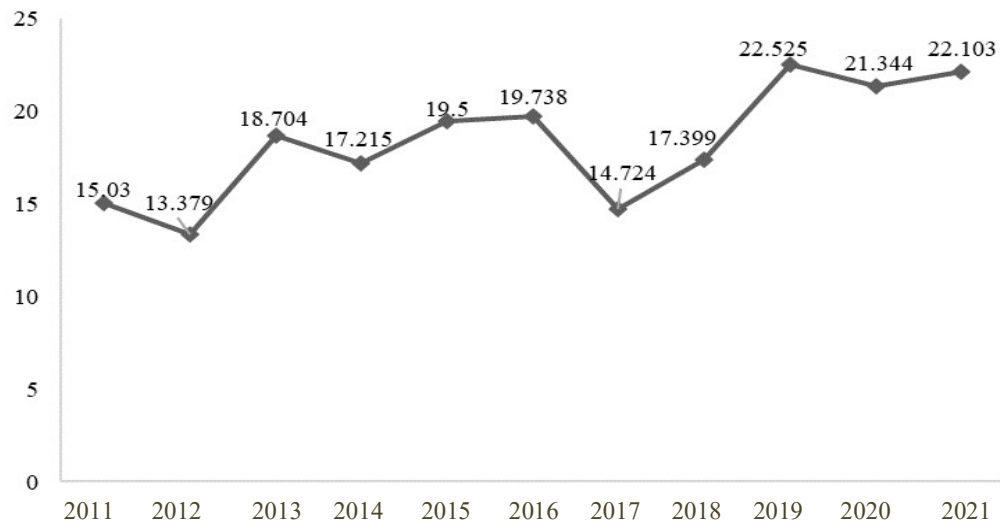


Figure 6. Trend analysis of LFTDR

The trend analysis of LFTDR has been shown in *Figure 6* is the average percentage of 11 years data having 10 sample commercial banks of Nepal. *Figure 4.6* shows that LFTDR of Nepalese commercial bank is 15.03 percentage in fiscal year 2010/11 decreases slightly to 13.38 percentage in fiscal year 2011/11, afterwards it increases at decreasing trend and reaches up to 22.53 percentage in fiscal year 2018/19 which is highest. Then after LFTDR decreases at increasing trend and reaches to 22.10 percentage in fiscal year 2020/21. This show that total liquid fund to total deposit ratio is in increasing trend in context of Nepalese commercial bank.

4.1.6 Trend analysis of CBTDR

CBTDR which 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. The trend analysis of CBTDR is shown in the *Figure 7*.

The trend analysis of CBTDR has been shown in *Figure 7* is the percentage of 10 years data having 10 sample commercial bank of Nepal. *Figure 7* shows that CBTDR of Nepalese commercial bank is 11.97 in fiscal year 2010/11 decreases slightly and increases at increasing trend and reaches up to 17.39 percentage in fiscal year 2012/13 which is highest. Afterwards it decreases at a decreasing rate, reaches to 11.36 percentage in fiscal year 2020/21.

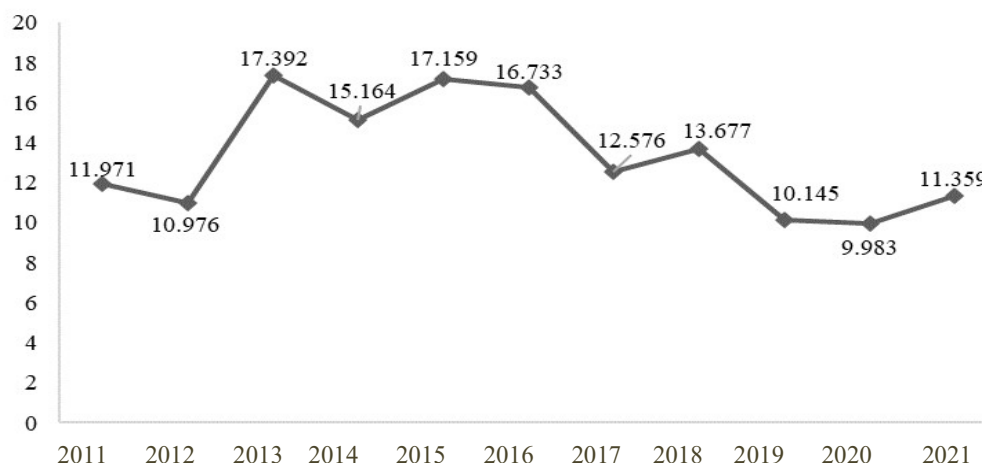


Figure 7. Trend analysis of CBTDR

4.1.7 Trend analysis of LFTCLR

LFTCLR indicates that the ratio total liquid fund on current liabilities (Deposits, Bill's payables plus 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. The trend analysis of LFTCLR is shown in the *Figure 8*.

The trend analysis of LFTCLR has been shown in *Figure 8* is the average percentage of 11 years data having 10 sample commercial banks of Nepal. *Figure 8* show that LFTCLR of Nepalese commercial bank is 14.76 percentage in fiscal year 2010/11, slightly decreases and reaches to 13.12 percentage in fiscal year 2011/12. Afterwards LFTCLR of commercial banks increases at increasing rate and reaches up to 21.35 percentage in fiscal year 2018/19. Then after it declines and reaches to 20.06 percentage in fiscal year 2019/20, after which it increases at an increasing rate and reaches up to 21.34 percentage in fiscal year 2020/21. This shows that total liquid fund to current liabilities ratio is in increasing trend in context of Nepalese commercial bank.

