

CHAPTER I

INTRODUCTION

1.1 Background of the study

Banking system plays an important role in the economic development of a country. Nepal, as a least developed country, is no exception to this. In Nepal, the banking sector dominates the financial sector and the macro-economic management largely depends on the performance of the banking sector. The banking institutions offer an efficient institutional mechanism through which resources can be mobilized and directed from less essential uses to more productive investments (Wilner, 2000).

Some of the major corporate goals include the need to maximize profit, maintain high level of liquidity, and attain the highest level of owner's net worth. Bank is very old institution that is contributing toward the development of any economy and it's treated as an important service industry in modern world.

Nowadays the function of bank is not limited to with the same geographical limit of any country. It is an important source of financing for most businesses. The common assumption, which underpins much of the financial performance research and discussions, is that increasing financial performance will lead to improved functions and activities of the organization. The financial performance of companies is globally as subject that have attracted a lot of attention, comments and interests from both financial experts, researchers, the generally including public and the private management of banks entities. The Financial performance of a firm can be analyzed in terms of profitability, dividend growth, sales turnover, and return on investments among others. However, there is still debate among several disciplines regarding how the performance of firms should be measured and the factors that affect financial performance of companies (Liargovas, 2008).

Basel Committee on Banking Supervision (2008) defined liquidity as the ability of a bank to fund increase in assets and meet its obligations as they come due without incurring unacceptable losses. Hence, liquidity risk arises from the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans.

The study sought to assess effects of liquidity risk on financial performance of development banks in Nepal. The importance of liquidity management is increasing day by day as it affects corporate profitability (Eljelly, 2004). A firm should ensure that it does not suffer from liquidity to meet its short-term compulsions. A study on liquidity is of major importance to both the internal and the external analysts because of its close relationship with day-to-day operations of a business (Bhunja, 2012). The primary role of liquidity management is to assess the needs for funds to meet obligations and ensure the availability of cash or collateral (Premalatha, 2015). 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. Thus, liquidity is lifeblood of a banking system (Cucinelli, 2013).

Goodhart (2008) inferred, there are two basic facet of liquidity risk. These are maturity transformation which is the maturity of a bank's liabilities and assets and the inherent liquidity of a bank's asset described as the extent to which an asset can be sold without incurring a significant loss of value under any market condition. Banks do not need to be worried about the maturity transformation if they have the assets that can be sold without bearing any loss. Whereas, banks having assets that are going to be matured in a shorter period may have a less need to keep the liquid assets (Ahmed, 2015).

Liquidity risk may arise due to liquidity mismatch which is measured in terms of liquidity gap. Liquidity gap is described as the of difference between a bank's assets and a bank's liabilities (Falconer, 2001; Plochan, 2007). This gap can be positive or negative. A negative gap means that the bank is netting less income than the amount of liabilities assumed. When the gap is positive, the bank has liquid assets left over after all of the liabilities have been covered. This is one way of measuring the organization's level of financial risk (Central Bank of Barbados, 2008; Brunnermeier & Yogo, 2009). Apart from the foregoing maturity mismatch, liquidity risk arises due to recessionary economic conditions, causing less resource generation. This increases the demand of depositors creating liquidity risk. This may cause the failure of a given bank or even the entire banking system due to contagion effect. Liquidity risk may also arise due to the breakdown or delays in cash flows from the borrowers or early termination of the projects (Diamond & Rajan, 2005).

Liquidity for a bank means the ability to meet its financial obligations as they come due. Bank lending finances investments in relatively illiquid assets, but it funds its loans with mostly short-term liabilities. Thus, one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. A bank's liquidity is determined by its ability to meet all its anticipated expenses, such as funding loans or making payments on debt, using only liquid assets.

After the global financial crisis, bank has begun to examine the problems of liquidity and its importance to the overall performance of the banking sector and financial markets. The world economy has experienced a number of financial crises. These crises are issues of liquidity provision by the banking sector and a financial market. When crises are likely to arrive, bank seem less willing to lend and hold more liquidity due to the low level of liquidity in the market for external finance (Acharya & Naqvi, 2012). Berger & Bouwman (2009) found the connection between financial crises and bank liquidity creation. According to the principle of liquidity, banks should invest their funds in such sectors, where investment can be converted into cash easily and quickly without remarkable loss on their value Bank's liquidity indicates the ability to finance its transactions efficiently. If the bank is unable to do this it is known as the liquidity risk. The management of liquidity as the bank has to follow a decisional structure for managing liquidity risk; an appropriate strategy of funding, the exposure limits and a set of rules for arranging liquidities in case of need (Greuning & Bratonovic, 2004). Liquidity management is of crucial importance in financial management decision. The optimal of liquidity management is could be achieved by company that manage the trade-off between profitability and liquidity management (Bhunia & Khan, 2011).

Bank specific factors or internal factors are the individual bank characteristics, which affect bank performance. These factors are influenced by the internal decisions of management and board. These factors are also within the scope of the bank to manipulate them and they differ from bank to bank. These include capital, size of deposit liabilities, size, and composition of credit portfolio, interest rate policy, labor productivity, and state of information technology, risk level management quality, bank size, and ownership among others (Dang, 2011). In case of development banks, first type of liquidity risk arises when depositors of development banks seek to withdraw money. They become insolvent if the assets are not enough to meet the liability

withdrawals. Similarly, the second type of liquidity risk arises when money supply cannot meet the demand of unexpected loans due to the lack of the funds (Baral, 2005).

On the other hand, maintaining the high liquidity position to minimize such risks also adversely affects the banks' profitability. Return on highly liquid assets will be zero. Nepal's banking sector has been passing through ups and downs in the last few years. Therefore, banks should strike the tradeoff between liquidity position and profitability to keep their health sound. Liquidity risk is defined as a situation when a bank can't meet all the request of depositors either totally or partially for a given period (Jenkinson, 2008). Also, it can be defined as the inability of a bank to meet short term financial demands. Liquidity risk can affect not only bank performance but also bank reputation. The insufficient liquidity causes erosion in depositor's confidence which leads to an opportunity cost.

Literature based on the relationship between liquidity and bank performance is ambiguous. Several studies reported that liquidity affects bank performance positively. Bourke(1989) found positive relationship between liquidity and profitability and argued that the relationship differs from a bank's business model and the state of the economy. However, other studies defended the opposite thesis. Mehar (2001) showed that there is no long-run relationship between banks' profitability and liquidity and capital management. In the short-run, capital ratio tend to have significant positive effect on banks' profitability. Likewise, several studies concluded that liquidity exerts a negative effect on bank performance under the misallocation of resources. Banks with high level of liquidity accept to finance risky projects with a high return but with a weak probability of success. Liquidity is considered as a vital pillar in banking activities. For this reason, it's important to study the link between liquidity risk and bank financial performance especially in an indebted economy. Therefore, this study investigates the problem of whether liquidity risk factors compromise the performance indicators of development banks.

1.2 Problem statement

Bank under going to achieve their goals have to consider to the liquidity risk and its management. The fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk, both of an institution-specific nature and that which affects markets as a whole. This

study is mainly focused on analyzing the financial data of Nepalese development banks to examine the impact of liquidity risk on the bank's financial performance. Malik and Ahmed (2013) observed that the performance of the chemical sector in terms of market to book value is affected by firm and industry specific factors related to liquidity risk management. Thus, the study of liquidity risk management helps not only banking and financial institution but also non-banking sectors.

Though a number of studies are available on banking industry, there is dearth of a comprehensive academic study on the impact of liquidity risk on financial performance of development banks in Nepal. In this context the present study may fill the gap to a certain extent. It is well known fact that Nepalese banks and financial intuitions frequently face the problem of liquidity and the issue is becoming difficult to manage. Though, many studies have been taken place in order to find out the impact of bank specific and macroeconomic factor on liquidity in international scenario. But there is no exclusive study on bank specific and macroeconomic determinant of liquidity in case of Nepalese banking scenario. So, this study attempts to fulfill the gap to certain limits. This study will help for the further studies carried out in countries like Nepal. This study also contributes to the financial sectors of the economy and society. Therefore, the major beneficiaries from this study are development bank, regulatory bodies, the academic staff and society.

This study therefore, aimed at answering the following research questions:

- i. What is the impact from liquidity risk factors on top line performance indicators of development banks?
- ii. Do liquidity risk factors influence on bottom line performance indicators of development banks?

1.3 Objectives of the study

The purpose of this study is to examine the effect of liquidity risk on the financial performance of development banks in Nepal. This study investigated the problem of whether liquidity risk factors compromise the performance indicators of development banks. Therefore, study used the liquidity risk as the independent variable and financial performances of the banks as the dependent variable. Credit to Deposit Ratio (CDR), Deposits to Total Assets (DTA), Non-Performing Loan Ratio (NPLR) were proxies for liquidity risk. On the other hand, Return on Average Assets (ROAA), Return on

Average Equity (ROAE) and Net Interest Margin (NIM) were proxies for the financial performances of banks. The study involved five development banks which were selected on the basis of their assets amount using a correlation and multiple regression analysis in order to achieve the below mentioned objectives.

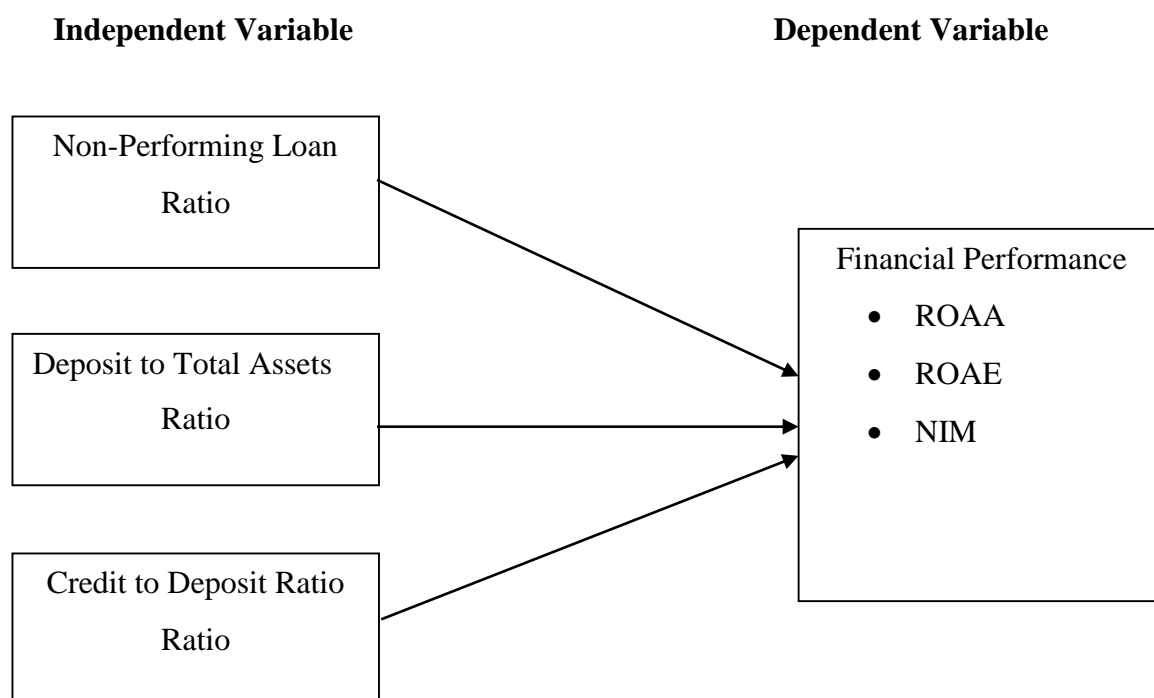
The specific objectives of the study are:

- i. To analyze the impact from liquidity risk factors on top line performance indicators of banks.
- ii. To investigate the influence from liquidity risk factors on bottom line performance indicators of banks.

1.4 Conceptual framework

Based on the review of the key paper by Madhuwanthi and Morawakag (2019) in “Impact of liquidity risk on the performances” and by Khalid, Rashed & Hossain (2019) in, “The Impact of Liquidity Risk on Banking Performance”, the model has taken for the study. Researcher has used the liquidity risk as the independent variable and performances of the banks as the dependent variable, mainly. Credit to Deposit Ratio (CDR), Deposits to Total Assets (DTA), Non-Performing Loan Ratio (NPLR) were proxies for liquidity risk (Jeanne & Svensson, 2007; Gatev & Strahan, 2006; Holmstrom & Tirole, 2000; Goodhart, 2008; Akhtar, 2007).

Return on Average Assets (ROAA), Return on Average Equity (ROAE) and Net Interest Margin (NIM) were proxies for the performances of banks (Noman, 2015; Iqbal, 2015; Bourke, 1989; Sehn, 2001). NIM was a top line performance indicator and the balance represents the bottom-line performance indicator. The conceptual framework showed the relationship between dependent and independent variable. The conceptual framework is shown in the figure below:

Figure 1.1*Conceptual Framework***1.5 Rationale of the study**

The purpose of this research is to discover the possible impact of liquidity risks on the financial performance of development banks in Nepal. On the basis of this study further research could be done on what possible solutions can be taken by the bank if liquidity risk arises in future. The findings of the research would be of scholarly importance in the academic arena. It will provide a source of reference for future studies on bank and financial institutions, also act as a source of literature for academics in the field of liquidity risk management. The most common source of bank vulnerability lies in liquidity mismatch between assets and liabilities – banks transform short-term deposits into long-term loans. BASEL,(2008) defined liquidity as the ability of bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses.

Liquidity risk underpins the financial performance of banks. Proper liquidity risk management reduces the default rate of customers and assists banks to be on top in the loan generating market. Lack of adequate liquidity is often one of the first signs that a bank is in serious financial trouble (Rose, 1999). It is vital to understand the

consequences, due to lack of adequate liquidity. If bank is unable to maintain high level of liquidity, it ultimately increases the liquidity risk. When the liquidity risk increases, the bank cannot fulfill the obligations such as deposit withdrawal, debt maturity, and funds for loan portfolio and investment. Liquidity management is never ending problem for bank and financial institution. Management always tries to avoid the problem of liquidity. In order to reduce the financial problem, it is very necessary to identify the various factors that affect it. Liquidity crunch has always been a headache for the banks. Nepal's banks often face difficulty in extending more loans to the enterprises seeking credits because of liquidity crunch. Therefore, it's also necessary to know possible impact of liquidity risk so that Nepalese bank would be prepared beforehand to be saved from possible consequences.

1.6 Limitations of the study

Despite of the continuous efforts made for arriving at meaningful conclusions from the study, the following major limitations have been outlined.

- i. Out of 29 development banks operating in the country, only 5 development banks were considered for the study purpose.
- ii. The result of the study was not broad and flexible, as only secondary data were considered for the study purpose, the primary data was not taken into consideration. It was limited to the data available in the quarterly reports of the sample bank.
- iii. Other financial institutions like commercial banks, finance companies, microfinance and cooperative banks were not taken into consideration for the study, only development banks were study subject.
- iv. Other different liquidity measures of the bank like quick ratio and current ratio were not included.
- v. Lack of more scientific and sophisticated tools had limited the validity of the study findings. Only limited statistical and financial tools had been used in the study.
- vi. The study period included 5years-quarterly data from the fiscal year 2071/72-2075/76. Some of the banks were not considered in the study due to their establishment after 2070 only which led to reduce the number of observations taken for the study.

1.6 Chapter plan

The study comprises into five different chapters: Introduction, Literature Review and Theoretical Framework, Research Design and Methodology, Results and Discussion, Summary and Conclusions.

Chapter I: Introduction

The first chapter deals with introduction of the entire thesis work, such as overview of the main area of the study i.e., it describes the general background of liquidity risk and its impact on financial performance. Besides these things it has objectives, statement of the problem, and significance of the study and limitations of the study.

Chapter II: Literature review

This chapter is devoted for review of literature, research gap, conceptual framework and operational definition. This chapter gives a picture of various studies that dealt with financial performance, profitability and liquidity of the bank and factor need to be considered

Chapter III: Research design and methodology

This chapter discusses research methodology used for the study. It comprises of research design, population and sample, sources of data, instrumentation, data analysis and software used.

Chapter IV: Results and discussion

It contains descriptive analysis which included tables and findings of this study and statistical tests, where dependent and independent variables identified for the study were tested for certain relationship. The test results help in conclude the research and interpreting results of the research.

Chapter V: Summary and conclusion

Final chapter deals with summary part, conclusions and implications of the study. Under, the summary part the overall findings of the research are discussed in brief. At last, conclusions and implication are drawn out.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

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

This chapter has two topics they are:

1. Theoretical review
2. Empirical review

2.2 Theoretical review

2.2.1 Liquidity

Total liquidity comprises of cash balance, bank balances with Nepal Rastra Bank and other Banks and Financial Institutions, money at call and investment in treasury bills. According to Santomero (1997), liquidity risk can be described as the risk of a funding crisis, such as unexpected event in the form of large charge off, loss of confidence, or a crisis of national proportion like existence crisis. Risk management here centers on liquidity facilities and portfolio structure. Recognizing liquidity risk leads the banks to recognize liquidity itself as an asset, and portfolio design in the face of illiquidity concerns as a challenge. Liquidity risk is the possibility that over a specific time period, a bank will become unable to settle financial obligations with immediacy (Drehmann & Nikolaou, 2009). It is a risk arising from a financial institution's inability to meet its obligations when they come due without incurring unacceptable losses. This risk can adversely affect both earnings and the capital; therefore, it becomes the top priority of a bank's management to ensure the availability of sufficient funds to meet future

demands of providers and borrowers, at reasonable costs. The vulnerability of Banks to liquidity risk is determined by the funding risk and the market risk. Liquidity risk needs to be monitored as part of the enterprise-wide risk management process, taking into account credit risk to ensure stability in the balance sheet and dynamic management of liquidity risk. Liquidity risk not only affects the performance of the banks, but also its reputation (Jenkinson, 2008).

Anyanwu, (1993) defined that the liquidity as the ability of a firm to convert its asset into cash within the short time period and without the loss of value. Liquidity ratio plays a very important role in every business because banks usually operate with large funds borrowed from depositors in form of demand deposits and time deposits. (Olagunju et al., 2012) explained that liquidity means the ability of a bank to meet financial commitments at a reasonable price at all times. Banks having money when they need to satisfy the withdrawal needs of their customers.

Nimer, Warrad, & Omari, (2013) considers that liquid assets should be marketable securities. Liquidity of assets means that they are expected to be converted to cash easily and pay out the liability. Another quality of liquid assets is price stability. Based on the characteristic, bank deposits and short-term securities are more liquid than equity investments due to the fact that the prices of the former are fixed than the prices of short-term securities.

2.2.2 Need for liquidity

We are concerned about bank liquidity levels as banks are important to the financial system. They are inherently sensitive if they do not have enough safety margins. We have witnessed in the past the extreme form of damage that an economy can undergo when credit dries up in a crisis. Capital is arguably the most essential safety buffer. This is because it supports the resources to reclaim from substantial losses of any nature.

The closest cause of a bank's demise is mostly a liquidity issue that makes it impossible to survive a classic "bank run" or, nowadays, a modern equivalent, like an inability to approach the debt markets for new funding. It is completely possible for the economic value of a bank's assets to be more than enough to wrap up all of its demands and yet for that bank to go bust as its assets are illiquid and its liabilities have short-term maturities.

Deposits are considered sticky. Theoretically, it is possible to withdraw all demand deposits in a single day, yet their average balances show remarkable stability in normal times. Thus, banks can accommodate the funds for longer durations with a fair degree of assurance that the deposits will be readily available or that equivalent deposits can be acquired from others as per requirement, with a raise in deposit rates.

2.2.3 Liquidity risk

Liquidity risk arises from maturity mismatches where liabilities have a shorter tenor than assets. A sudden rise in the borrower's demands above the expected level can lead to shortages of cash or liquid marketable assets (Oldfield & Santamero, 1997). Liquidity crisis in a banking institution could lead to insolvency and bank runs. Consequently, minimizing the liquidity risk is one of the most important aspects of banks' asset and liability management. In essence, the objective of liquidity risk management is to mitigate the impact of the maturity mismatch on the banks' statement of financial position. This requires the understanding of how cash flows are moving within an organization, identifying the existence and location of cash flow strains by measuring emerging liquidity pressures, and taking corrective actions to prevent these pressures from growing. The amount of liquidity that a development bank or the development banking system should maintain is one of the basic problems of the bank management. If too much liquidity is maintained, it means that the bank and the banking system are foregoing income. Too, little, however, may be fatal not only to an individual bank but to the development banking system as a whole, the financial structure of the country, and the economy of the nation. Too little liquidity and the demands of the depositors in the form of 'runs' on the banks are like oil and water, they do not mix well (Reed, 2002).

According to Santomero (1997), liquidity risk can be described as the risk of a funding crisis, such as unexpected event in the form of large charge off, loss of confidence, or a crisis of national proportion like existence crisis. Risk management here centers on liquidity facilities and portfolio structure. Recognizing liquidity risk leads the banks to recognize liquidity itself as an asset, and portfolio design in the face of illiquidity concerns as a challenge. Liquidity by definition means a bank has the ability to meet payment obligations primarily from its depositors and has enough money to give loans. So, liquidity risk is the risk of a bank not being able to have enough cash to carry out

its day-to-day operations. Provision for adequate liquidity in a bank is crucial because a liquidity shortfall in meeting commitments to other banks and financial institutions can have serious repercussions on the bank's reputation and the bank's bond prices in the money market. Liquidity risk can sometimes lead to a bank run, where depositors rush to pull out their money from a bank, which further aggravates a situation. Liquidity is the status and part of the assets that can be used to meet the obligation in the development banks. Liquidity can be viewed in terms of liquidity stored in the balance sheet and in terms of liquidity available through purchased funds.

Types of Liquidity Risks can be listed as:

- i Market liquidity – The risk that an asset cannot be sold due to lack of liquidity in the market. This can be accounted by using Widening bid/offer spread, making explicit liquidity reserves and Lengthening holding period for VaR calculations
- ii Funding liquidity – The risk that liabilities cannot be met when they fall due, can only be met at an uneconomic price and can be name-specific or systemic.

2.2.4 Liquidity risk management

Liquidity risk management is an essential component of the overall risk management framework of the financial services industry, concerning all financial institutions. Ideally, a well-managed bank should have a well-defined mechanism for the identification, measurement, monitoring and mitigation of liquidity risk. A well-established system helps the Banks in timely recognition of the sources of liquidity risk to avoid losses. The balance sheets of banks are growing in complexity and dependence upon the capital markets, which has made the liquidity risk management more challenging. Comptroller of the Currency (2001), liquidity risk is the potential loss to banks arising from their inability either to meet their obligations or to fund increases in assets as they fall due without incurring unacceptable costs or losses.

The survival of any business depends on its ability of meet, either in the short run or in the long-run, and its obligations as they fall due and also take opportunities either in the form of prompt payment of liabilities in order to enjoying discounts and also to finance business expansion. It is important to state at this point that profitability does not always amount to liquidity as such a critical analysis of company's inflow and expected outflow in an accounting period is gamine to effective cash management.

To prevent breaks or gaps in the trading cycle due to lack of cash, administrators must calculate the cash amount best suited to their level of activity, plan the timing of the relevant payments and collections and draw up a policy of investment in assets with high liquidity that can be converted to cash at a low transactional cost to serve as support for the treasury funds maintained by the company (Srinivasan & Kim, 1986). It is therefore essential to establish the right level of disposable assets to short-term financial investments at companies. Holding the wrong amount in cash or cash equivalent may interrupt the normal flow of business activities. Moreover, the wrong safety margin may result in financial difficulties, with firms unable to meet needs that may arise at any given time or unable to take advantage of unexpected investment opportunities. Maintaining a cash surplus thus has a number of advantages. It enables companies to carry on the normal transactions that arise in the course of their activities and avoid any treasury gaps. It also helps them cover any unexpected needs for cash by acting as a preventive balance. However, there are also disadvantages in being too conservative, as reflected in the opportunity costs entailed by assets with little or no profitability.

However, taking basic treasury principles as their reference, these authors identify and determine more complex techniques, instruments and functions, which they also integrate into treasury management. They mention advanced cash management, which is considered to include the management of short-term investments, short-term financing and bank relationships. Therefore, although they stress the essence of treasury management, they analyze and set out more advanced management techniques and tools, which are considered as characteristic of cash management. Optimal balance here means a position when the cash balance amount is on the most ideal proportion so that the company has the ability to invest the excess cash for a return (profit) and at the same time have sufficient liquidity for future needs.

The objective was to minimize the sum of the fixed costs of transactions and the opportunity cost of holding cash balances. The optimal cash balance is at the point where opportunity cost and transaction cost are equal while the cost of holding the cash is at lowest possible point.

2.2.5 The liquidity management theory

There are a number of dimensions in the way banks concretely manage their liquidity risk. In simple words, there are competing liquidity management theories. Liquidity

management theories encompass where it is exactly performed in the organization, how liquidity is measured and monitored, and the measures that banks can take to prevent or tackle a liquidity

2.2.6 Commercial loan theory

In the development of the commercial banking system, one of the principles of bank credit that has acquired widespread acceptance, not only in theory but also in practice, is the belief that commercial banks in their lending activities should extend credit only for short periods and for purposes which result in the self-liquidation of the credit. Self-liquidating loans are those, which are meant to finance the production, storage, transportation, and distribution. When such goods are ultimately sold, the loans are considered to liquidate themselves automatically. Such short-term self-liquidating productive loans possess three advantages. First, they possess liquidity that is why, they liquidate themselves automatically. Second, since they mature in the short run and are for productive purposes, there is no risk of their running into bad debts. Third, being productive such loans earn income for the banks.

The primary function of commercial banks, therefore, is to create funds which may be used to complete the processing of goods, to bring them to the markets, to transfer them to the possession of the ultimate consumer or user, and to provide means of final payment for all materials and services involved in the production and marketing of the goods. This is an explanation of bank liquidity described by Adam Smith: short-term loans advanced to finance salable goods on the way from producer to consumer are the most liquid loans the bank can make. These are self-liquidating loans because the goods being financed will soon be sold. The loan finances a transaction and the transaction itself provides the borrower with the funds to repay the bank. Adam Smith described these loans as liquid because their purpose and their collateral were liquid. The goods move quickly from the producers through the distributors to the retail outlet and then are purchased by the ultimate cash-paying consumer. The earliest view was that loans should be granted to all classes alike but this was soon modified when successive failures brought home the importance of the liquidity principle in banking. The commercial loan theory posits that bank loans should be made largely to finance the production and movement of goods.

2.2.7 Shiftability theory

The "Shiftability" theory is the second major theory of bank liquidity. According to the Shiftability theory the liquidity of a bank may be measured by the extent to which it can shift its assets readily to other buyers for cash at satisfactory prices. The old traditional theory of liquidity with short maturities was no longer to be considered the only basis upon which banks might extend credit. This greatly expanded opportunity for the shifting of assets in an emergency unquestionably gave some impetus to the granting of longer-term bank credits. The bond portfolios of banks, whether the bonds do or do not have ready markets, rarely represent the extension of credit or the use of bank funds in accordance with the traditional concept of liquidity. The bonds are not liquidated by the sale of goods as in a typical commercial transaction, but are liquidated by the bank selling them or shifting them to another holder. The Shiftability theory holds that experience shows that the bond paper often cannot be liquidated at maturity; that when the paper can be liquidated at maturity, it may not be desirable to liquidate it; and that when demand is made on the liabilities of an individual bank, the only reliance for liquidity in an emergency lies in the power to shift assets to other banks and get funds from the banks that still have available funds (Mitchell, 1923). It should be emphasized that in ordinary times the problem of liquidity is not a problem of maturing loans so much as it is a problem of shifting assets to other banks in exchange for cash. If one bank can always get help from another in case of trouble, there is no necessity of relying upon maturing loans i.e., banks only need to shift liabilities and assets.

The Shiftability theory has its inadequacies and advantages. The first shortcoming is shiftability of assets does not provide liquidity to the banking system. It completely relies on the economic conditions. Secondly, this theory neglects acute depression, the shares and debentures cannot be shifted to others by the banks. In such a situation, there are no buyers and all who possess them want to sell them. Third, a single bank may have shiftable assets in sufficient quantities but if it tries to sell them when there is a run on the bank, it may adversely affect the entire banking system. Fourth, if all the banks simultaneously start shifting their assets, it would have disastrous effects on both the lenders and the borrowers.

The shiftability theory has positive elements of truth. Now banks obtain sound assets which can be shifted on to other banks. Shares and debentures of large enterprises are welcomed as liquid assets accompanied by treasury bills and bills of exchange. This has motivated term lending by banks.

2.2.8 Anticipated income theory

The anticipated income theory was developed by H.V. Prochnow in 1950 on the basis of the practice of extending term loans by the USA commercial banks. According to this theory, regardless of the nature and character of a borrower's business, the bank plans the liquidation of the long-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.

It is granted against the hypothecation of machinery, stock and even immovable property. The bank puts restrictions on the financial activities of the borrower while granting this loan. At the time of granting a loan, the bank takes into consideration not only the security but the anticipated earnings of the borrower. So, a loan by the bank gets repaid by the future earnings of the borrower in installments, rather giving a lump sum at the maturity of the loan.

This theory dominates the commercial loan theory and the shiftability theory as it satisfies the three major objectives of liquidity, safety and profitability. Liquidity is settled to the bank when the borrower saves and repays the loan regularly after certain period of time in installments. It fulfills the safety principle as the bank permits a relying on good security as well as the ability of the borrower to repay the loan. The bank can use its excess reserves in lending term-loan and is convinced of a regular income. Lastly, the term-loan is highly profitable for the business community which collects funds for medium-terms.

On the flip side, the theory of anticipated income is not free from demerits. This theory is a method to examine a borrower's creditworthiness. It gives the bank conditions for examining the potential of a borrower to favorably repay a loan on time. It also fails to meet emergency cash requirements.

2.2.9 Strategies for liquidity management in existing practice.

Nepal Rastra Bank implements monetary policy to extend or narrow the loan flowing capacity of development banks to manage the liquidity and internal loan as they are the

main reason of liquidity growth. It becomes impossible for the central bank to control the growth of the forcing capital by the implementation of the monetary policy. In managing the liquidity, the central bank pays attention mainly in two aspects.

- i Not to make less liquidity this is necessary for the development banks to run their transactions.
- ii To save the economy from the sustainable effect, that causes to arise, the high liquidity and the liquidity crisis.

The development banks should attract the deposit because it is called the raw materials of banks, without which the development bank can't run. A decision to the effect that in which sector the deposit shall be flowed is important. The amount of the current account is the most important liability for development banks. But it should return immediately at the time of demand. So, there must be a liquid fund. Though the, loan and advance are the most profitable sector in the side of asset, it is not being recovered at the time of demand. Therefore, to make arrangements for liquid assets from its own assets, to give loan, to fix the quantity of investment and to make the coordination between the assets and liquidity are the most important factor for a development bank. The central bank too pays attention to this fact while giving the instruction about liquidity to the development banks. In preparing the strategy of liquidity management, the bank should consider many factors. If the banks fail to prepare a good strategy, it can be an unfortunate event for the bank. Therefore, bank should set the following strategies for the management liquidity (Kumar and Yadav, 2013).

a) Strategy relating to deposit

The bank can allow opening current, saving and fixed accounts for its customers. Common people, organization and institution in the banks according to their need, they can deposit the cash. Such cash may be accumulated in a great deal as deposit in the banks. The banks should do all works like determination of how much money will be deposited, which account and what interest rate shall be maintained for which deposit and fixing of minimum and maximum period of the deposits. To set the strategy of liquidity it can analyze the amount accumulated as deposit. It is an internal matter of banks to set up their strategy for the management of liquidity from this the bank may get success in its goal.

b) Strategy relating to investment

The bank can't invest if there is scarcity of liquidity. But the bank should invest to gain profit. For this purpose, the liquidity is necessary. The development banks are established with the objective of earning profit. So, the bank can't meet its goal in lack of liquidity. Keeping the stock, a bank needs, daily liquidity, the bank should set the strategy to invest the rest of the cash fund.

c) Strategy relating to reserve fund

A bank should deposit money in different funds. There is some fund in which it should compulsorily deposit cash. If it can't deposit the amount these funds, it will have to face a disaster. It should be able to manage liquidity well to save itself from such disaster. It establishes a reserve fund. Some percent of amount gained from profitability is kept in this reserve fund. The bank should set a strategy on such subject as how much cash is to be kept in a bank from the amount of such reserve and how much is to be flowed as investment.

d) Strategy relating to dividend

A bank distributes some dividend from profit to its shareholders. But if it lacks liquidity it can issue share certificates instead of distribution of cash. But the bank management should understand that whether such condition prevail in the bank or not. If there is scarcity of liquidity, it should precede the strategy of distributing the share certificates. It is better to set the strategy of distributing the cash, if there is adequate liquidity in the bank.

e) Strategy relating to capital

After a bank is established, it needs capital for its operation. It can open another branch or sub branches. It may need a lot of capital for this. In such condition, the bank can collect a capital by issuing its shares and debenture. Somehow, it lessens the problem from liquidity. The bank should adopt a strategy whether it should issue the shares, debenture or not.