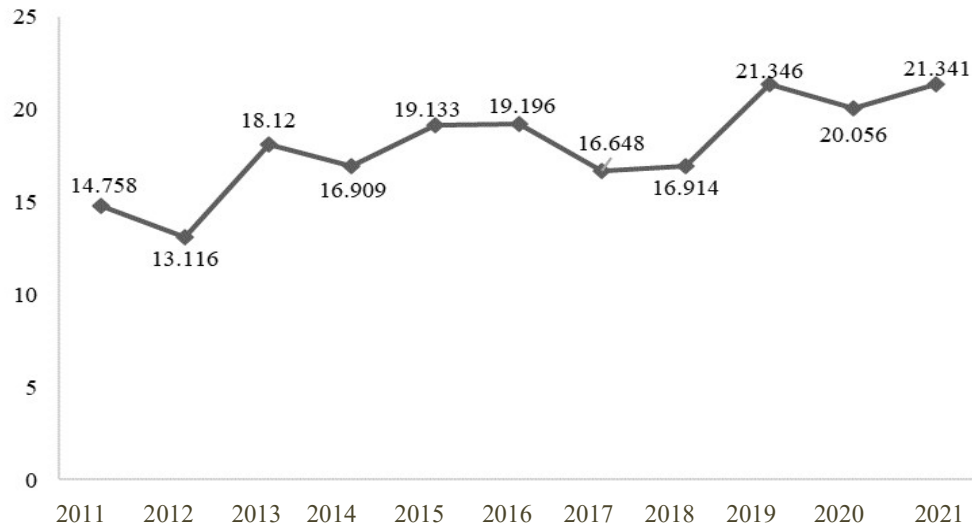


Figure 8. Trend analysis of LFTCLR

4.1.8 Descriptive statistics of the variables

The descriptive statistics of the variables used in the study for the bank specific variables as well as macroeconomic variables have been presented and analyzed in this section of the study. The descriptive statistics used in the study consists of mean, median, standard deviation, number of observations, coefficient of variance, minimum and maximum values which is shown in *Table 3*.

Table 3

Descriptive statistics

Variables	Scale	Observations	Mean	Median	Maximum	Minimum	Std. Dev.	CV
ROA	Percent	110	1.655	1.635	3.030	0.050	0.584	35.32
ROE	Percent	110	17.220	16.115	32.780	0.500	6.950	40.36
CBTDR	Percent	110	13.376	12.435	41.300	2.520	6.315	47.21
LFTCLR	Percent	110	17.958	16.250	46.860	8.670	7.243	40.34
LFTDR	Percent	110	18.333	16.965	47.870	8.870	7.151	39.01
NRBTDR	Percent	110	8.877	8.465	20.610	1.190	4.094	46.12
VTDR	Percent	110	4.103	2.950	13.680	1.210	3.117	75.95

Note. From Annual report of sample banks and results are drawn from e-views9.

The *Table 3* reveals the descriptive status for the whole sample. It is found that mean value for independent variable LFTDR to be highest among other variables with mean 18.333 followed by other independent variable LFTDR with mean value of 17.958, dependent variable ROE 17.220, CBTDR 13.376, NRBTDR 8.877, VTDR 4.103 and ROA 1.655 respectively. Similarly, the mid value for independent variable LFTDR to

be highest among other variables with median 16.965 with maximum value of 47.870 whereas dependent variable ROA has mid value of 1.635 with minimum value of 0.050 which is lowest among other variables.

The standard deviation found to be highest for LFTCLR with 7.243 followed by LFTDR with standard deviation of 7.151, ROE 6.950, NRBTDTR 4.094, VTDR 3.117, and ROA 0.584 percent respectively. Likewise, the coefficient of variance is found to be highest for independent variable VTDR with 75.91 percentage followed by CBTDR 47.21, NRBTDTR 46.12, ROE 40.36, LFTCLR 40.34, LFTDR 39.01, and ROA 35.32 percent respectively. The calculated data clearly shows that the coefficient of variance of VTDR is maximum with minimum standard deviation whereas coefficient of variance of LFTCLR, LFTDR, NRBTDTR, CBTDR and ROA is minimum. So, the independent variables VTDR, LFTCLR, LFTDR, NRBTDTR, CBTDR highly effects on bank's profitability.

4.1.9 Correlation analysis

Table 4

Correlation analysis (ROA) *(n=110)*

		ROA	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
ROA	Pearson Correlation	1					
	Sig. (2-tailed)						
NRBTDR	Pearson Correlation	-.006	1				
	Sig. (2-tailed)	(0.947)					
VTDR	Pearson Correlation	-.279**	-.146	1			
	Sig. (2-tailed)	(0.003)	(0.127)				
LFTDR	Pearson Correlation	.101	.398**	.120	1		
	Sig. (2-tailed)	(0.295)	(0.000)	(0.212)			
CBTDR	Pearson Correlation	-.041	.468**	-.179	.575**	1	
	Sig. (2-tailed)	(0.669)	(0.000)	(0.061)	(0.000)		
LFTCLR	Pearson Correlation	.091	.315**	.076	.943**	.518**	1
	Sig. (2-tailed)	(0.347)	(0.001)	(0.433)	(0.000)	(0.000)	

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

Note. From Annual report of sample banks and results are drawn from SPSS.