In this way, the bank can carry out a healthy transaction by adopting above-mentioned strategies for management of liquidity. There is also a provision to pay fine, if the cash stock is less than prescribed by the Nepal Rastra Bank. Hence the management of liquidity is really significant aspect for the banks for the purpose of maintaining liquidity in balance.

2.2.10 Description of variables

i) Non-performing loan ratio (NPLR):

Banks depend on borrowers to maintain their scheduled loan repayments as a major source of revenue. When a borrower has not made regular payments for at least 90 days, the loan is considered a nonperforming loan. The nonperforming loan ratio, better known as the NPLR, is the ratio of the amount of nonperforming loans in a bank's loan portfolio to the total amount of outstanding loans the bank holds. The NPLR measures the effectiveness of a bank in receiving repayments on its loans. The bank's asset is another bank specific variable that affects the profitability of a bank. The bank asset includes among others current assets, credit portfolio, fixed assets, and other investments (Athanasoglou et al., 2005). The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans (Dang, 2011). The non-performing loan ratios are the best proxies for asset quality. This ratio portrays the bank's ability to keep the risk of loan repayment by the debtor. After credits are given, banks should monitor the use of the credits as well as the debtors' ability and compliance to meet their obligations cause if there is a failure of the debtor to pay, it will decrease bank's profitability. Nsambu (2014) proved that the NPLR has a significant negative effect on profitability. But Duraj & Moci (2015) proved that the NPLR has no significant effect on profitability. While Buchory (2015) proved that the NPLR has a significant positive effect on performance.

ii) Deposit to total assets ratio (DTA):

Deposits to Assets is a ratio that tells you that to what extent bank's assets have been funded from a stable source. Deposits are attracted by better advertising and other promotional efforts. Checking deposits carry zero interest rate, and high deposit and depositor bases is meaningful. Parvin, Shahnaz, et al (2019) on their research article showed that deposit to asset ratio had a negative impact on the profitability. Whereas, Madhuwanthi & Morawakage (2019), on their research article, document that there is a positive significant relationship between DTA and top line performance of the banks.

iii) Credit to deposit ratio (CDR):

It is the ratio of how much a bank lends out of the deposits it has mobilized. It indicates how much of a bank's core funds are being used for lending, the main banking activity.

A higher ratio indicates more reliance on deposits for lending and vice-versa. The regulator does not stipulate a minimum or maximum level for the ratio. But, a very low ratio indicates banks are not making full use of their resources. And if the ratio is above a certain level, it indicates a pressure on resources.

iv) Net interest margin (NIM):

Net interest margin is the ratio of net interest income to invested assets. Net interest margin is also known as "net yield on interest-earning assets." The net Interest margin can be expressed as a performance metric that examines the success of a firm's investment decisions as contrasted to its debt situations. A negative Net Interest Margin indicates that the firm was unable to make an optimal decision, as interest expenses were higher than the amount of returns produced by investments. Thus, in calculating the Net Interest Margin, financial stability is a constant concern. Net Interest Margin (NIM) measures the cost of financial intermediation and a reliable indicator of asset and liability management and hence it directly affects the cost of borrowing and lending within the financial system. However, NIM is a top line performance indicator and it only considers the direct cost (interest) bearing on main income sources and generally used by the company when making pricing strategies (Madhuwanthi & Morawakage, 2019).

v) ROAA & ROAE

Return on average assets (ROAA) shows how well and efficiently a company uses its assets to generate profits and works best when comparing to similar companies in the same industry. The formula uses average assets to capture any significant changes in asset balances over the period being analyzed. Companies that invest heavily upfront into equipment and other assets typically have a lower ROAA. Unlike return on equity, which measures the return on invested and retained rupees, ROAA measures the return on the assets purchased using those rupees.

ROAA is calculated by dividing net income by average total assets. To arrive at a more accurate measure of return on assets, analysts like to take the average of the asset balances from the beginning and end of the same period that was used to define net income. The ROAA result varies greatly depending on the type of industry, and companies that invest a large amount of money up front into equipment and other assets will have a lower ROAA. A ratio result of 5% or better is generally considered good.

Return on average equity (ROAE) is a financial ratio that measures the performance of a company based on its average shareholders' equity outstanding. Typically, ROAE refers to a company's performance over a fiscal year, so the ROAE numerator is net income and the denominator is computed as the sum of the equity value at the beginning and end of the year, divided by 2. The return on average equity (ROAE) can give a more accurate depiction of a company's corporate profitability, especially if the value of the shareholders' equity has changed considerably during a fiscal year.

A high ROAE means a company is creating more income for each rupee of stockholders' equity. It also tells the analyst about which levers the company is pulling to achieve higher returns, whether it is profitability, asset turnover, or leverage. The product of these three measurements equals ROAE. Return on Average Assets (ROAA) and Return on Average Equity (ROAE) are derived from net profit after all the expenses incurred in running the business including overhead expenses are excluded. Therefore, ROAA and ROAE are the bottom-line performance indicators of the company (Madhuwanthi & Morawakage, 2019).

2.3 Empirical review

In this chapter, the review of various articles, research studies, journals and books has been made to have a clear understanding about the impact of liquidity risk on the Nepalese development bank and its relevance in different part of the world. This chapter will help to recall the theories and previous studies made by various researches in different part of the world. Literature review is basically a stock taking work of available literature. The purpose of literature review is thus to find out what principle are established and what research studies have been conducted in the field of study and what remains to be done.

2.3.1 Review of journal articles

Suyanto (2021) analyze the effect of bad credit and liquidity on bank performance with the mediation of capital adequacy. The results of the research show that the effect of bad credit and liquidity on bank performance is not significant. A high level of bad credit is associated with a low level of bank performance. Bank earnings decline along with low profitability. This relationship is not significant because banks can still cover some proportions of bad credit through capital availability. Capital adequacy as an intervening variable has mediated partially the effect of bad credit and liquidity on bank performance. Besides, capital

adequacy has a strong effect on credit distribution. Agency theory says that the owner of the fund (the savers of saving account, current account, deposit account) is called principal while the bank as the trusted institution to manage the fund is called an agent. If customers fulfill their duty, then bad credit never happens.

Otwoko & Maina (2021) critically analyzed the effect of liquidity risk on the financial performance of Deposit-taking Savings and Credit Cooperative Organizations (DT SACCOs) in Kenya. The study used a descriptive survey design and employed regression methods to model the relationship between liquidity risk and financial performance of DT SACCOs. The data were analyzed at a 5% level of significance. The study findings revealed that at a 5% level of significance, liquidity risk had a statistically significant influence on the financial performance of deposit-taking SACCOs. Based on the findings, DT SACCOs are encouraged to focus on enhancing the mobilization

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

Effiong & Ejabu (2020), aimed at establishing the extent of concern of consumer goods companies in the management of their liquid cash, cash defensive intervals, long term debts, and quick ratios, for the purpose of turning around their financial performance.

Analyses were done using multiple regression analysis methods and findings show that long term debts, quick ratios, and cash defensive intervals have a significant effect on Earning Per Share and Return on Assets, while cash ratio and long-term debts affect Return on Capital Employed only. Specifically, it was empirically established that there exists a significant relationship between liquidity risk management and the financial performance of consumer goods companies. Findings, further reveal that companies' non-concerned attitude to liquidity risk management affects the financial performance of consumer goods companies significantly. The study recommends that consumer goods companies should incorporate a clear liquidity risk management approach in their strategic policy framework and communicate the same to all functional units.

Abu-Alrop & Kokh (2020) explored the effect of credit risk on the performance of Russian commercial banks. The study concluded that the effect of credit risk on the performance of Russian banks is not a fixed effect but a changing one from one year to another, but in cases where credit leaves an impact on performance indicators this effect is often negative and significant. The study also concluded that the quality of credit has a significant and negative impact on performance indicators, but the volume of the credit has a limited impact.

Mustafa (2020), assessed the impact of Liquidity Shortage Risk (LSR) on the financial performance of Islamic Commercial Banks (ICBs). The main findings revealed that current deposits to total deposits, total finance to total deposits and inflation negatively affected the financial performance. While liquid assets to total assets have positive influence to the performance of ICBs. Monetary policy indirectly contributed to the exposure of ICBs to LSR through money supply increase. Moreover, high inflation motivated depositors to high cash withdrawal from their deposits; and, consequently exposed ICBs to LSR. The study recommends that ICBs should not wholly depend on current deposits as a source of finance, because customers' default might lead to LSR resulting in deteriorating profitability. Moreover, diversification of financial assets (with high liquidity) protects them from LSR. As for the central bank, the contractionary monetary policy is a crucial to control inflation in order to improve the financial performance of ICBs.

Winoto & Bustaman (2020) analyzed the effect of liquidity, ownership, and global financial crisis on Indonesian Banking profitability. For liquidity, liquidity ratio, loan

to funding ratio, and cash ratio were used. Meanwhile ownership and global financial crisis used dummy variable. Ordinary Least Square method were used with Net Interest Margin as dependent variable, a control variable, and capital adequacy ratio. The result finds that there is no significant connection between liquidity and ownership on profitability, while crisis has significant connection on profitability.

Cheng, Nsiah, Ofori & Ayisi (2020) explored the influence of credit risk, operational risk, and liquidity risk effect on bank profitability. Smart partial least squares structural equation modeling was employed to investigate the impact of the dependent variable on the independent variables. The conclusions of this research indicated that credit risk (non-performing loan ratio, capital adequacy ratio, and cost per loan) has a significant positive association with bank profitability (ROA, ROE, NIM). Similarly, liquidity risk (current ratio, acid-test ratio, cash ratio) shown a positive and significant connection with bank profitability. However, operational risk (portfolio concentration, bank leverage, lawsuit, resignation of key directors) indicated a negative affiliation with bank profitability. The bank-specific risk shown a positive and significant nexus with credit risk, operational risk, and liquidity risk. it's linked with profitability was insignificant. This investigation recommends that commercial banks take proper management of their operational risk by diversifying their investments into portfolios that will yield return, management of their internal and external operations, and decrease their leverage levels.

Khalid, Rashed & Hossain (2019) aimed to empirically study the relationship between liquidity and financial performance. The investigation had been performed using panel data procedure for a sample of Dhaka stock market enlisted all commercial banks (31) during the year of 2010-2017. Their result showed that liquidity had no significant and positive or negative impact on return on asset (ROA), return on equity (ROE) as financial performance. Liquidity risk behaves in equivalent ways in different dependent variables.

Madhuwanthi and Morawakage (2019) aimed at investigating the impact of liquidity risk on the performances of Sri Lankan commercial banks. Researchers found that liquidity gap and non-performing loan ratio were the significant proxies for liquidity risk. Multiple regression analysis revealed that liquidity risk negatively and significantly affects bottom lines Return on Average Assets (ROAA) and Return on

Average Equity (ROAE), whilst positively affects the top line Net Interest Margin (NIM) of the commercial banks. The findings of this study suggested that expenses of the banks should be controlled with better liquidity management to enhance bottom line performances.

Pokharel and Pokhrel (2019) explored the influence of liquidity on the profitability in the Nepalese commercial banks. 5 commercial banks in Nepal; Agriculture Development Bank, Everest Bank, Prime Commercial Bank, Sunrise Bank and Citizens Bank International were randomly selected among 28 commercial banks of Nepal as a sample and analyzed for the current study over the period 2010/11 to 2016/17 AD. Since liquidity management can increase the bank's profitability, the study had examined their liquidity management as well as profitability positions using various statistical and financial tools. The study indicated largely zigzag trend of average profitability of commercial banks, although the trend of liquidity ratios of the bank was unstable. The research concluded that bank's liquidity ratios have below the prescribed standard. Similarly, CRR is extremely heavy than prescribed by monetary policy 2016/17. The CRR and IGSCA are positively correlated with ROA while CRR and CBBISD are inversely correlated with ROA. In case of liquidity-ROE Relation, CR is inversely correlated to ROE but all other ratios (CRR, CBBISD and IGSCA) are positively correlated with ROE. It also has reported there is significant relationship between liquidity ratios with profitability, except between IGSCA and ROA.

Muriithi & Waweru (2017) measured the liquidity risk by liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) while financial performance by return on equity (ROE). Data were collected from commercial banks' financial statements. Panel data techniques of random effects estimation and generalized method of moments (GMM) were used to purge time-invariant unobserved firm specific effects and to mitigate potential endogeneity problems. Pairwise correlations between the variables were carried out. Wald and F- tests were used to determine the significance of the regression while the coefficient of determination, within and between, was used to determine how much variation in dependent variable was explained by independent variables. Findings indicate that NSFR was negatively associated with bank profitability both in long run and short run while LCR does not significantly influence the financial performance of commercial banks both in long run and short run.

However, the overall effect was that liquidity risk has a negative effect on financial performance. It is therefore advisable for a bank's management to pay the required attention to the liquidity management.

Hakimi and Zaghdoudi (2017) aimed to study the effect of liquidity risk on bank performance. By applying panel data method, precisely random effect regression, their results showed that liquidity risk decreases bank performance. Also, findings indicated that international financial crisis and inflation act negatively and significantly affect bank's performance.

Abdi and Kavale (2016) evaluated the effect of liquidity management on financial performance of commercial banks in Mogadishu, Somalia. The key findings were that liquidity management drivers individually had a positive influence on the financial performance of commercial banks. According to the research there was a significant linear relationship between account receivable management, account payable and cash management on financial performance of commercial banks. The conclusions were based on the objectives of the study that liquidity management drivers had a significant influence on financial performance of commercial banks. The research results established that liquidity management drivers were found to significantly and positively influence financial performance of commercial banks. The study results support the view that liquidity management drivers have a significant effect on financial performance. It is recommended that managers should study and select the driver that best suits their banks in order to achieve maximum performance.

Pradhan and Shrestha (2016) examined the impact of liquidity on bank profitability in Nepalese commercial bank. Correlation between capital ratio and return on equity found to be positive indicating higher the capital ratio higher would be the return on equity. However, the correlation between return on equity and liquidity ratio was found to be negative indicating higher the liquidity in the bank lower would be the return on equity. Further, the correlation was found to be negative for quick ratio with return on equity. Beta coefficients for investment ratio and capital adequacy were positively significant with bank performance, which indicated that increase in investment ratio and capital ratio leads to increase the performance of the banks. However, beta coefficients for liquidity ratio and quick ratio were negative with return on assets and

return on equity indicating increased liquidity ratio and quick ratio decreases the return on assets and return on equity of the bank.

Thuraisingam, (2015) focused on analyzing the nature of the liquidity and its impact of profitability from listed companies in Sri Lanka. In this study an attempt had been made to analyze the liquidity and its impact on profit earning capacity during 2008 to 2012. To evaluate the profitability ratio of ROE and ROA were used. Based on the nature of data collection through different tools, the following statistical techniques were employed: Descriptive analysis, correlation and regression. The research findings show that there is no significant relationship between liquidity and profitability. These results were consistent with prior empirical studies.

Ferrouhi, (2014), showed that bank's performance was mainly determined by 7 determinants: liquidity ratio, size of banks, logarithm of the total assets squared, external funding to total liabilities, share of own bank's capital of the bank's total assets, foreign direct investments, unemployment rate and the realization of the financial crisis variable. Banks' performance depends positively on size of banks, on foreign direct investments and on the realization of the financial crisis and negatively on external funding to total liabilities, on share of own bank's capital of the bank's total assets and on unemployment rate while the dependence between bank performance and liquidity ratios and bank performance and logarithm of the total assets squared depend on the model used.

Ben-Caleb, Egbide, Olubukunola, Uwuigbe, Uwalomwa, (2013), examined the liquidity management and profitability of manufacturing companies in Nigeria. The analysis was based on a sample of 30 Manufacturing Companies. The result suggested that current ratio and liquid ratio are positively associated with profitability while cash conversion period is negatively related with profitability of manufacturing companies in Nigeria. The association in all the cases was however, statistically insignificant, indicating low degree of influence of liquidity on the profitability of manufacturing companies.

Manyo & Ogakwu, (2013) aimed at examining the impact of liquidity on Return on Assets on 46 quoted firms listed on the Nigerian Stock Exchange from 2000-2009. Liquidity and its management determine to a great extent the growth and profitability

of a firm because inadequate or excess liquidity may be injurious to the smooth operations of the firm. It became a source of concern for business managers as bank loans are becoming too expensive to maintain as a result of tightening of both the local and international financial market and the reluctance of the public to invest in the shares of companies' sequel to the partial crash of the capital market. From the hypothesis test carried out, the result of the study showed that liquidity had a significant positive impact on Return on Assets (ROA), implying that a unit change in liquidity will result into a corresponding increase in ROA. It concluded therefore that managers can increase profitability by putting in place good credit policy, short cash conversion cycle and an effective cash flow management procedures.

Ajanthan, (2013) investigated the relationship between dividend payout and firm policy. The main thrust of this study was to find out the relationship between dividend payout and firm profitability among listed hotels and restaurant companies in the Colombo Stock Exchange (CSE). Regression and correlation analysis were carried out to establish the relationship between dividend payout and firm profitability. The findings indicated that dividend payout was a crucial factor affecting firm performance ($R = 0.725$ & $R^2 = 0.526$). Their relationship was also strong and positive. This therefore showed that dividend policy was relevant. It can be concluded, based on the findings of this research that dividend policy is relevant and that managers should pay attention

Ayele (2012) studied the determinants of profitability of private commercial banks in Ethiopia by using multiple regression models from year 2002 to 2011. In this study, the researcher applied fixed affect regression model to test the impact of variables such as capital adequacy, managerial efficiency, liquidity, asset quality, bank size and real GDP on bank's profitability. The dependent variables to major the bank profitability were ROA, ROE and NIM. The result of this study concluded that ROA and ROE has positive significant relationship with capital adequacy, asset quality, managerial efficiency, bank size and GDP whereas; ROA and ROE has negative significant relationship with liquidity. In this study the bank size is measured by natural logarithm of total asset. The study further states that Net Interest Margin (NIM) has positive significant relationship with capital adequacy, liquidity, managerial efficiency and GDP whereas; NIM has negative correlation with asset quality and bank size.

Saleem & Rehman, (2011) made a research on “Impacts of liquidity ratios on profitability of selected enterprises in Pakistan” with the sample of 26 oil and gas companies listed under the Karachi Stock Exchange (KSE). Findings reveal that there is a significant impact of only liquid ratio on ROA while insignificant on ROE and ROI; the results also show that ROE has no significant impact by three ratios current ratio, quick ratio and liquid ratio while ROI is greatly affected by current ratios, quick ratios and liquid ratio.

Each and every researcher have their own point of view regarding liquidity risk and its impact on financial performance. Some say it has positive impact while other say it has negative impact. Similarly, we will be finding the result in context of Nepalese banking industry.

2.3.2 Review of previous thesis

In this section, different types of related research studies have been reviewed because change of duplication will be avoided from present study and some new change can be created for achieving the objective.

Laminfoday, (2018) has examined the effect of liquidity risk management on financial performance of commercial banks in Sierra Leone with an objective to establish the nexus between management of liquidity risk and financial returns of commercial banks in Sierra Leone. The study was centred on a representative sample of 8 commercial banks and the central banks of Sierra Leone. Descriptive study design was adopted and multiple regression analysis model was adopted to analyse the association between the outcome and predictor parameters. Significant negative association between liquidity risk management and financial returns of commercial banks in Sierra Leone was revealed. 43.7% of the deviation in financial returns (ROA) was explained by the predictor parameters. Stakeholders should therefore ensure that appropriate mechanism to manage liquidity risks in the banking sector are adopted to ensure resilience and improved financial returns for commercial banks in Sierra Leone.

Workineh, (2016) has analysed the impact of liquidity on profitability of private commercial banks—the case of nib international bank and used both qualitative and quantitative data to address the objective of the study. Results of the regression model indicated that Liquidity ratio, NBE Bills and inflation rate had significant positive

impact on profitability. However, loan to deposit ratio and deposit interest rate had an inverse relation with insignificant impact on profitability of Nib International Bank. In addition, the existing liquidity measurement tools were found out to be applicable and effective in terms of liquidity measurement and management. Finally, the study concluded that the impact of liquidity on profitability of Nib International Bank was positive and significant.

Joshi, (2011) compared the financial performance of NIBL and EBL and constructed a result that the liquidity position of NIBL was comparatively better than EBL. NIBL had highest current ratio, cash and bank balance to total deposit ratio and cash and bank balance to total deposit ratio and cash and bank balance to current assets ratio than EBL. NIBL was successful in mobilization of its investment to total deposit, saving deposit to total deposit ratio. On the other hand, EBL appeared to be stronger in mobilization of total investment to total deposits.

Thakur, (2011) analysed the financial performance of commercial banks of Nepal (HBL and NABIL) and found the liquidity position of the banks was in fluctuating trend. The HBL cash and bank balance to current assets, cash reserve ratio is more than NABIL, but current ratio of NABIL was more than HBL. Return on equity, return on assets, return on total deposits and interest earned to total assets of NABIL was better than HBL. So NABIL's profitability position was better than HBL. Investment trend, total deposit trend, net profit, operating income, interest earned, etc. of NABIL was in increasing trend than HBL throughout the study period. All of correlation was almost positive relation.

Limbu, (2006), compared the financial performance of NSBI, EBL & NABIL, he concluded that profitability position of NABIL was best; EBL had better position than NSBI. In terms of income structure, interest paid to interest income, ROA, ROE, etc. reflected that NABIL was most capable to utilize the fund to productive sector and EBL paid highest amount of interest. Liquidity position of three sample banks was good because cash and bank balance to deposit ratio of NSBI, EBL & NABIL showed that the three banks had constantly maintained liquidity ratio (i.e., cash reserve ratio) as defined by NRB. But on the view of current ratio, NABIL could maintain highest liquidity.

Poudel, (2002) looked over the liquidity and investment position of joint venture commercial bank in Nepal. He made an attempt to evaluate liquidity and investment of JVBS' special reference to EBL and NABIL. He concluded that liquidity position of EBL was comparatively better than NABIL. Growth rate of investment was higher in EBL than NABIL. A commercial bank at its own judgement may decide to maintain an appropriate level of liquid assets. There was no standard and uniform rate or ratio for maintaining liquid assets by the commercial banks. He further found the banks do not have constant and consistent liquidity and investment policy. So, researcher recommended exploring such investment and to increase its investment so share and debenture and the bank should have laid policy for timely review of portfolio and to maintain risk and return.

Adhikari, (2001) compared and studies the financial performance of Nepal SBI Bank Ltd. and Everest Bank Ltd. Study found the liquidity position of both banks. Overall liquidity position of EBL was slightly stronger than the NSBI. It showed that EBL can meet its current liabilities more efficiently than NSBI and concluded that both banks had used higher proportion of debt in their capital structure and also found that overall capital structure of NSBI appears more levered than the EBL. The study revealed that both of the banks had maintained NRB balance sheet to deposit ratio remarkable higher than the NRB standard.

After the detailed study, it can be concluded that financial market is the place that facilitate financing and investment of financial assets. Banks are the main financial institution. Mismanagement in financial institutions is involved inadequate and over optimistic loan appraisal, high risk divaricating of loan portfolio and investment etc are major causes investment and loan that has gone bad. NRB is focusing on monetary policy to insure prise, external and financial sector stability so as to create the environment supportive for high and sustainable economic growth.

2.3.3 Summary of articles and thesis.

Table 2.1

Summary of literature review

Source	Topic	Objective	Methods	Findings
Suyanto (2021)	The Effect of Bad Credit and Liquidity on Bank Performance in Indonesia.	To analyze the effect of bad credit and liquidity on bank performance with the mediation of capital adequacy.	Partial least squares structural equation modelling technique	The effect of bad credit and liquidity on bank performance is not significant. Capital adequacy has a strong effect on credit distribution.
Otwoko & Maina (2021)	Effect of liquidity risk on the financial performance of deposit taking savings and credit cooperative organisations (SACCOs) in Kenya.	To analyze the effect of liquidity risk on the financial performance of Deposit-taking Savings and Credit Cooperative Organizations.	descriptive survey design and regression methods	liquidity risk had a statistically significant influence on the financial performance of deposit-taking SACCOs.
Effiong & Ejabu (2020),	Liquidity Risk Management and Financial Performance: Are Consumer Goods Companies Involved?	To examine the effect of liquidity risk management on the financial performance of consumer goods companies.	Multiple regression analysis methods	There exists a significant relationship between liquidity risk management and the financial performance of consumer goods companies. Findings, further reveal that companies' non-concerned attitude to liquidity risk management affects the financial performance of consumer goods companies significantly.
Abu-Alrop & Kokh (2020)	Impact of Credit Risk on the Performance of Russian Commercial Banks	To examine the effect of credit risk on the performance of Russian banks.	Multiple regression	The effect of credit risk on the performance of Russian banks is not a fixed effect but a changing one from one year to another, sometimes it does not

				leave an effect, sometimes it leaves an effect, but in cases where credit leaves an impact on performance indicators, this effect is often a negative and significant effect. The study also concluded that the quality of credit has a significant and negative impact on performance indicators, but the volume of the credit has limited impact.
Mustafa (2020)	Impact of Liquidity Shortage Risk on the financial performance of Sudanese Islamic Commercial Banks	To examine the impact of Liquidity Shortage Risk (LSR) on the financial performance of Islamic Commercial Banks (ICBs) in Sudan	Ordinary Least Square Method	Findings revealed that current deposits to total deposits, total finance to total deposits and inflation negatively affected the financial performance. While liquid assets to total assets have positive influence to the performance of ICBs.
Winoto & Bustaman (2020)	Impact of Liquidity, ownership, Global Financial Crisis and Capital Adequacy ratio on Indonesian Banking Profitability	To analyse the effect of liquidity, ownership, and global financial crisis on Indonesian Banking profitability.	Ordinary Least Square method	The result finds that there is no significant connection between liquidity and ownership on profitability, while crisis has significant connection on profitability.
Cheng, Nsiah, Ofori & Ayisi (2020)	Credit risk, operational risk, liquidity risk on profitability. A study on South Africa commercial	To explore the influence of credit risk, operational risk, and liquidity risk effect on bank profitability.	Smart partial least squares structural equation modeling	Credit risk has a significant positive association with bank profitability. Similarly, liquidity risk shown a positive and significant connection with bank profitability. However, operational risk

	banks. A PLS-SEM Analysis.			indicated a negative affiliation with bank profitability.
Khatai, (2020)	Impact of Liquidity on Profitability of Nepalese Commercial Banks	To investigate the relationship between the liquidity and the profitability of commercial banks in Nepal	Hausman test and fixed effects approach	The finding indicates that credit-deposit (CDR) has positive but insignificant relationship with ROA. However, credit-deposit (CDR) has negative and insignificant relationship with return on equity (ROE). This reveals that profitability ratio ROE has no relationship with those liquidity ratios.
Khalid, Rashed & Hossain (2019),	The Impact of Liquidity Risk on Banking Performance	To empirically study the relationship between liquidity and financial performance.	One-way Fixed Effect Model (FEM) of panel data analysis.	The finding reveals liquidity has no significant and positive or negative impact on return on asset (ROA), return on equity (ROE) as financial performance. Liquidity risk behaves in equivalent ways in different dependent variables.
Madhuwanti and Morawakage (2019),	Impact of liquidity risk on the performances of Sri Lankan commercial banks	To analyze the impact from liquidity risk factors on top line and bottom-line performance indicators of banks.	The researchers test the Hausman specification test, used least squares estimation technique and panel regression models.	Researchers find that liquidity risk negatively and significantly affects bottom lines Return on Average Assets and Return on Average Equity, whilst positively affects the top line Net Interest Margin of the commercial banks. The findings of this study suggest that expenses of the banks should be controlled with better liquidity management to enhance bottom line performances.

Rudhani and Balaj, (2019)	The effect of liquidity risk on financial performance	To study the impact of liquidity risk on the performance of banks in Kosovo.	Linear regression	The results show that there is a positive and significant relation between liquidity risk and performance of the banks and concluded that commercial banks in Kosovo could raise the level of performance by improving their ability to cope with the liquidity shocks risk, the short-term liquidity risk and the risk from the presence of large non-liquid assets.
Pokharel and Pokhrel, (2019)	Impact of liquidity on profitability in Nepalese commercial banks	To examine the impact of liquidity on profitability on the basis of total assets.	descriptive statistics, correlation and regression.	The study indicated largely zigzag trend of average profitability of commercial banks, although the trend of liquidity ratios of the bank was unstable. The research concluded that bank's liquidity ratios have below the prescribed standard.
Laminfoday, (2018)	The Effect of Liquidity Risk Management on Financial Performance of Commercial Banks in Sierra Leone	To investigate the association between liquidity risk and management and financial return of Commercial Banks in Sierra Leone	Descriptive Study	Stakeholders should ensure that appropriate mechanism to manage liquidity risks in the banking sector are adopted to ensure resilience and improved financial returns for commercial banks in Sierra Leone.
Hakimi and Zaghdoudi, (2017)	Liquidity risk and bank performance	To study the effect of liquidity risk on bank performance.	Panel data and random effect regression.	liquidity risk decreases bank performance. Also, findings indicate that international financial crisis and inflation act negatively and significantly on bank performance.

Workineh, (2016)	Impact of liquidity on Profitability of Private Commercial Banks—the case of Nib International Bank S.C.	To investigate the relationship that prevails between liquidity and profitability of the Bank and to find out the extent to which liquidity affects profitability of the Bank	Descriptive and inferential statistical tools	Liquidity had significant impact on profitability of NIB, and existing liquidity measurement tools are applicable and effective in terms of liquidity measurement and management.
Abdi and Kavale, (2016)	Effect of liquidity management on financial performance of commercial banks	To conduct a survey of Liquidity management factors affecting in financial performance of the commercial banks in Mogadishu, Somalia.	Descriptive survey.	Liquidity management drivers individually had a positive influence on the financial performance of commercial banks.
Pradhan and Shrestha, (2016)	Impact of liquidity on bank profitability	To examine the effect of liquidity on the performance of Nepalese commercial banks.	Correlation and Regression	
Thuraisingam, (2015)	The Effects of Liquidity Management on Firm Profitability	To analyze the nature of the liquidity and its impact of profitability from listed companies in Sri Lanka.	Descriptive analysis, correlation and regression.	The research findings show that there is no significant relationship between liquidity and profitability.
Ferrouhi, (2014),	Bank liquidity and financial performance	To analyze the relationship between liquidity risk and financial	panel date regression	Moroccan bank's performance depends positively on size of banks, on foreign direct investments and

		performance of Moroccan banks and to define the determinants of bank's performance in Morocco during the period 2001–2012.		on the realization of the financial crisis and negatively on external funding to total liabilities, on share of own bank's capital of the bank's total assets and on unemployment rate
Ben-Caleb, Egbide, Olubukunol, Uwuigbe, Uwalomwa, (2013)	Liquidity Management and Profitability of Manufacturing companies in Nigeria	To investigate the relationship between liquidity and profitability.	Descriptive analysis	the overall state of liquidity should be improved by establishing more realistic credit policy which would engender shorter cash conversion period (CCP), hence have a favorable impact on the profitability of the company
Manyo& Ogakwu, (2013)	Impact Of Liquidity On Return On Assets Of Firms: Evidence From Nigeria	To examine the impact of liquidity on Return on Assets on 46 quoted firms listed on the Nigerian Stock Exchange from 2000-2009	Multiple Regression Analysis	Managers can increase profitability by putting in place good credit policy, short cash conversion cycle and an effective cash flow management procedure.
Ajanthan, (2013)	The Relationship between Dividend Payout and Firm Profitability: A Study of Listed Hotels and Restaurant Companies in Sri Lanka	The main thrust of this study was to find out the relationship between dividend payout and firm profitability among listed hotels and restaurant companies in the Colombo Stock Exchange (CSE).	Regression and correlation	Dividend policy is relevant and that managers should pay attention and devote adequate time in designing a dividend policy that will enhance firm profitability and therefore shareholder value.