The correlation matrix is used to show the relationship between the independent and dependent variables to ensure that there is no strong correlation between them. In an effort to analyze the nature of the correlation between the dependent and the independent variables and also to ascertain whether or not multi-collinearity exists as

a result of the correlation among variables, Pearson correlation analysis have been computed. The correlation matrix that is shown in *Table 4* provides some insights into the independent variables that are significantly correlated to the dependent variable ROA.

Table 4 characterizes the correlation analysis of the variables under the study which is conducted for the whole sample. As shown in the table, the correlation for all samples between ROA and LFTCLR is observed to be positive with correlation coefficient of 0.091. Likewise, the relationship between LFTDR and ROA is also found to be positive with correlation coefficient of 0.101. Contradictory the relationship between ROA and CBTDR, NRBTDTR is found to be negative with correlation coefficient of -0.41 and -0.006 respectively. Likewise, the relationship between ROA and VTDR is also found to be negative and significant at 97 percent confidence level with correlation coefficient of -0.279. The correlation analysis shows that independent variables LFTCLR and LFTDR have positive relationship with ROA but CBTDR, NRBTDTR and VTDR have negative and significant relationship with ROA.

Table 5

Correlation analysis (ROE)

(n=110)

		ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
ROE	Pearson Correlation	1					
	Sig. (2-tailed)						
NRBTDR	Pearson Correlation	.121	1				
	Sig. (2-tailed)	(0.209)					
VTDR	Pearson Correlation	-.457**	-.146	1			
	Sig. (2-tailed)	(0.000)	(0.127)				
LFTDR	Pearson Correlation	-.109	.398**	.120	1		
	Sig. (2-tailed)	(0.255)	(0.000)	(0.212)			
CBTDR	Pearson Correlation	.050	.468**	-.179	.575**	1	
	Sig. (2-tailed)	(0.606)	(0.000)	(0.061)	(0.000)		
LFTCLR	Pearson Correlation	-.122	.315**	.076	.943**	.518**	1
	Sig. (2-tailed)	(0.206)	(0.001)	(0.433)	(0.000)	(0.000)	

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

Note. From Annual report of sample banks and results are drawn from SPSS.

Table 5 characterizes the correlation analysis of the variables under the study which is conducted for the whole sample. As shown in the table, the correlation for sample

between ROE and CBTDR is observed to be positive with correlation coefficient of 0.09. Likewise, the relationship between NRBTDR and ROE is also found to be positive with correlation coefficient of 0.121. Contradictory the relationship between ROE and LFTCLR, LFTDR is found to be negative with correlation coefficient of -0.122 and -0.109 respectively. Likewise, the relationship between ROE and VTDR is also found to be negative and significant at 99 percent confidence level with correlation coefficient of -0.457. The correlation analysis shows that independent variables CBTDR and NRBTDR have positive relationship with ROE but LFTCLR, LFTDR and VTDR have negative and significant relationship with ROE.

4.1.10 Regression analysis

Table 6

Panel regression results of effects on liquidity and profitability on banks efficiency (ROA)

$$ROA_{it} = \beta_0 + \beta_1 CBTDR_{it} + \beta_2 LFTCLR_{it} + \beta_3 LFTDR_{it} + \beta_4 NRBTDR_{it} + \beta_5 VTDR_{it} + e_{it}$$

Variable	Coefficient	Std. Error	t-Statistic	Sig.
Constant	1.906	0.182	10.470	0.000
CBTDR	-0.238	0.124	-1.920	0.058
LFTCLR	-1.044	0.560	-1.864	0.065
LFTDR	1.448	0.597	2.425	0.017
NRBTDR	-0.116	0.117	-0.993	0.323
VTDR	-0.391	0.081	-4.833	0.000
R ² = 0.202		Adj. R ² = 0.164		Log likelihood = -84.054
				F value = 3.859

Note. From Annual reports of sample banks and results are drawn from eviews9.

As depicted in *Table 6*, ROA is used as dependent variable and CBTDR, LFTCLR, LFTDR, NRBTDR and VTDR as independent variables. After introducing all the variables under study, CBTDR, LFTCLR and NRBTDR are positively affected since probability of those variables are 0.058, 0.065, 0.323 which is greater than 0.05.

The value of R² and adjusted R² are 0.202, 0.164 respectively. The overall explanatory power of the regression model is fair with R² of 0.164. This indicates that 16.4% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood - 84.054.

The result indicates that, cash and bank balance to total deposit ratio, total liquid fund

to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio is negative statistically significant. The sign of the coefficient is as usual because theoretically cash and bank balance to total deposit ratio, total liquid fund to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio was expected to have a positive relationship with a bank's profitability (ROA).

Menicucci and Paolucci (2017) also found a positive, but statistically insignificant, relationship of liquidity with ROA and ROE. High cash and bank balance to total deposit ratio and total liquid fund to current liabilities ratio has a positive impact on the bank's profitability (ROE) because it reduces the funding cost, increases bank's creditworthiness. Sinha, P and Sharma, S. (2017) showed a positive, and statistically significant, relationship with ROA suggesting that higher liquidity ratios at larger banks operate at a more efficient level than smaller banks and exploits all economies of scale to reap the higher benefit.