Ayele, (2012)	Determinants of bank profitability: An empirical study on Ethiopian private commercial banks	To test the impact of variables such as capital adequacy, managerial efficiency, liquidity, asset quality, bank size and real GDP on bank's profitability	Multiple regression	Study found the mixed relation between variables and bank's profitability
Joshi, (2011)	A Comparative Study of Financial Performance of NIBL and EBL	To study and compare the financial performance of NIBL and EBL	Descriptive analysis	Liquidity position of NIBL is comparatively better than EBL. EBL appears to be stronger in mobilization of total investment to total deposits.
Thakur, (2011)	Financial Performance Analysis of Commercial Banks of Nepal (HBL and NABIL)	To compare the financial position of NABIL and HBL	Descriptive model	The liquidity position of the banks is in fluctuating trend. NABIL's profitability position is better than HBL.
Limbu, (2006)	A Comparative Study of Financial Performance of NSBI, EBL & NABIL	To assess the financial performance of NSBI, EBL & NABIL	Analytical research design	The profitability position of NABIL is best; EBL has better position than NSBI. Liquidity position of three sample banks is good
Poudel, (2002)	Liquidity and Investment Position of Joint Venture Commercial Bank in Nepal	To evaluate liquidity and investment of JVBs' special reference to EBL and NABIL.	Analytical research design	There is no standard and uniform rate or ratio for maintaining liquid assets by the commercial banks. The banks do not have constant and consistent liquidity and investment policy.
Adhikari, (2001)	A Comparative Study of Financial	To study the financial performance of		Both banks have used higher proportion of debt in their capital structure and also

	Performance of Nepal SBI Bank Ltd. and Everest Bank Ltd.,”	Nepal SBI Bank & Everest bank with compare to the NRB standard.		found that overall capital structure of NSBI appears more levered than the EBL.
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2.4 Research gap

A thorough review of the literature indicates that only a very few studies has been undertaken on liquidity risk and bank performance in the context of Nepalese development banks. Most of the studies are done on commercial banks only. Rijal (2019) conducted research to explore Impact of Liquidity on Profitability of Nepalese Commercial Banks taking sample of 8 commercial banks covering the period from 2011-2017. He recommended that a further study be undertaken taking into account other factors which he also identified. Similarly, Shrestha (2012) in his investigation Impact of Liquidity on Profitability of Commercial Banks in Nepal taking 8 commercial banks sample has considered very few variables and also recommended that further research incorporating more explanatory variables.

Following the suggestions of Rijal (2019) and Shrestha (2012) this study has incorporated more explanatory variables. The identification of additional variables is the outcomes of a thorough literature review (presented in chapter 2). Moreover, the study has included sample of development banks instead of commercial banks as compared to previous studies. The previous researches in Nepal had not incorporated all these variables to examine the impact of liquidity risk and financial performance in banking industry which can be seen as a research gap.

The concept of ROAA and ROAE as a bottom-line performance indicator and NIM as a top-line performance indicator is still new and the research is hardly conducted analyzing these factors. The researcher believes that the outcome of this study helps to minimize the gap on literatures published so far and add something new in the literature. So, there will be academic contribution for the future references. To the best of researcher’s knowledge outcome had been analyzed by considering the views and opinions of different sources, the research has managed to minimize the gap.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

Research methodologies used by researcher is presented in this study. It includes research design, population, sampling methods, sample size, data collection instruments and processing procedures.

3.2 Research design

The research design used in this study is descriptive and analytical research design, in order to examine the impact of liquidity risk on financial performance of development bank in case of Nepal from the fiscal year 2071/72 to 2075/76. Descriptive research design helps to describe characteristics of variables and involves in the evaluation of facts and information. Various analytical tools such as Correlation and regression are used to examine the performance of the banks. It has involved the systematic collection and presentation of data to give a clear picture of a particular situation.

In addition to description research design, a causal comparative research design is applied in this study. This design help to show cause and effect relationship among the variables. To conduct cause and effect research, independent variables (Deposit to total assets ratio, non-performance loan ratio and credit-deposit ratio) are considered as cause and dependent variables (NIM, ROAA and ROAE) are considered as effect. The study is based on various statistical tests such as correlation, regression, mean, standard deviation and etc. The software called SPSS and Microsoft Excel are used to analyze and interpret the quantitative data. This software is commonly used by researchers and easily available in business setting.

3.3 Population and sample

The target population to assess the impact of liquidity risk on financial performance of Nepalese development banks includes development banks that are currently providing services in banking industry. According to Development Bank Supervision Report 2018/19, there are 29 development banks (“B”) operating in the country. Nepalese

development banks are divided into two working areas there are National level working area and Province/Regional level working area.

This study employs quantitative approach to analyze the secondary data. The target population of this study is the total of 29 Nepal Rastra Bank (NRB) licensed development banks in Nepal. Among which on the basis of convenience sampling technique 5 development banks were chosen as a sample. Common characteristics among selected sample banks is there working area is National level.

In this study, quarterly financial statements of the selected banks are the source of data used for this study. Therefore, this research is solely based on secondary data. Since each bank had different years of operation, the census of the population is not desirable for this nature of the study. The name lists of the sample banks taken for study are as follows:

- i. Muktinath Bikas Bank Ltd.
- ii. Gandaki Bikas Bank Ltd.
- iii. Jyoti Bikas Bank Ltd.
- iv. Kailash Bikash Bank Ltd.
- v. Deva Bikash Bank Ltd.

3.4 Sources of data

This research was totally based on secondary data. The research was analytical and empirical in nature. The major sources of secondary data were;

- i Quarterly reports of Development banks under study from financial period 2071/72 to 2075/76B.S. from the website of selected banks
- ii From the website of Nepal Rastra Bank
- iii Journals, Text books, publications and other dissertations

3.5 Data collection procedure

Different tools and techniques were adopted while collecting and processing data for the study. The data needed for conducting this study were all secondary sources. The degree of reliability and validity of the data using for the study depends on the degree of accuracy of the data maintained by the sample banks in their respective reports or accounts. However, the data can be ensured through crosschecking the source. For the collection of data, data collection sheets were edited, coded and re-arranged as per the

need of the study. Data were analyzed by using Microsoft Excel and SPSS software. The collected data were entered using SPSS software and analysis of descriptive, correlation and regression as per the requirement of study.

3.6 Data analysis tools and techniques

Financial ratio like Non-Performing Loan Ratio, Deposit to Total Assets Ratio and Credit to Deposit ratio were used to establish the relationship among the data and research. Ratio Analysis is one of the best tools for financial analysis. Ratios can be taken as expression of relationships between two items or group of items and therefore may be calculated in any number and ways so far meaningful co-relationship is obtainable. In general, the Ratio Analysis is used as a benchmark for evaluating the financial position and performance of a firm.

The following ratios related to the banks are used to analyze the data:

- i Non-Performing Loan Ratio

$$NPLR = \frac{\text{Non - Performing Loan}}{\text{Total loan}}$$

- ii Deposit to Total Assets Ratio

$$DTA = \frac{\text{Deposit}}{\text{Total Assets}}$$

- iii Return on Average Assets

$$ROAA = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

- iv Return on Average Equity

$$ROAE = \frac{\text{Net Income}}{\text{Average shareholder's equity}}$$

- v Credit to Deposit ratio

$$CDR = \frac{\text{Credit}}{\text{Total Deposit}}$$

- vi Net Interest Margin

$$NIM = \frac{\text{Net Interest Income}}{\text{Average Interest Earning Assets}}$$

Following tools were used to analyze and interpret the data of the research.

3.6.1 Descriptive statistics

The descriptive statistics of the variables used in the study for the bank specific variables have been presented and analyzed in this section of the study. The descriptive statistics used in the study consists of mean, standard deviation, number of observations, minimum and maximum values.

3.6.2 Correlation Analysis

Correlation analysis is a statistical method used to evaluate the strength of relationship between two quantitative variables. A high correlation means that two or more variables have a strong relationship with each other, while a weak correlation means that the variables are hardly related. In other words, it is the process of studying the strength of that relationship with available statistical data. The Pearson correlation coefficients were calculated to examine the nature and direction of the relationship between the dependent variable i.e., ROAE, ROAA and NIM. The independent variables such as; NPLR, DTA and CDR.

3.6.3 Multiple regression analysis

A regression analysis provides more information about the slope of the relationship. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'Criterion Variable') changes when and one of the independent variables is varied, while the other independent variables are held fixed. To find out the factors affecting financial performance of development banks, a multiple linear regression analysis was carried out in respect of 5 Nepalese development banks from 2071 to 2076 B.S.

A multiple regression equation in this analysis can be expressed as:

$$\text{ROAA} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

$$\text{ROAE} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

$$\text{NIM} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Where,

ROAA = Return on Average Assets

ROAE = Return on Average Equity

N.I.M = Net Interest Margin

β_0 = Constant

β_1 = Regression coefficient of Non-performance Loan ratio

X_{1it} = Independent variable Non-performance Loan ratio for firm 'i' during time period 't'

B2 = Regression coefficient of Deposit to Total assets ratio

X_{2it} = Independent variable for Deposit to Total assets ratio firm 'i' during time period 't'

B3 = Regression coefficient of Credit to Deposit ratio

X_{3it} = Independent variable Credit to Deposit ratio for firm 'i' during time period 't'

e_{it} = Error component

CHAPTER IV

RESULTS AND DISCUSSION

This chapter has been organized to present the result, analysis and interpret them accordingly. Its main objective was to present data and facts and interpret them. Data collected from various sources were classified and tabulated as requirement of the study and in accordance to the nature of collected data. Different types of financial and statistical tools were used in this chapter. In this chapter data from secondary sources were analyzed and explained in a systematic manner and tabulated in a prescribed format.

4.1 Results

4.1.1 Descriptive statistics of the variables

The descriptive statistics of the variables used in this study for the bank specific variables had been presented and analyzed in this section of the study. The descriptive statistics used in the study consists of mean, standard deviation, minimum and maximum values.

Table 4.1

Descriptive statistics of the variables

	ROAA	ROAE	NIM	DTA	NPLR	CDR
Mean	.0065757	.0538856	.0131472	.8405271	.011975	.757678
Std. Deviation	.00287756	.02585200	.00426167	.02166670	.0157717	.0366990
Minimum	-.00004	-.00032	.00363	.78029	.0000	.5683
Maximum	.01642	.15730	.03807	.89022	.1033	.7931

Source: Annual report of sample banks and results are drawn from SPSS-25

Table 4.1 presents the descriptive statistics of variables for the bank specific variables associated with all 5 development banks for the period 2071/72 to 2075/76. ROAA, ROAE and NIM are the proxies for financial performances of development banks and DTA, NPLR and CDR, are proxies for liquidity risk. Return on Average Assets (ROAA) is an indicator of how efficient a company is using its assets to generate before contractual obligation must be paid. ROAA measures the ability of the management to convert the assets of the bank into net earnings. The ROAA reflects the ability of a

bank's management to generate profits from the bank's assets. The average value of ROAA of Nepalese development bank is 0.00658 with the standard deviation of 0.00288 and the minimum and maximum range from -0.00004 to 0.01642. Similarly, ROAE is what the shareholders look in return for their investment. The profitability performance measured by ROAE showed that the average value of bank performance is 0.05389 with the standard deviation of 0.02559 but it has minimum value -0.00426 and maximum value 0.03807. The NIM has average value of 0.01315 with the standard deviation of 0.000426 and the minimum and maximum range from 0.00363 to 0.03807. The DTA has minimum value of 0.78029 to maximum 0.89022 with a mean of 0.84053 and standard deviation of 0.02167. Similarly, the average value of NPLR is 0.01198 with the standard deviation of 0.01577 the maximum value is 0.1033 and minimum value is 0.000.

The CDR has average value of 0.75768 with the standard deviation of 0.03669 and the minimum and maximum range from 0.5683 to 0.7931. The result of this study proposed that a continuous increase in credit to deposit ratio will result in a liquidity risk. It can be explained as much of the deposit, which has undefined maturity, changed to long term loans and advances, the maturity mismatch will be wider. Thus, the probability of exposure to liquidity risk will be higher and this may result in cost of illiquidity. This in fact has adverse impact on profitability of development banks.

The mean value of ROAE, ROAA and NIM are significantly positive, which suggests that the systemically important banks record a healthy profitability. However, standard deviation of ROAE is relatively higher compared to other performance indicators, suggesting that degree of financial leverage can be significantly different among the banks.

4.1.2 Correlation analysis

Return on Average Assets, Return on Average Equity, Net Income, and Net Interest Margin had been used as the variables for the financial performance and Nonperformance loan ratio, Credit to deposit ratio and Deposit to total assets ratio were the explanatory variables for liquidity risk used in this study. Therefore, to expect some kind of statistically significant relationship among these pairs of variables was reasonable. This section therefore was devoted to explaining the direction and magnitude of relationship among different pairs of these variables. Hence, Pearson's

correlation analysis between variables had been studied to find relations among them. This section dealt with at what extent variables under study were correlated to each other. A positive correlation reveals that the direction of relationship is positive with one increasing in action to other increase. Meanwhile, a negative correlation reveals an inverse; an increase in one when the other decreases.

Table 4.2

Correlation analysis

		DTA	NPLR	CDR	ROAA	ROAE	NIM
DTA	Pearson Correlation	1	-.407**	.128	.274**	.283**	.228*
	Sig. (2-tailed)		.000	.203	.006	.004	.022
	N	100	100	100	100	100	100
NPLR	Pearson Correlation	-.407**	1	-.693**	-.193	-.065	-.332**
	Sig. (2-tailed)	.000		.000	.055	.523	.001
	N	100	100	100	100	100	100
CDR	Pearson Correlation	.128	-.693**	1	-.068	-.197*	.162
	Sig. (2-tailed)	.203	.000		.500	.050	.108
	N	100	100	100	100	100	100
ROAA	Pearson Correlation	.274**	-.193	-.068	1	.856**	.754**
	Sig. (2-tailed)	.006	.055	.500		.000	.000
	N	100	100	100	100	100	100
ROAE	Pearson Correlation	.283**	-.065	-.197*	.856**	1	.688**
	Sig. (2-tailed)	.004	.523	.050	.000		.000
	N	100	100	100	100	100	100
NIM	Pearson Correlation	.228*	-.332**	.162	.754**	.688**	1
	Sig. (2-tailed)	.022	.001	.108	.000	.000	
	N	100	100	100	100	100	100

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

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

Source: SPSS 25.0

a) Correlation between liquidity risk (deposit to total assets ratio) and bottom-line performance.

Table 4.2 shows the Pearson correlation between Deposit to Total Assets ratio (DTA) and bottom-line performance (Return on Average Assets and Return on Average Equity). From the outcome of the correlation analysis, the significance level of ROAA and ROAE is $p=0.006$ and $p=0.004$ respectively, a result that is within the allowed value $p<0.01$, which shows that the link is significant. On the other hand, Pearson correlation values for ROAA and ROAE are $r=0.274$ and $r=0.238$ respectively, which lead to conclude that the financial performance and the bank's ability to withstand liquidity risk in the short-term have small positive correlation.

b) Correlation between liquidity risk (deposit to total assets ratio) and top-line performance

Table 4.2 shows the correlation between liquidity risk measured by deposit to total assets ratio(DTA) and top-level performance i.e.; Net Interest Margin Ratio (NIM). The significance level $p = 0.022$, a result that is within the allowed value $p<0.05$, meaning that there is a statistically significant relationship between bank's top-line performance and DTA. The value of the Pearson coefficient shows the strength of the correlation, and table no.4.2 shows the variable NIM is $r = 0.228$, which means that the performance of banks has a moderate correlation, and also from signs it reveals that the relation between them is positive.

c) Correlation between liquidity risk (non-performing loan ratio) and bottom-line performance.

Table 4.2 shows the Pearson correlation between liquidity risk measured by non-performing loan ratio (NPLR) and bottom-line performance (Return on Average Assets and Return on Average Equity). Pearson correlation values for financial performance variables ROAA and ROAE are $r= -0.193$ and $r= -0.065$ respectively, which means that the liquidity risk factor NPLR and bottom-line performance of banks has a small negative correlation.

d) Correlation between liquidity risk (non-performing loan ratio) and top-line performance.

Table 4.2 shows the correlation between liquidity risk indicator Non-Performing Loan Ratio (NPLR) and top-level performance i.e.; Net Interest Margin Ratio (NIM). The

significance level $p = 0.001$ is within the allowed value $p < 0.01$, meaning that there is a statistically significant relationship between bank's top-line performance and liquidity risk. The value of the Pearson coefficient shows the strength of the correlation, and in table no.4.2 the variable NIM is $r = -0.332$, which means that the performance of banks has a moderate negative correlation. That means, increase in liquidity risk decrease the topline performance of development banks.

e) Correlation between liquidity risk (credit to deposit ratio) and bottom-line performance.

From the outcome of the correlation analysis in table 4.2 the significance level of return on average assets is $p = 0.500$, that shows $p > 0.01$ which means there isn't any statistical relation between CDR and ROAA. Whereas, the significance level of return on average equity is $p = 0.050$, which means there is a significant relation between CDR and ROAE. On the other hand, Pearson correlation values for ROAA and ROAE are $r = -0.068$ and $r = -0.197$ respectively, which lead us to conclude that the liquidity risk (CDR) and bottom-line performance has small negative correlation.

f) Correlation between liquidity risk (credit to deposit ratio) and top-line performance.

Table 4.2 shows the correlation between liquidity risk indicator CDR and top-level performance i.e.; Net Interest Margin Ratio (NIM). The significance level $p = 0.108$, that shows $p > 0.01$ which means there isn't any statistical relation between CDR with Top line performance of Nepalese development banks. In short, liquidity risk doesn't have any impact on Bottom line performance.

4.1.3 Regression analysis

In statistical modeling, regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). It is a statistical tool for the investigation of relationships between variables.

It basically deals with regression results from the model to examine and investigate the direction and strength of relationship between the independent and dependent variables. The regression results have been presented in tables below.

a) Regression analysis between bottom line performance (ROAA) and liquidity risk variables.

Table 4.3

Model summary (ROAA)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.373 ^a	.139	.112	.00271168

a. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculations

Table 4.3 shows R value is 0.373 which suggest that there is positive association between bottom line performance (ROAA) and liquidity risk (DTA, CDR and NPLR). The value of adjusted R² of the regression model is 0.112 which means that liquidity risk explain 11.2% of the variability of bottom line (ROAA) and the remaining by the other factors.

Table 4.4

ANOVA^a table (ROAA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	3	.000	5.161	.002 ^b
	Residual	.001	96	.000		
	Total	.001	99			

a. Dependent Variable: ROAA

b. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculations

The analysis of ANOVA table 4.4 shows an overall significance of the regression model. The total sum of squares deviation of the observations is 0.001, in which the explained sum of squares is 0.000 and the residual sum of square is 0.001. The table shows that the liquidity risk as an independent variable statistically significantly predict the bottom line performance/dependent variable, $F(3, 96) = 5.161$, $p < .005$ (i.e., the regression model is a good fit of the data).

Table 4.5

Beta coefficient of liquidity risk factors and bottom-line performance indicator

(ROAA)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.008	.016		.508	.613
	DTA	.023	.014	.172	1.615	.110
	NPLR	-.065	.027	-.356	-2.429	.017
	CDR	-.026	.011	-.337	-2.496	.014

a. Dependent Variable: ROAA

b. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculations

Table 4.5 shows the relationship between the liquidity risk factors and bottom-line performance variable (ROAA). These estimates tell the amount of increase in ROAA that would be predicted by a 1 unit increase in the predictor. Liquidity risks factor DTA- The coefficient is 0.023. So, for every unit increase in DTA, a 0.023 unit increase in ROAA is predicted, holding all other variables constant. The variable DTA is technically not statistically significantly different from 0, because the p-value is greater than 0.05. NPLR- For every unit increase in NPLR, there is a -0.065 unit decrease in ROAA, holding all other variables constant. The coefficient for NPLR is statistically significantly different from 0 using alpha of 0.05 because its p-value is 0.017, which is smaller than 0.05. For every increase of one point on the CDR, ROAA is predicted to be lower by -.026 points. The coefficient for CDR is statistically significant because its p-value is 0.014, which is smaller than alpha 0.05. To conclude liquidity risk factor negatively influence on bottom line performance variable ROAA.

b) Regression analysis between bottom line performance (ROAE) and liquidity risk variables.

Table 4.6

Model summary (ROAE)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.400 ^a	.160	.133	.02407

a. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculations

Table 4.6 shows R value is 0.400 which suggest that there is a positive association between liquidity risk (DTA, CDR and NPLR) and bottom-line performance variable (ROAE). The value of adjusted R square of the regression model is 0.133 which means that 13.3% variation in ROAE can be explained by the regression equation involving three explanatory liquidity risk variables and the remaining by the other factors.

The reliability of the regression equation is explained by the standard error of estimate for dependent variable ROAE which is 0.02407 shown in model summary table. It means that there is 2.407% dispersion of values from the regression line for bottom line performance (ROAE).

Table 4.7

ANOVA table (ROAE)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.011	3	.004	6.078	.001 ^b
	Residual	.056	96	.001		
	Total	.066	99			

a. Dependent Variable: ROAE

b. Predictors: (Constant), CDR, DTA, NPLR

Source: SPSS 25.0 calculations

The analysis of ANOVA table 4.7 shows an overall significance of the regression model. The total sum of squares deviation of the observations is 0.066, in which the explained sum of squares is 0.011 and the residual sum of square is 0.056. The significance value (p-value) is 0.001 which is more less than alpha (0.05) so it can conclude that the model is significant.

Table 4.8

Beta coefficient of liquidity risk factors and bottom-line performance variable (ROAE)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.034	.143		.242	.809
	DTA	.280	.126	.234	2.224	.028

	NPLR	-.398	.237	-.243	-1.677	.097
	CDR	-.278	.094	-.395	-2.961	.004

- a. Dependent Variable: ROAE
- b. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculations

By the analysis of coefficients indicated by table 4.8, it is observed that the beta for liquidity risk factors NPLR and CDR are -0.398 and -0.278 respectively that means NPLR and CDR has inverse relationship with bottom line performance indicator ROAE as a point increase on NPLR and CDR, decrease of -0.398 and -0.278 respectively can be felt on ROAE. The beta for liquidity risk-DTA is 0.280 which means that a point increase in DTA has an impact on ROAE by 0.131 times. The p-value for NPLR is 0.097 which is higher than alpha 0.05 it indicates NPLR has insignificant relation with ROAE. The p-value for DTA and CDR is 0.028 and 0.004 respectively which is less than alpha 0.05. It indicates that liquidity risk has mixed influence on bottom line performance variable ROAE.

c) Regression analysis between liquidity risk and top line performance (NIM)

Table 4.9

Model summary (NIM)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.355 ^a	.126	.099	.00405

- a. Predictors: (Constant), DTA, CDR, NPLR

Source: SPSS 25.0 calculation

Table 4.9 shows R value is 0.355 which suggest that there is positive association between top line performance (NIM) and liquidity risk (DTA, CDR and NPLR). The value of adjusted R square of the regression model is 0.099 which means that 9.9% variation in top line performance can be explained by the regression equation involving three liquidity risk variables and the remaining by the other factors.

The reliability of the regression equation is explained by the standard error of estimate for top line performance is 0.00405 shown in model summary table. It means that there is 0.405% dispersion of values from the regression line for top line performance.

Table 4.10*ANOVA table (NIM)*

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.000	3	.000	4.612	.005 ^b
	Residual	.002	96	.000		
	Total	.002	99			

a. Dependent Variable: NIM

b. Predictors: (Constant), CDR, DTA, NPLR

Source: SPSS 25.0 calculations

The analysis of ANOVA table 4.10 shows an overall significance of the regression model. The total sum of squares deviation of the observations is 0.002, in which the explained sum of squares is 0.000 and the residual sum of square is 0.002. The table shows that the liquidity risk variables statistically significantly predict the top line performance variable, $F(3, 96) = 4.612$, $p < .05$ (i.e., the regression model is a good fit of the data).

Table 4.11*Beta coefficient of liquidity risk variables and top line performance variable (NIM).*

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.008	.024		.339	.735
	DTA	.018	.021	.093	.863	.390
	NPLR	-.099	.040	-.366	-2.478	.015
	CDR	-.012	.016	-.104	-.762	.448

a. Dependent Variable: NIM

b. Predictors: (Constant), CDR, DTA, NPLR

Source: SPSS 25.0 calculations

Table 4.11 shows the relationship between the liquidity risk variables and top line performance variable (NIM). These estimates tell the amount of increase in NIM that would be predicted by a 1 unit increase in the predictor or liquidity risk variables. DTA- The coefficient is .018. So, for every unit increase in DTA, a .018 unit increase in NIM is predicted, holding all other variables constant. The variable DTA is technically not statistically significantly different from 0, because the p-value is greater than .05. NPLR- For every unit increase in NPLR, there is a -.099 unit decrease in NIM,

holding all other variables constant. The coefficient for NPLR is statistically significantly different from 0 using alpha of 0.05 because its p-value is 0.015, which is smaller than 0.05. For every increase of one point on the CDR, NIM is predicted to be lower by -0.026 points. The coefficient for CDR is statistically insignificant because its p-value is 0.448, which is higher than alpha 0.05. To conclude, out of three liquidity risk variables only one variable i.e.; NPLR seem to impact on top line performance.

4.1.4 Findings

- i. The study depicted the mean value of ROAA, ROAE and NIM i.e., 0.0065757, 0.0538856 and 0.0131472 respectively are significantly positive, which suggests that the systemically important development banks record a healthy profitability. However, standard deviation of ROAE is relatively higher compared to other financial performance indicators, suggesting that degree of financial leverage can be significantly different among the banks. Mean value of CDR unveiled the probability of exposure to liquidity risk would be higher and this may result in cost of illiquidity.
- ii. The adjusted R^2 value for the NIM model, 0.099 indicates that 9.9 percent of the variation in NIM of banks is determined by liquidity risk. Table 4.11 further discloses that only the non-performing loans ratio significantly affect the NIM of the banks. The estimated coefficient of NPLR is negative and the corresponding p-value is less than alpha i.e. ($0.015 < 0.05$). Therefore, the researcher document that liquidity risk negatively impacts the NIM which is top line performance of selected banks.
- iii. The adjusted R^2 of the regression model ROAA, 0.112 suggests that 11.2 percent of the variation in ROAA is explained by given explanatory variables. The estimates of the regression coefficients and p-values are also given in Table 4.5. Based on the results, only non-performing loans ratio ($0.017 < 0.05$) and credit to deposit ratio ($0.014 < 0.05$) significantly affect the ROAA of the banks negatively since p-value is significant at 5% level with the negative coefficients. Hence, study shows liquidity risk have significantly negative influence on bottom line performance measured by ROAA.
- iv. The adjusted R^2 for the ROAE model, 0.133 suggests that 13.3 percent of the variation in ROAE of banks is determined by given independent variables. The Deposit to total assets ratio and credit to deposit ratio significantly affect the

ROAE of the banks. The p-value for DTA and CDR as depicted in Table 4.8 are 2.8% and 0.4% respectively which are statistically significant at 5% level. The estimated coefficient of DTA is positive and CDR is negative which indicates there is a positive and negative impact of liquidity risk on ROAE. On that account study reveals liquidity risk has mixed influence on bottom line performance of banks indicated by ROAE.

- v. As a key finding of this study, the liquidity risk negatively affects both top line and bottom-line performance indicators.

4.2 Discussion

The findings of the study prove that there is significant impact from deposits to total assets as a proxy for liquidity risk on the performance of development banks at 5% of significance level. This outcome complies with the research findings of Arif & Nauman Anees (2012) and Diamond & Rajan (2001), who conclude that there is a positive significant relationship between deposits and performance of the banks. Holmstrom & Tirole (2000) argue that maintaining a high level of cash reserves within the banks will reduce the performance of the banks due to the fact that if the banks hold cash within the banks, they cannot invest, lend to the public or use for alternative investments to earn profits. This view also conforms with this study as it reveals that the deposits to total assets does have a significant impact on performances of systemically important banks in Sri Lanka. It suggests that administration and management of the assets have an impact rather than just having the assets in their portfolio.

Furthermore, this study emphasizes that the non-performing loan ratio has a negative significant impact on ROAA and ROAE as bottom-line performance indicator and NIM as a proxy for top line performance of development banks. It is consistent with the finding of Shen et al. (2001), which states that the negative significant relationships between non-performing loans and ROAA and ROAE are due to a high cost of funds. The finding of Boahene et al. (2012) evidence that the non-performing loans have a positive impact on financial performances of banks which is contrary with this study's findings relating to NIM and NPLR. This study indicates that if a bank's risk of customer loan default increases, the bank might face a difficulty on improving its top line performances which eventually erode the bottom-line performances due to the administration cost and bad debts.

This study revealed that NPLR is the only liquidity indicator that affect both top line and top line performance indicator which was in line with Madhuwanthi R. M. R. and Morawakage P. S. (2019), which indicated that non-performing loan ratio is the significant proxies for liquidity risk. Multiple regression analysis reveals that liquidity risk negatively and significantly affects bottom lines Return on Average Assets (ROAA) and Return on Average Equity (ROAE).

The above finding confirms to the finding by Munteanu, (2013) who disclosed there could be slightly positive and the negative impact of liquidity on both ROAE and ROAA, deciphering the non-linear relationship between the variables. Paper presented empirical evidence regarding the non-linear relationship between liquidity and profitability for a panel of Eastern and Central European banks, over the period of 2003 to 2010. A study undertaken by Bordeleau and Graham (2010) on the impact of liquidity on profitability of a sample of large U.S.A and Canadian commercial banks revealed that a nonlinear relationship exists, where by profitability is improved for banks that hold some liquid assets, however, there is a point beyond which holding further liquid assets diminishes a banks' profitability.

CHAPTER V

SUMMARY AND CONCLUSION

This chapter comprises an in-brief summary of the whole study, conclusions drawn from the study and implications. The summary section provides an overview of the study and it covers a very brief introduction and justification of the study. It reports key findings based on the analysis and discussion section. The conclusion segment involves the corollaries drawn whereas implication segment involves the utility and contribution of the study.

5.1 Summary

This study aims at examining the relationship between liquidity and financial performance of Nepalese development banks by taking three liquidity factors into consideration- Deposit to Total Assets Ratio (DTA), Non-Performing Loan Ratio (NPLR), and Credit to Deposit Ratio (CDR). Similarly, Return on Average Assets (ROAA), Return on Average Equity (ROAE) and Net Interest Margin (NIM) were proxies for the financial performances of banks.

Relevant literatures were reviewed and that have been referred under conceptual review and conceptual framework sections, which cover the concepts, definitions of liquidity risk and its indicator and financial performance determinants from various perspectives. Dependent and independent variables were defined and the relationship between those dependent and independent variables were enumerated. It also illustrated previous studies in relation to financial performance. For this, various books, journal, articles in periodicals, reports, cases, websites and other literary articles were studied.

Descriptive research design has been used in this study. The population for this study comprised all development banks of Nepal and a suitable sample size was chosen on the basis of total assets. The source of data was secondary in nature. Data was extracted from the quarterly financial report of the respective banks. Descriptive statistics, correlation, regression and ANOVA test were used for the analysis of data in the study.

The identified factors i.e., NPLR, CDR and DTA shows mixed relation with top and bottom-line performance of the banks. This study exhibits that there are partial relation

between the dependent and independent variables indicators. Study also divulges liquidity factors have non-linear relation with ROAA. Similar finding was found by Munteanu, (2013) in his research paper regarding the non-linear relationship between liquidity and profitability for a panel of Eastern and Central European banks, over the period of 2003 to 2010. The study declines the underlying fact in the literature by providing that all the identified factors have insignificant relation on the dependent ones. However, DTA has positive significant impact on bottom line performance measured by ROAE. To elaborate study depicts DTA has positive non-linear relation with ROAA that means DTA has indirect influence on ROAA. Similarly, DTA has positive impact on ROAE that means with the increase in DTA, ROAE will also increase significantly. Contrarily, study reveals that CDR has negative and significant impact on bottom line performance. In case of NPLR, study showed negative relation between NPLR and bottom-line performance. But this study unveiled an interesting fact that NPLR and ROAA has non-linear relation that means NPLR doesn't have direct negative impact on ROAA. Whereas, NPLR had no impact on ROAE. Conclusively, Liquidity factor does seem to have much impact on bottom line performance of bank. Out of three liquidity factors only NPLR has negative and significant impact on NIM.