The result is contrary to priori to the findings of Dietrich and Wanzenried (2015) who investigated negative relationship between the cash and bank balance to total deposit ratio, total liquid funds to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability. Likewise, Sufian and Kamrudin (2013) also investigated lower needs for external funding, increasing safety for depositors during unstable macroeconomic conditions having negative relationship between total liquid funds to total deposit ratio and profitability measures.

Table 7

Panel regression results of effects on liquidity and profitability on banks efficiency (ROE)

$$ROE_{it} = \beta_0 + \beta_1 CBTDR_{it} + \beta_2 LFTCLR_{it} + \beta_3 LFTDR_{it} + \beta_4 NRBTD R_{it} + \beta_5 VTDR_{it} + e_{it}$$

Variable	Coefficient	Std. Error	t-Statistic	Sig.
Constat	22.021	2.071	10.634	0.000
CBTDR	-0.252	1.416	-0.178	0.859
LFTCLR	-11.618	6.405	-1.814	0.033
LFTDR	9.798	6.825	1.436	0.154
NRBTDR	0.737	1.332	0.553	0.581
VTDR	-5.108	0.926	-5.518	0.000
$R^2 = 0.263$	Adj. R2 = 0.227	Log likelihood = -352.078	F Value = 6.162	

Note. from Annual reports of sample banks and results are drawn from eviews9.

However, total liquid fund to total deposit ratio has positive and statistically significant on bank's performance at 5% level of significance.

As depicted in *Table 7*, ROE is used as dependent variable and CBTDR, LFTCLR, LFTDR, NRBTD and VTDR as independent variables. After introducing all the variables under study, CBTDR, LFTCLR and NRBTD are positively affected since probability of those variables are 0.859, 0.154 and 0.581 which is greater than 0.05. The value of R^2 and adjusted R^2 are 0.263, 0.227 respectively. The overall explanatory power of the regression model is fair with R^2 of 0.227. This indicates that 22.7% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood - 352.078.

The result indicates that, total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio is negative statistically significant. The sign of the coefficient is as usual because theoretically total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio was expected to have a positive relationship with a bank's profitability (ROE).

Menicucci and Paolucci (2017) also found a positive, but statistically insignificant, relationship of liquidity with ROA and ROE. High cash and bank balance to total deposit ratio and total liquid fund to current liabilities ratio has a positive impact on the bank's profitability (ROE) because it reduces the funding cost, increases bank's creditworthiness. The result is contrary to priori to the findings of Dietrich and Wanzenried (2015) who investigated negative relationship between the total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability.

However, total cash and bank balance to total deposit ratio and total liquid fund to current liabilities ratio has positive and statistically significant on bank's performance at 5% level of significance. The result is contrary to priori to who investigated lower needs for external funding, increasing safety for depositors during unstable macroeconomic conditions having positive relationship between total liquid funds to total deposit ratio and profitability measures. Sinha, P and Sharma, S. (2017) showed a positive, and statistically significant, relationship with ROE suggesting that higher liquidity ratios at larger banks operate at a more efficient level than smaller banks and all economies of scale to reap the higher benefit.

4.2 Major findings

The study of trend analysis shows that the value of ROA is at increasing to decreasing trend during the observation period. The decreasing trend of ROA is due to liquidity crises and lower interest rate provided by banks and financial institutions. Likewise, ROE is in decreasing trend which indicates decreasing number of shareholder than previous year. The trend analysis of NRBTDR shows that the NRB balance of commercial banks is highest till fiscal year 2015/15 due to higher interest rate and maximum number of commercial banks till that period. But due to merger of commercial banks and lower interest rates from fiscal year 2016/16 the NRBDTR of Nepalese commercial banks declines. Similarly, cash vault to total deposit ratio is in increasing trend due to increase in financial institutions and higher interest rate in commercial banks. The trend analysis of total liquid fund to total deposit ratio shows that total liquid fund to total deposit ratio is in increasing trend in context of Nepalese commercial bank. The result drawn from cash and bank balance to total deposit ratio shows that it is in increasing trend till fiscal year 2020/20 but due to lower supply and increasing interest rate cash and bank balance to total deposit ratio is not increasing rapidly. The trend analysis of total liquid fund to current liabilities ratio is in increasing trend in context of Nepalese commercial bank due to assessable cash and bank balance.

The result drawn from descriptive analysis shows that the coefficient of variance of VTDR is maximum with minimum standard deviation whereas coefficient of variance of LFTCLR, LFTDR, NRBTDR, CBTDR and ROA is minimum. So, the independent variables VTDR, LFTCLR, LFTDR, NRBTDR, CBTDR highly effects on bank's profitability. The finding is similar to that of Sufian and Kamrudin (2013), Dietrich and Wanzenried (2015).

The correlation analysis shows that independent variables LFTCLR and LFTDR have positive relationship with ROA but CBTDR, NRBTDR and VTDR have negative and significant relationship with ROA. This result indicates that increase in LFTCLR trends to increase ROA and decrease in LFTCLR decreases ROA. Likewise increase in LFTDR increases ROA and decrease in LFTDR decreases ROA. Contradictory increase in CBTDR, NRBTDR and VTDR decreases ROA and decrease in CBTDR, NRBTDR and VTDR increases ROA. On the other hand, correlation analysis shows that independent variables CBTDR and NRBTDR have positive relationship with

ROE but LFTCLR, LFTDR and VTDR have negative and significant relationship with ROE. The result shows that increase in CBTDR, NRBTDOR increases ROE, decrease in CBTDR, NRBTDOR decreases ROE. Contradictory, increase in LFTCLR, LFTDR and VTDR decreases ROE, decrease in LFTCLR, LFTDR and VTDR increases ROE. The finding is similar to that of Messai, Gallali and Jouini (2016).