5.2 Conclusion

Using quarterly data of five development banks in Nepal from fiscal year 2071/72-2075/76 and multiple regression analysis, the researchers found that Non-Performing Loan Ratio is the most significant liquidity risk factor which affects all the performance indicators of the banks. Deposit to total assets and Credit to deposit ratio factors affect the bottom-line performances at 5% significance levels.

The study further reveals that the NPLR has significant impact on the top-line performances of the banks. In addition, the research concludes that the Non-Performing Loan Ratio does negatively affect the bottom-line performances measured by ROAA only while negatively and significantly affecting the top line performances which is measured by Net Interest Margins of the banks.

Furthermore, the study discloses that CDR negatively and significantly affects the bottom-line performance indicators i.e., ROAA and ROAE of the banks, which means that the higher level of CDR of the banks will decline the bottom-line performance of the banks significantly. CDR also seems to have non-linear relation with ROAA. In

addition, the research concludes that the CDR inversely affect the bottom-line performances of the banks. While insignificantly affecting the top line performances which is measured by Net Interest Margins of the banks.

The study also further reveals that the DTA has positive significant impact on the bottom-line performances of the banks, which means that the DTA of the banks will impact the bottom-line performance measured by Return on Average Equity of the banks only. In addition, the research concludes that the DTA could affect the bottom-line performances while DTA has no impact on line performances which is measured by Net Interest Margins of the banks.

The banks need to control and closely monitor the non-performing loans in order to reduce the Non-Performing Loan Ratio with the purpose of achieving better performance of the banks and also to avoid the negative impact on the performance of the banks. Finally, the decision makers of the development banks in Nepal need to maintain proper attention to reduce their recovering and other overhead costs relating to their main banking businesses in order to strike an equal balance between liquidity and both top line and bottom-line performances of the banks.

In addition, the study disclosed that there is a mixed relationship between liquidity risk and performance of the banks. Therefore, further research can investigate the impact from other liquidity factors and market liquidity risk on the performance of the banks and the profit efficiency of top line and bottom-line performance indicators of the banks by considering the administration and other overhead costs which specifically, erode the bottom-line performances

5.3 Implication

On the basis of the results and findings this study has following implication.

5.3.1 Implications for management.

On the basis of the findings and conclusions the following implications for future researchers emerge.

On the basis of research, the following implications are recommended to the banks in Nepal.

- i The decision makers of the development banks in Nepal need to maintain proper attention to reduce their recovering and other overhead costs relating to their

main banking businesses in order to strike an equal balance between liquidity and both top line and bottom-line performances of the banks.

- ii The study shows that CDR leads to less financial performance on the perspective of bottom-line performance. Study suggests Nepalese development banks to increase the level of deposits and core fund to gain the higher-level liquidity and financial performance.
- iii The study found that liquidity measured by CDR has a significantly negative influence on the bottom-line performance as measured by ROAA and ROAE. Banks should maintain adequate liquidity levels in the form of marketable securities in order to realize profits for the banks.
- iv It is essential for the banks to keep a constant watch over the non-performing assets not just to keep it performing, but also once they become non-performing, effective measures are initiated to get full recovery and where this is not possible.
- v The selected banks have to exercise extraordinary care in the selection of fresh borrowers so that new account should not enter in to the arena of non-performing loan.

5.3.2 Recommendations for future researchers.

- i Study concentrated only on the funding liquidity risk. Therefore, further research can investigate the impact from market liquidity risk on the performance of the banks and the profit efficiency of top line and bottom-line performance indicators of the banks by considering the administration and other overhead costs which erode the bottom-line performances specifically.
- ii The research model developed in this study has been shown to offer a good explanation of impact of liquidity on development banks' financial performance in Nepal. Thus, replication of this model to other parts of the world is important so as to be able to generalize the findings in this study.
- iii As indicated earlier, this study is limited to the development banks in Nepal. Extending this study to other groups of banks and financial institutions would also be interesting.
- iv On this research model the factors NPLR, CDR and DTA has been taken in to consideration, identifying new factors to analyze the financial performance of banks and financial institutions would also be intriguing.

S.N	Components	REQ.	Qtrrs	Gandaki Bikash Bank ('000)														
				2071/72	real 71/72	ROAA/E	2072/73	real 72/73	ROAA/E	2073/74	real 73/74	ROAA/E	2074/75	real 74/75	NI ratio	2075/76	real 75/76	NI ratio
1	Net income (NI)	Nil	Q1	22049	22049		46572	46572	33.54%	62233	62233	33.95%	53913	53913	23.39%	102788	102788	35.05%
			Q2	55,632	33,583		110275	63703	40.16%	181548	119315	54.37%	204508	150595	49.90%	265222	162434	39.65%
			Q3	86,567	30,935		164814	54539	32.72%	273135	91587	45.39%	340444	135936	46.99%	390354	125132	34.79%
			Q4	220,479	133,912		300524	135710	59.92%	540604	267469	44.74%	501828	161384	40.02%	611274	220920	42.52%
		operating income	Q1	56,124	56,124		138848	138848		183314	183314		230460	230460		293279	293279	
			Q2	129,268	73,144		297486	158638		402755	219441		532279	301819		702915	409636	
			Q3	205,123	75,855		464191	166705		604512	201757		821538	289259		1062597	359682	
			Q4	556,311	351,188		690664	226473		1202339	597827		1224806	403268		1582216	519619	
2	ROAA	Beginning Shareholder's Assets	Q1	4529540	4541052.5	0.49%	11035355	11351127.5	0.41%	13744559	13911684	0.45%	22038796	22419034.5	0.24%	27948188	28221971.5	0.36%
			Q2	4552565	4764286	0.70%	11666900	12047921.5	0.53%	14078809	14396516	0.83%	22799273	23299719.5	0.65%	28495755	29614813	0.55%
			Q3	4,976,007	5127936.5	0.60%	12428943	12481599.5	0.44%	14714223	14728247.5	0.62%	23800166	24277549.5	0.56%	30733871	31383471	0.40%
			Q4	5,279,866	8157610.5	1.64%	12534256	13139407.5	1.03%	14742272	18390534	1.45%	24754933	26351560.5	0.61%	32033071	33387973	0.66%
		Ending Shareholder's Assets	Q1	4552565			11666900			14078809			22799273			28495755		
			Q2	4,976,007			12428943			14714223			23800166			30733871		
			Q3	5,279,866			12534256			14742272			24754933			32033071		
			Q4	11,035,355			13744559			22038796			27948188			34742875		
3	ROAE	Beginning Shareholder's Equity	Q1	483842	494731.5	4.46%	1187113	1210399	3.85%	1485002	1516118.5	4.10%	2778894	2805581	1.92%	3764645	3816039	2.69%
			Q2	505621	520848.5	6.45%	1233685	1264105	5.04%	1547235	1606377.5	7.43%	2832268	2907199	5.18%	3867433	3750243	4.33%
			Q3	536076	551542	5.61%	1294525	1321908.5	4.13%	1665520	1711313.5	5.35%	2982130	3292696	4.13%	3633053	3695619	3.39%
			Q4	567008	877060.5	15.27%	1349292	1417147	9.58%	1757107	2268000.5	11.79%	3603262	3683953.5	4.38%	3758185	3868644.5	5.71%
		Ending Shareholder's Equity	Q1	505621			1233685			1547235			2832268			3867433		
			Q2	536076			1294525			1665520			2982130			3633053		
			Q3	567008			1349292			1757107			3603262			3758185		
			Q4	1187113			1485002			2778894			3764645			3979104		
4	NIM	Net Interest income	Q1	45,353	45,353		115269	115269		154700	154700		200579	200579		233681	233681	

			Q2	105,740	60,387		251187	135918		347882	193182		453772	253193		554275	320594	
			Q3	168,807	63,067		392634	141447		531649	183767		705341	251569		859793	305518	
			Q4	467,990	299,183		581809	189175		1065950	534301		1046319	340978		1309027	449234	
		beginning earning assets	Q1	4288462	4340717.5	1.04%	10673290	10885575	1.06%	13380331	13572274	1.14%	21337645	21910518.5	0.92%	27442392	27566600.5	0.85%
			Q2	4392973	4573263	1.32%	11097860	11509139.5	1.18%	13764217	14091776.5	1.37%	22483392	22842823.5	1.11%	27690809	28893552	1.11%
			Q3	4753553	4898889	1.29%	11920419	12032049	1.18%	14419336	14370503.5	1.28%	23202255	23707857	1.06%	30096295	30744223	0.99%
			Q4	5044225	7858757.5	3.81%	12143679	12762005	1.48%	14321671	17829658	3.00%	24213459	25827925.5	1.32%	31392151	32703603.5	1.37%
		ending earning assets	Q1	4392973			11097860			13764217			22483392			27690809		
			Q2	4753553			11920419			14419336			23202255			30096295		
			Q3	5044225			12143679			14321671			24213459			31392151		
			Q4	10673290			13380331			21337645			27442392			34015056		
5	NPL (Given)	Non Performing Loan Ratio	Q1	0.25%	0.0025%		1.380%	0.01380%		1.59%	0.01590%		1.40%	0.01400%		0.46%	0.0046%	
			Q2	0.12%	0.0012%		1.59%	0.01590%		0.84%	0.00840%		0.88%	0.00880%		0.41%	0.0041%	
			Q3	0.20%	0.0020%		2.99%	0.02990%		1.14%	0.01140%		0.84%	0.00840%		0.79%	0.0079%	
			Q4	0.70%	0.0070%		0.54%	0.00540%		0.40%	0.00400%		0.41%	0.00410%		0.33%	0.0033%	
6	CDR(Given)	credit to deposit ratio	Q1	77.13%	0.7713%		76.42%	0.76420%		77.53%	0.77530%		74.81%	0.74810%		77.15%	0.7715%	
			Q2	78.48%	0.7848%		74.72%	0.74720%		78.17%	0.78170%		76.81%	0.76810%		78.18%	0.7818%	
			Q3	77.67%	0.7767%		78.02%	0.78020%		74.73%	0.74730%		76.38%	0.76380%		77.23%	0.7723%	
			Q4	76.43%	0.7643%		77.45%	0.77450%		78.29%	0.78290%		73.71%	0.73710%		76.10%	0.7610%	
7	deposit to total assets ratio(DTA)	deposits	Q1	3,844,065	0.844373		9847474	0.844052319		12120414	0.86089768		19344295	0.848461045		23721916	0.832471924	
			Q2	4171217	0.838266		10530146	0.847227797		12590188	0.855647492		19924727	0.837167564		26194036	0.85228561	
			Q3	4454947	0.843761		10631626	0.84820559		12200019	0.827553514		20434059	0.825454022		27489299	0.858153719	
			Q4	9371365	0.849213		11730937	0.853496791		18334571	0.831922533		23522900	0.841661005		29920087	0.861186272	
		total assets	Q1	4,552,565			11666900			14078809			22799273			28495755		
			Q2	4976007			12428943			14714223			23800166			30733871		
			Q3	5279866			12534256			14742272			24754933			32033071		
			Q4	11035355			13744559			22038796			27948188			34742875		

S.N	Components	Req.	Qtrts	Kailash Bikash Bank ('000)															
				2071/72	real71/72	NI ratio	2072/73	real72/73	NI ratio	2073/74	real73/74	NI ratio	2074/75	real74/75	ROAA/E	2075/76	real75/76	ROAA/E	
1	Net income (NI)	Nil	Q1	45724	45724	42.01%	51931	51931	46.35%	130198	130198	54.32%	97242	97242	52.93%	115796	115796	36.98%	
			Q2	111264	65540	50.67%	136653	84722	56.10%	263863	133665	47.92%	266070	168828	58.96%	274667	158871	39.75%	
			Q3	161077	49813	38.32%	212798	76145	44.87%	367994	104131	45.48%	390930	124860	45.12%	396141	121474	29.56%	
			Q4	255437	94360	65.39%	439496	226698	53.65%	502623	134629	58.18%	553221	162291	44.00%	616425	220284	41.92%	
		operating income	Q1	108835	108835		112050	112050		239679	239679		183711	183711		313158	313158		
			Q2	238191	129356		263079	151029		518588	278909		470066	286355		712784	399626		
			Q3	368167	129976		432787	169708		747546	228958		746808	276742		1123764	410980		
			Q4	512466	144299		855327	422540		978960	231414		1115635	368827		1649268	525504		
2	ROAA	Beginning Shareholder's Assets	Q1	9759449	9500424.5	0.48%	10521048	10884160	0.48%	17752596	17989751	0.72%	20999244	21845624	0.45%	27106134	28216268.5	0.41%	
			Q2	9241400	9444200.5	0.69%	11247272	11374183.5	0.74%	18226906	18551567	0.72%	22692004	23028498.5	0.73%	29326403	30913924.5	0.51%	
			Q3	9647001	9703225	0.51%	11501095	11902052	0.64%	18876228	19524106	0.53%	23364993	24231386	0.52%	32501446	33842112	0.36%	
			Q4	9759449	10140248.5	0.93%	12303009	15027802.5	1.51%	20171984	20585614	0.65%	25097779	26101956.5	0.62%	35182778	36040888	0.61%	
		Ending Shareholder's Assets	Q1	9241400			11247272			18226906			22692004			29326403			
			Q2	9647001			11501095			18876228			23364993			32501446			
			Q3	9759449			12303009			20171984			25097779			35182778			
			Q4	10521048			17752596			20999244			27106134			36898998			
3	ROAE	Beginning Shareholder's Equity	Q1	1129854	1191660	3.84%	1385291	1410826.5	3.68%	2447800	2511252	5.18%	3278853	3327415.5	2.92%	3613484	3670326	3.15%	
			Q2	1253466	1247291.5	5.25%	1436362	1478723	5.73%	2574704	2641536.5	5.06%	3375978	3349112.5	5.04%	3727168	3592339.5	4.42%	
			Q3	1241117	1266024	3.93%	1521084	1559156	4.88%	2708369	2760434	3.77%	3322247	3386791	3.69%	3457511	3518247.5	3.45%	
			Q4	1290931	1338111	7.05%	1597228	2022514	11.21%	2812499	3045676	4.42%	3451335	3532409.5	4.59%	3578984	3689242.5	5.97%	
		Ending Shareholder's Equity	Q1	1253466			1436362			2574704			3375978			3727168			
			Q2	1241117			1521084			2708369			3322247			3457511			
			Q3	1290931			1597228			2812499			3451335			3578984			
			Q4	1385291			2447800			3278853			3613484			3799501			
4	NIM	Net Interest income	Q1	93341	93341		98076	98076		212187	212187		154529	154529		267035	267035		

			Q2	206465	113124		229500	131424		462909	250722		396765	242236		611355	344320		
			Q3	319175	112710		374791	145291		670595	207686		641337	244572		944991	333636		
			Q4	446758	127583		739500	364709		877685	207090		962661	321324		1404214	459223		
		beginning earning assets	Q1	8731999	8872981	1.05%	10337417	10700204.5	0.92%	17568609	11460743	1.85%	20745795	21551422.5	0.72%	26760360	27835987.5	0.96%	
			Q2	9013963	9254528.5	1.22%	11062992	10946407.5	1.20%	5352877	11956118	2.10%	22357050	22693164.5	1.07%	28911615	30440305	1.13%	
			Q3	9495094	9531307.5	1.18%	10829823	11471952	1.27%	18559359	19202995.5	1.08%	23029279	23910803.5	1.02%	31968995	33302056	1.00%	
			Q4	9567521	9952469	1.28%	12114081	14841345	2.46%	19846632	20296213.5	1.02%	24792328	25776344	1.25%	34635117	35478034.5	1.29%	
		ending earning assets	Q1	9013963			11062992			5352877			22357050			28911615			
			Q2	9495094			10829823			18559359			23029279			31968995			
			Q3	9567521			12114081			19846632			24792328			34635117			
			Q4	10337417			17568609			20745795			26760360			36320952			
5	NPL (GIVEN)	Non PERFORMANCE LOAN RATIO	Q1	3.70%	0.0370%		1.90%	0.0190%		0.98%	0.0098%		0.91%	0.0091%		0.30%	0.0030%		
			Q2	2.80%	0.0280%		1.59%	0.0159%		0.70%	0.0070%		0.56%	0.0056%		0.33%	0.0033%		
			Q3	2.88%	0.0288%		1.52%	0.0152%		0.93%	0.0093%		0.46%	0.0046%		0.35%	0.0035%		
			Q4	1.96%	0.0196%		0.82%	0.0082%		0.88%	0.0088%		0.32%	0.0032%		0.24%	0.0024%		
6	CDR(Given)	credit to deposit ratio	Q1	74.07%	0.7407%		73.05%	0.7305%		78.15%	0.7815%		72.72%	0.7272%		75.14%	0.7514%		
			Q2	73.54%	0.7354%		76.66%	0.7666%		78.31%	0.7831%		78.14%	0.7814%		77.37%	0.7737%		
			Q3	77.77%	0.7777%		78.55%	0.7855%		76.14%	0.7614%		77.33%	0.7733%		79.31%	0.7931%		
			Q4	76.55%	0.7655%		77.06%	0.7706%		73.57%	0.7357%		76.08%	0.7608%		78.16%	0.7816%		
7	deposit to total assets ratio(DTA)	deposits	Q1	7818050	0.845981128		9662790	0.859122994		15333456	0.841253913		18629410	0.820968038		24259341	0.827218428		
			Q2	8272479	0.857518207		9852683	0.856673473		15913973	0.843069548		19113418	0.818036539		26728046	0.822364826		
			Q3	8346454	0.855217748		10564048	0.858655635		16847153	0.835175806		20361118	0.811271707		29483434	0.838007562		
			Q4	8999729	0.855402333		15070693	0.848928968		17177628	0.818011734		22862105	0.843429203		31442051	0.852111242		
		total assets	Q1	9241400			11247272				18226906			22692004			29326403		
			Q2	9647001			11501095				18876228			23364993			32501446		
			Q3	9759449			12303009				20171984			25097779			35182778		
			Q4	10521048			17752596				20999244			27106134			36898998		