The regression result of ROA with other independent variables shows that indicates that, cash and bank balance to total deposit ratio, total liquid fund to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio is negative statistically significant. The sign of the coefficient is as usual because theoretically cash and bank balance to total deposit ratio, total liquid fund to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio was expected to have a positive relationship with a bank's profitability (ROA). The result is similar to the finding of Menicucci and Paolucci (2017), Sinha and Sharma (2017) contrary to the finding of Dietrich and Wanzenried (2015), Sufian and Kamrudin (2013) who investigated negative relationship between the cash and bank balance to total deposit ratio, total liquid funds to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability. Likewise, the regression result of ROE with other independent variables shows that total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio is negative statistically significant. The sign of the coefficient is as usual because theoretically total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio was expected to have a positive relationship with a bank's profitability (ROE). The result is similar to the finding of Menicucci and Paolucci (2017), Sinha and Sharma (2017) contrary to the finding of Dietrich and Wanzenried (2015), Sufian and Kamrudin (2013) who investigated negative relationship between the cash and bank balance to total deposit ratio, total liquid funds to current liabilities ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio and bank profitability.

Therefore, correlation analysis concluded that bank profitability measured by ROA can significantly be influenced by capital base, off- balance sheet activities, growth rate of real GDP and inflation rate whereas the profitability measured can be significantly affected by size of the bank, loan, deposit and absolute number of branches. The result of this study could not verify the evidence of the economies of

scale theory, negative impact of credit portfolio volume and weak asset quality, and positive impact of greater bank activity diversification with bank profitability measured by ROA found by the study of Gwachha (2020) in Nepalese banking.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Commercial banks are major financial institutions, which occupy quite an important place in the framework of every economy because they provide capital for the development of industry trade and business and other resources deflect sectors investing the saving collected as deposit commercial banks, by playing active role have changed the economic structure of the world. Commercial banks have its own role and contribution in the economic development; it maintains economic confidence of various segments and extends credit to people. The income and profit of the bank depends upon its lending procedure, lending policy and investment of its fund utilize in different securities. The various studies on this topic based on the review, appropriate variables were selected to be included in the analysis. Each of the variables was then defined and the rationale of choosing them was put forward. However, dependent variables indicating profitability of commercial banks, ROA and ROE were selected as these were the most popular variables in the literature and independent variables include: CBTDR, LFTCLR, LFTDR, NRBTD and VTDR representing liquidity of efficiency.

The study is totally based on secondary sources of data and required data have been collected by using various published and unpublished sources. There are 27 commercial banks have been operating in Nepal which are considered to be the population of the study and out of them ten commercial banks have been taken for the period 2010/11 to 2020/21 as a sample of the study and the collected data have been analyzed by panel data analyses with various financial tools and statistical tools like arithmetic mean, standard deviation, correlation coefficient, regression analysis and trend analysis. For the analysis of data, descriptive statistics, correlation analysis, regression analysis, robustness test has been applied to estimate the relationship between dependent variables and independent variables with the use of e-views9. Based on the analysis of data, the major findings of the study are summarized as follows:

1. The data from trend analysis shows that liquidity ratios NRB balance to total deposit ratio, cash vault to total deposit ratio, liquid fund to total deposit ratio,

cash and bank balance to total deposit ratio and total liquid fund to current liability ratio are in increasing trend till 2019/20, profitability ratios return on assets and return on equity also increases fiscal year 2019/20 but due to lower lower interest rates deposit ratios decline which decreases profitability ratios of commercial banks during fiscal year 2020/21.

2. The descriptive data shows that standard deviation found to be highest for LFTCLR with 7.243 followed by LFTDR with standard deviation of 7.151, ROE 6.950, NRBTD 4.094, VTDR 3.117, and ROA 0.584 percent respectively. Likewise, the coefficient of variance is found to be highest for independent variable VTDR with 75.91 percentage followed by CBTDR 47.21, NRBTD 46.12, ROE 40.36, LFTCLR 40.34, LFTDR 39.01, and ROA 35.32 percent respectively. The calculated data clearly shows that the coefficient of variance of VTDR is maximum with minimum standard deviation whereas coefficient of variance of LFTCLR, LFTDR, NRBTD, CBTDR and ROA is minimum. So, the independent variables VTDR, LFTCLR, LFTDR, NRBTD, CBTDR highly effects on bank's profitability.
3. The data from correlation analysis shows that independent variables NRBTD and ROA have no significant relationship with ROA as p value is 0.947, likewise LFTDR, CBTDR and LFTCLR also have no significant relationship with ROA as p value is 0.295, 0.669, 0.347 respectively. Likewise, NRBTD, LFTDR, CBTDR, LFTCLR have no significant relationship with ROE as p value is 0.209, 0.255, 0.606 and 0.206 respectively.
4. The result drawn from the regression analysis shows that CBTDR, LFTCLR and NRBTD with ROA are positively affected since probability of those variables are 0.058, 0.065, 0.323 which is greater than 0.05. The value of R^2 and adjusted R^2 are 0.202, 0.164 respectively. The overall explanatory power of the regression model is fair with R^2 of 0.164. This indicates that 16.4% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood - 84.054. Likewise, the regression analysis of ROE with other independent variables CBTDR, LFTCLR and NRBTD are positively affected since

probability of those variables are 0.859, 0.154 and 0.581 which is greater than 0.05. The value of R^2 and adjusted R^2 are 0.263, 0.227 respectively. The overall explanatory power of the regression model is fair with R^2 of 0.227. This indicates that 22.7% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood -352.078.

5.2 Conclusion

The main objective of the study is to identify how liquidity impact on the profitability of commercial banks of Nepal. This study concludes that cash and bank balance to total deposit ratio, total liquid fund to current liabilities ratio, total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio are the major indicator of efficiency of Nepalese commercial banks.

The result from correlation analysis shows that independent variables NRBTDTR and ROA have no significant relationship with ROA as p value is 0.947, likewise LFTDTR, CBTDR and LFTCLR also have no significant relationship with ROA as p value is 0.295, 0.669, 0.347 respectively. Likewise, NRBTDTR, LFTDTR, CBTDR, LFTCLR have no significant relationship with ROE as p value is 0.209, 0.255, 0.606 and 0.206 respectively.

The result drawn from the regression analysis shows that CBTDR, LFTCLR and NRBTDTR with ROA are positively affected since probability of those variables are 0.058, 0.065, 0.323 which is greater than 0.05. The value of R^2 and adjusted R^2 are 0.202, 0.164 respectively. The overall explanatory power of the regression model is fair with R^2 of 0.164. This indicates that 16.4% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood -84.054. Likewise, the regression analysis of ROE with other independent variables CBTDR, LFTCLR and NRBTDTR are positively affected since probability of those variables are 0.859, 0.154 and 0.581 which is greater than 0.05. The value of R^2 and adjusted R^2 are 0.263, 0.227 respectively. The overall explanatory power of the regression model is fair with R^2 of

0.227. This indicates that 22.7% of the variation in liquidity position can be explained by the variation in the explanatory variables. The p-value for F statistics in the model represent that the model is fairly fitted well statistically. The independent variables chosen for the model are best suited for regression analysis. From F Table the value of F (5, 99) is so log likelihood -352.078.

5.3 Recommendation

The main objective of the study is to identify how liquidity and profitability impacts on the efficiency of commercial banks of Nepal. This study concludes that cash and bank balance to total deposit ratio, total liquid fund to current liabilities ratio, total liquid fund to total deposit ratio, NRB balance to total deposit ratio and cash vault to total deposit ratio are the main indicators which effect on efficiency of Nepalese commercial banks.

As the findings of the study have revealed liquidity management has a significant contribution to bank profitability. It is recommended for banks to emphasize more on liquidity management. In general, banks need to maintain an optimum level of CBTDR (or as per regulatory requirement) so that they will not have difficulty in meeting their financial obligations, protect their depositor's investment and thus promotes the stability of the financial system.

The study further recommends for banks to control and monitor NRBTDR, and keep the level of NRBTDR as low as possible by emphasizing more on the ability to pay back before credit approvals are given, a practice that will enable banks to achieve higher profitability. Also, banks need to emphasize on coverage ratio, meaning that banks monitor all the factors related to total liquidity fund to current liabilities ratio as it affects bank profitability.

Further, the banks are recommended not to be highly financed by debt as higher financial leverage will increase liabilities resulting negative effect on financial performance. It is also recommended to balance the bank's capital between shareholder's equity and debt in financing its operations.

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ANNEXTURE

Annex 1

Data of banks selected for the study

Standard Chartered Bank Nepal Limited. (SCBN)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	2.7	32.22	2.33	1.45	10.23	5.48	9.98
2012	2.55	30.49	4.31	1.61	19.1	7.83	18.62
2013	2.8	28.36	13.44	1.42	23.61	17.7	23.06
2014	2.67	26.38	11.63	1.74	23.85	16.23	23.38
2015	2.51	26.29	14.82	1.33	37.04	19.85	36.19
2016	1.99	21.65	16.25	1.37	41.1	16.08	40.22
2017	1.98	17.15	2.72	1.43	18.02	3.71	41.23
2018	1.84	11.99	11.07	1.27	33.74	9.98	32.99
2019	2.64	15.71	5.94	1.37	46.03	32.88	44.9
2020	2.61	16.34	3.24	1.21	33.05	16.67	32.17
2021	1.71	13.13	2.09	1.24	47.87	41.3	46.86

Note. From Annual reports of sample banks and excel software

Annex 2

Nepal SBI Bank Limited. (NSBI)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	1.03	16.05	5.28	2.34	9.86	9.86	9.74
2012	1.01	16.19	5.5	2.38	11.5	11.5	11.37
2013	0.83	15.02	6.13	2.23	10.66	10.33	10.5
2014	1.19	20.31	8.41	2.1	13.33	13.09	13.08
2015	1.51	20.35	7.14	2.8	12.21	12.21	12.02
2016	1.8	18.87	9.03	3.4	16.34	16.34	16.04
2017	1.7	19.25	9.86	2.76	15.93	15.93	15.68
2018	1.53	14.65	9.05	2.46	16.37	16.37	15.94
2019	1.97	15.81	6.7	12.44	19.17	12.44	18.56
2020	1.94	16.2	9.51	8.42	18.07	8.42	17.5
2021	1.17	10.44	6.86	13.68	20.59	13.68	19.65

Note. From Annual reports of sample banks and excel software

Annex 3

Nepal Investment Bank Limited. (NIBL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	2.21	27.66	6.46	3.05	13.61	13.61	13.37
2012	2.02	22.85	8.00	3.43	16.24	16.24	15.88
2013	1.58	17.14	14.91	3.44	21.06	20.70	20.73
2014	2.62	27.34	14.02	3.48	21.66	21.23	21.10
2015	2.25	24.5	17.14	2.94	22.99	22.68	22.42
2016	1.88	19.95	9.92	2.94	15.79	15.79	15.45
2017	1.97	15.67	7.15	2.10	12.13	11.99	11.96
2018	2.06	16.65	9.06	1.97	14.27	14.24	14.01
2019	2.13	14.69	9.02	7.18	23.05	7.18	22.20
2020	1.79	12.98	7.27	9.05	22.30	9.05	21.40
2021	1.19	8.9	8.61	4.53	18.01	4.53	17.38

Note. From Annual reports of sample banks and excel software

Annex 4

Nabil Bank Limited (NABIL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	2.18	29.66	1.19	1.37	9.75	3.02	9.52
2012	2.30	29.29	2.97	1.50	9.86	4.96	9.59
2013	2.68	30.25	6.69	1.91	9.27	7.77	9.07
2014	3.03	32.78	7.53	1.79	11.82	9.25	11.53
2015	2.66	27.97	9.38	1.95	14.23	13.26	13.77
2016	1.81	22.73	12.46	1.75	15.66	15.35	15.41
2017	2.21	25.61	5.28	1.49	10.05	9.52	9.83
2018	2.57	26.65	8.64	1.38	11.01	11.12	10.78
2019	2.61	20.94	5.47	5.90	18.9	5.90	14.39
2020	2.11	17.76	3.80	7.66	18.26	7.66	12.94
2021	1.58	13.61	10.49	2.52	18.37	2.52	17.95

Note. From Annual reports of sample banks and excel software

Annex 5

Machhapuchhre Bank Limited (MBL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	0.35	4.13	5.91	5.66	16.84	13.27	16.64
2012	0.05	0.5	6.55	5.3	15.33	13.45	15.18
2013	0.16	1.44	14.3	6.06	25.24	25.24	25.05
2014	0.49	5.31	10.8	5.61	18.59	18.59	18.38
2015	1.12	14.05	8.52	4.71	17.63	17.63	17.47
2016	1.26	16.15	10.44	4.74	18.97	18.97	18.75
2017	1.51	16.82	7.28	4.03	15.29	15.29	15.14
2018	1.89	15.86	9.32	3.35	16.5	16.5	16.22
2019	1.47	12.07	9.98	3.32	15.26	3.32	14.99
2020	1.61	15.1	3.79	11.08	17.09	11.08	16.39
2021	1.02	10.92	4.37	9.39	14.11	9.39	13.27

Note. From Annual reports of sample banks and excel software

Annex 6

Laxmi Bank Limited (LAXMI)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	1.56	17.1	6.75	1.35	15.18	10.18	14.94
2012	1.74	17.75	10.20	1.95	15.44	15.60	14.93
2013	1.37	15.61	16.84	1.79	22.37	19.48	22.04
2014	1.41	15.56	11.06	1.38	15.06	13.35	14.84
2015	1.36	15.16	14.18	1.65	19.79	17.43	19.54
2016	0.92	10.04	9.86	1.72	14.04	12.34	13.88
2017	1.24	11.99	7.81	2.14	11.39	11.32	11.28
2018	1.43	10.50	6.90	2.31	10.54	10.34	10.41
2019	1.46	10.59	5.27	9.65	15.01	9.65	14.79
2020	1.49	12.57	5.98	12.98	25.36	12.98	25.08
2021	1.10	10.10	9.60	9.58	25.52	9.58	24.76

Note. From Annual reports of sample banks and excel software

Annex 7

Kumari Bank Limited (KBL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	1.54	17.73	9.55	3.29	16.31	15.63	16.02
2012	1.23	11.35	3.10	3.09	9.54	6.88	9.41
2013	1.10	11.61	13.02	2.66	18.39	16.93	18.19
2014	1.03	10.95	10.02	2.52	16.43	13.46	16.28
2015	1.10	8.67	13.89	2.82	19.59	17.75	19.42
2016	1.06	10.6	10.02	2.48	16.24	14.93	16.11
2017	1.69	14.71	8.18	2.27	16.1	11.89	15.93
2018	1.70	8.54	9.76	11.41	26.67	14.89	26.27
2019	1.27	9.85	10.3	9.93	23.39	7.93	22.90
2020	1.17	10.49	4.89	12.05	25.47	12.05	25.10
2021	0.76	6.71	4.99	7.85	19.94	7.85	19.21

Note. From Annual reports of sample banks and excel software

Annex 8

Himalayan Bank Limited (HBL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	1.19	14.02	6.93	1.37	18.49	10.28	18.02
2012	1.91	22.35	3.40	1.54	9.04	7.24	8.83
2013	1.73	20.7	8.34	1.99	13.88	13.33	13.55
2014	1.51	17.81	4.57	1.63	10.76	6.87	10.50
2015	1.28	15.77	5.82	1.72	8.87	8.57	8.67
2016	1.31	15.98	7.99	1.83	12.85	11.41	12.6
2017	1.90	21.94	6.50	1.72	10.71	9.02	10.47
2018	2.09	18.61	6.61	1.68	9.60	9.60	9.40
2019	1.58	13.27	6.65	5.13	18.62	5.13	18.13
2020	2.04	17.28	4.46	4.26	13.62	6.37	13.51
2021	1.66	14.71	9.91	5.77	20.83	5.77	19.86

Note. From Annual reports of sample banks and excel software

Annex 9

Everest Bank Limited (EBL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	2.01	30.17	15.23	2.96	21.17	21.17	20.77
2012	2.01	25.58	11.44	2.55	14.89	14.89	14.67
2013	1.95	27.15	16.32	3.40	20.72	20.72	17.37
2014	2.24	31.52	14.22	2.99	19.43	19.43	18.95
2015	2.20	29.04	15.21	3.30	21.21	21.21	20.71
2016	1.59	23.25	20.61	2.49	30.23	30.23	27.58
2017	1.52	20.61	14.25	2.68	24.66	24.66	22.19
2018	1.72	17.50	15.33	3.22	22.49	22.49	20.61
2019	1.78	16.08	16.40	8.71	27.96	8.71	25.30
2020	1.80	17.41	17.99	5.99	25.55	5.99	22.20
2021	1.36	13.53	13.91	6.72	22.82	6.72	19.85

Note. From Annual reports of sample banks and excel software

Annex 10

Citizens Bank International Limited (CZBIL)

Fiscal Year	ROA	ROE	NRBTDR	VTDR	LFTDR	CBTDR	LFTCLR
2011	1.17	14.8	11.23	4.41	18.86	17.21	18.58
2012	1.18	9.13	3.65	6.17	12.85	11.17	12.68
2013	1.12	9.81	15.18	3.99	21.84	21.72	21.64
2014	1.59	17.4	11.96	3.45	21.22	20.14	21.05
2015	0.15	18.09	9.69	3.74	21.44	21.00	21.12
2016	1.74	19.31	7.97	4.09	16.16	15.89	15.92
2017	1.96	29.13	6.65	3.98	12.96	12.43	12.77
2018	1.65	11.45	5.39	3.86	12.8	11.24	12.51
2019	1.59	11.22	6.08	8.31	17.86	8.31	17.3
2020	1.62	11.71	3.68	9.56	14.67	9.56	14.27
2021	1.08	8.93	2.75	12.25	12.97	12.25	14.62

Note. From Annual reports of sample banks and excel software

Annex 11

Result of hypothesis test

Hypothesis	Results	Tools	Significance level
H0 ₁ : There is no significant relationship between NRBTD and ROA of commercial banks.	Accepted	Correlation Analysis	
H0 ₂ : There is no significant relationship between VTDR and ROA of commercial banks.	Rejected	Correlation Analysis	0.01
H0 ₃ : There is no significant relationship between LFTDR and ROA of commercial banks.	Accepted	Correlation Analysis	
H0 ₄ : There is no significant relationship between CBTDR and ROA of commercial banks.	Accepted	Correlation Analysis	
H0 ₅ : There is no significant relationship between LFTCLR and ROA of commercial banks.	Accepted	Correlation Analysis	
H0 ₆ : There is no significant relationship between NRBTD and ROE of commercial banks.	Accepted	Correlation Analysis	
H0 ₇ : There is no significant relationship between VTDR and ROE of commercial banks.	Rejected	Correlation Analysis	0.01
H0 ₈ : There is no significant relationship between LFTDR and ROE of commercial banks.	Accepted	Correlation Analysis	
H0 ₉ : There is no significant relationship between CBTDR and ROE of commercial banks.	Accepted	Correlation Analysis	
H0 ₁₀ : There is no significant relationship between LFTCLR and ROE of commercial banks.	Accepted	Correlation Analysis	
H0 ₁₁ : There is no significant effect between NRBTD and ROA of commercial banks.	Accepted	Regression	
H0 ₁₂ : There is no significant effect between VTDR and ROA of commercial banks.	Rejected	Regression	0.01
H0 ₁₃ : There is no significant effect between LFTDR and ROA of commercial banks.	Rejected	Regression	0.10
H0 ₁₄ : There is no significant effect between CBTDR and ROA of commercial banks.	Rejected	Regression	0.10
H0 ₁₅ : There is no significant effect between LFTDR and ROA of commercial banks.	Rejected	Regression	0.05
H0 ₁₆ : There is no significant effect between NRBTD and ROE of commercial banks.	Accepted	Regression	
H0 ₁₇ : There is no significant effect between VTDR and ROE of commercial banks.	Rejected	Regression	0.01
H0 ₁₈ : There is no significant effect between LFTDR and ROE of commercial banks.	Accepted	Regression	
H0 ₁₉ : There is no significant effect between CBTDR and ROE of commercial banks.	Accepted	Regression	
H0 ₂₀ : There is no significant effect between LFTCLR and ROE of commercial banks.	Accepted	Regression	0.05