S.N	Components	Necessary Requirement	Qtrs	Deva Bikash Bank ('000)														
				2071/72	real71/72	ROAA/E	2072/73	real72/73	ROAA/E	2073/74	real73/74	ROAA/E	2074/75	real74/75	ROAA/E	2075/76	real75/76	ROAA/E
1	Net income (NI)	Nil	Q1	45592	45592	163.73%	39153	39153		50695	50695		32377	32377		32978	32978	
			Q2	129423	83831	96.41%	56371	17218		140379	89684		140686	108309		132982	100004	
			Q3	146827	17404	31.18%	56031	-340		199058	58679		202366	61680		255289	122307	
			Q4	159502	12675	3.58%	136556	80525		289484	90426		275380	73014		345365	90076	
		operating income	Q1	27845	27845		81752	81752		139252	139252		155291	155291		194192	194192	
			Q2	114802	86957		178165	96413		319833	180581		378665	223374		447855	253663	
			Q3	170623	55821		269471	91306		476966	157133		573674	195009		737541	289686	
			Q4	524807	354184		412375	142904		657759	180793		820260	246586		1048206	310665	
2	ROAA	Beginning Shareholder's Assets	Q1	5629523	5684894	0.80%	8036569	8165332	0.48%	9051255	9568833.5	0.53%	12902861	13444538.5	0.24%	19711295	19992498	0.16%
			Q2	5740265	5773578.5	1.45%	8294095	8289423.5	0.21%	10086412	10554178.5	0.85%	13986216	15334186	0.71%	20273701	21022766	0.48%
			Q3	5806892	5574833.5	0.31%	8284752	8829025	0.00%	11021945	11538357	0.51%	16682156	16999129	0.36%	21771831	22288942.5	0.55%
			Q4	5342775	6689672	0.19%	9373298	9212276.5	0.87%	12054769	12478815	0.72%	17316102	18513698.5	0.39%	22806054	25859664	0.35%
		Ending Shareholder's Assets	Q1	5740265			8294095			10086412			13986216			20273701		
			Q2	5806892			8284752			11021945			16682156			21771831		
			Q3	5342775			9373298			12054769			17316102			22806054		
			Q4	8036569			9051255			12902861			19711295			28913274		
3	ROAE	Beginning Shareholder's Equity	Q1	411565	434421	10.49%	932057	997195.5	3.93%	1077037	1133470.5	4.47%	1921391	1937579.5	1.67%	3014935	3031215	1.09%
			Q2	457277	532937	15.73%	1062334	1070629	1.61%	1189904	1311199	6.84%	1953768	2093955	5.17%	3047495	3097524.5	3.23%
			Q3	608597	617316	2.82%	1078924	1078754	-0.03%	1432494	1582570	3.71%	2234142	2264981.5	2.72%	3147554	3207226	3.81%
			Q4	626035	779046	1.63%	1078584	1077810.5	7.47%	1732646	1827018.5	4.95%	2295821	2655378	2.75%	3266898	3558523	2.53%
		Ending Shareholder's Equity	Q1	457277			1062334			1189904			1953768			3047495		
			Q2	608597			1078924			1432494			2234142			3147554		
			Q3	626035			1078584			1732646			2295821			3266898		
			Q4	932057			1077037			1921391			3014935			3850148		
4	NIM	Net Interest income	Q1	19204	19204		71376	71376		117160	117160		120652	120652		153736	153736	

			Q2	97652	78448		153652	82276		260292	143132		314883	194231		367314	213578		
			Q3	144912	47260		223368	69716		397053	136761		482144	167261		615804	248490		
			Q4	216114	71202		342723	119355		554804	157751		693469	211325		893777	277973		
		beginning earning assets	Q1	5230290	5294845	0.36%	7670097	7756513.5	0.92%	8694547	9153918	1.28%	12405100	12927354.5	0.93%	18978225	19225187.5	0.80%	
			Q2	5359400	5457575	1.44%	7842930	7839519.5	1.05%	9613289	10073981.5	1.42%	13449609	14174610.5	1.37%	19472150	20162922	1.06%	
			Q3	5555750	5298387	0.89%	7836109	8354427	0.83%	10534674	11089329	1.23%	14899612	15701122	1.07%	20853694	21320544.5	1.17%	
			Q4	5041024	6355560.5	1.12%	8872745	8783646	1.36%	11643984	12024542	1.31%	16502632	17740428.5	1.19%	21787395	24773569.5	1.12%	
		ending earning assets	Q1	5359400			7842930			9613289			13449609			19472150			
			Q2	5555750			7836109			10534674			14899612			20853694			
			Q3	5041024			8872745			11643984			16502632			21787395			
			Q4	7670097			8694547			12405100			18978225			27759744			
5	NPL (GIVEN)	Non PERFORMANCE LOAN RATIO	Q1	10.33%	0.1033%		4.65%	0.0465%		3.44%	0.0344%		1.79%	0.0179%		2.09%	0.0209%		
			Q2	4.81%	0.0481%		4.79%	0.0479%		1.70%	0.0170%		2.56%	0.0256%		2.17%	0.0217%		
			Q3	4.20%	0.0420%		4.96%	0.0496%		1.39%	0.0139%		3.01%	0.0301%		1.66%	0.0166%		
			Q4	4.77%	0.0477%		3.99%	0.0399%		1.24%	0.0124%		1.92%	0.0192%		2.37%	0.0237%		
6	CDR(Given)	credit to deposit ratio	Q1	56.83%	0.5683%		65.40%	0.6540%		73.81%	0.7381%		76.53%	0.7653%		77.76%	0.7776%		
			Q2	59.67%	0.5967%		68.71%	0.6871%		76.73%	0.7673%		76.35%	0.7635%		78.71%	0.7871%		
			Q3	68.33%	0.6833%		77.55%	0.7755%		76.17%	0.7617%		78.30%	0.7830%		78.82%	0.7882%		
			Q4	66.61%	0.6661%		70.88%	0.7088%		77.77%	0.7777%		72.86%	0.7286%		76.86%	0.7686%		
7	deposit to total assets ratio(DTA)	deposits	Q1	4804117	0.836915543		6841973	0.824920983		7968642	0.790037329		11353036	0.811730349		15843866	0.781498455		
			Q2	4727939	0.814194409		6803901	0.821255844		9071979	0.823083312		13509741	0.809831835		17114220	0.786071691		
			Q3	4416215	0.826577013		7313887	0.780289606		9818396	0.814482302		13952186	0.805734801		17925677	0.786005198		
			Q4	6700993	0.833812663		7478477	0.826236472		10413242	0.807049072		15698100	0.796401251		23401944	0.809384091		
		total assets	Q1	5740265			8294095				10086412			13986216			20273701		
			Q2	5806892			8284752				11021945			16682156			21771831		
			Q3	5342775			9373298				12054769			17316102			22806054		
			Q4	8036569			9051255				12902861			19711295			28913274		

S.N	Components	Req.	Qtrts	Jyoti Bikash Bank ('000)														
				2071/72	real71/75	ROAA/E	2072/73	real72/73	ROAA/E	2073/74	real73/74	ROAA/E	2074/75	real74/75	ROAA/E	2075/76	real75/76	ROAA/E
1	Net income (NI)	Nil	Q1	39378.56	39378.56		46227.71	46227.71		67880.36	67880.36		65096.57	65096.57		96743.69	96743.69	
			Q2	85960.73	46582.17		124061.18	77833.47		165982.83	98102.47		151434.94	86338.37		199034.84	102291.15	
			Q3	134718.4	48757.67		187995.24	63934.06		269005.58	103022.75		237200.71	85765.77		310903.51	111868.67	
			Q4	194863.7	60145.3		270752.98	82757.74		349620.92	80615.34		322978.18	85777.47		420284.09	109380.58	
		operating income	Q1	91793.23	91793.23		102805.25	102805.25		154237.04	154237.04		168339.31	168339.31		233598.48	233598.48	
			Q2	193556.76	101763.53		232856.08	130050.83		346766.33	192529.29		349940.89	181601.58		470048.77	236450.29	
			Q3	299628.48	106071.72		366076.11	133220.03		554016.71	207250.38		546807.01	196866.12		729794.8	259746.03	
			Q4	418682.04	119053.56		536493.82	170417.71		739444.74	185428.03		770280.18	223473.17		1027055.2	297260.37	
2	ROAA	Beginning Shareholder's Assets	Q1	5787777.81	5952793.965	0.66%	7311115.5	7438358.585	0.62%	9846131.4	10246333.41	0.66%	12118282.03	6684460.195	0.97%	16788727	17226169.96	0.56%
			Q2	6117810.12	6341628.805	0.73%	7565601.6	7752257.89	1.00%	10646535	10764025.81	0.91%	1250638.36	7613433.045	1.13%	17663613	18090865.52	0.57%
			Q3	6565447.49	6632457.615	0.74%	7938914.1	8228416.73	0.78%	10881516	10961220.43	0.94%	13976227.73	14467647.08	0.59%	18518118	19035216.65	0.59%
			Q4	6699467.74	7005291.635	0.86%	8517919.3	9182025.36	0.90%	11040925	11579603.34	0.70%	14959066.42	15873896.62	0.54%	19552315	20591798.8	0.53%
		Ending Shareholder's Assets	Q1	6117810.12			7565601.6			10646535			1250638.36			17663613		
			Q2	6565447.49			7938914.1			10881516			13976227.73			18518118		
			Q3	6699467.74			8517919.3			11040925			14959066.42			19552315		
			Q4	7311115.53			9846131.4			12118282			16788726.82			21631282		
3	ROAE	Beginning Shareholder's Equity	Q1	769205.57	780339.855	5.05%	946959.27	959418.245	4.82%	1292042.3	1328921.205	5.11%	1646038.52	1679769.04	3.88%	1954120.7	2002492.585	4.83%
			Q2	791474.14	814765.22	5.72%	971877.22	1010793.965	7.70%	1365800.1	1414851.32	6.93%	1713499.56	1756373.275	4.92%	2050864.4	2102010.005	4.87%
			Q3	838056.3	862435.14	5.65%	1049710.7	1081177.775	5.91%	1463902.6	1515413.925	6.80%	1799246.99	1842129.87	4.66%	2153155.6	2209089.915	5.06%
			Q4	886813.98	916886.625	6.56%	1112644.8	620843.58	13.33%	1566925.3	1606481.91	5.02%	1885012.75	1919566.745	4.47%	2265024.3	2319714.535	4.72%
		Ending Shareholder's Equity	Q1	791474.14			971877.22			1365800.1			1713499.56			2050864.4		
			Q2	838056.3			1049710.7			1463902.6			1799246.99			2153155.6		
			Q3	886813.98			1112644.8			1566925.3			1885012.75			2265024.3		
			Q4	946959.27			129042.32			1646038.5			1954120.74			2374404.8		
4	NIM	Net Interest income	Q1	81400.03	81400.03		88982.4	88982.4		135043.95	135043.95		146024.41	146024.41		201322.75	201322.75	

			Q2	169614.81	88214.78		203281.13	114298.73		312690.55	177646.6		303104.04	157079.63		409980.71	208657.96		
			Q3	263447.75	93832.94		322027.25	118746.12		501051.84	188361.29		469772.4	166668.36		639815.43	229834.72		
			Q4	367357.38	103909.63		473162.29	151135.04		664637.52	163585.68		658619.65	188847.25		897069.96	257254.53		
		beginning earning assets	Q1	5660926.48	5837723.34	1.39%	7134091.9	7251904.825	1.23%	9635591.7	9999158.855	1.35%	11853194.3	12265183.24	1.19%	16379888	16145783.14	1.25%	
			Q2	6014520.2	6230189.665	1.42%	7369717.7	7552301.455	1.51%	10362726	10505021.01	1.69%	12677172.17	13157095.28	1.19%	15911679	16992322.36	1.23%	
			Q3	6445859.13	6509117.56	1.44%	7734885.2	8024080.62	1.48%	10647316	10724084.55	1.76%	13637018.38	14113470.15	1.18%	18072966	18581531.99	1.24%	
			Q4	6572375.99	6853233.96	1.52%	8313276.1	8974433.89	1.68%	10800853	11327023.68	1.44%	14589921.92	15484904.77	1.22%	19090098	20117270.55	1.28%	
		ending earning assets	Q1	6014520.2			7369717.7			10362726			12677172.17			15911679			
			Q2	6445859.13			7734885.2			10647316			13637018.38			18072966			
			Q3	6572375.99			8313276.1			10800853			14589921.92			19090098			
			Q4	7134091.93			9635591.7			11853194			16379887.61			21144443			
5	NPL (GIVEN)	Non PERFORMANCE LOAN RATIO	Q1	0.60%	0.0060%		0.76%	0.0076%		0.24%	0.0024%		0.53%	0.0053%		0.11%	0.0011%		
			Q2	0.79%	0.0079%		0.34%	0.0034%		0.35%	0.0035%		0.17%	0.0017%		0.17%	0.0017%		
			Q3	0.88%	0.0088%		0.41%	0.0041%		0.26%	0.0026%		0.16%	0.0016%		0.19%	0.0019%		
			Q4	0.49%	0.0049%		0.31%	0.0031%		0.22%	0.0022%		0.07%	0.0007%		0.13%	0.0013%		
6	CDR(Given)	credit to deposit ratio	Q1	76.81%	0.7681%		76.07%	0.7607%		77.12%	0.7712%		76.47%	0.7647%		78.51%	0.7851%		
			Q2	76.54%	0.7654%		78.18%	0.7818%		76.72%	0.7672%		76.34%	0.7634%		78.08%	0.7808%		
			Q3	77.65%	0.7765%		78.23%	0.7823%		77.34%	0.7734%		77.75%	0.7775%		77.32%	0.7732%		
			Q4	73.17%	0.7317%		75.31%	0.7531%		73.83%	0.7383%		75.22%	0.7522%		74.00%	0.7400%		
7	deposit to total assets ratio(DTA)	deposits	Q1	5135418.74	0.839421074		6413546.1	0.847724527		9053317.4	0.850353382		10938199.4	0.8746093		15259157	0.863875155		
			Q2	5603431.93	0.853472964		6730264.5	0.847756298		9205058.3	0.845935266		11944783.46	0.854650031		16102372	0.8695469		
			Q3	5698642.28	0.850611198		7250717.5	0.851231063		9265976.3	0.83923916		12856153.28	0.859422167		16986993	0.868797015		
			Q4	6243993.09	0.854041092		8386758.7	0.851782121		10268966	0.84739454		14539917.26	0.866052406		18910011	0.874197406		
		total assets	Q1	6117810.12			7565601.6			10646535				12506383.6			17663613		
			Q2	6565447.49			7938914.1			10881516				13976227.73			18518118		
			Q3	6699467.74			8517919.3			11040925				14959066.42			19552315		
			Q4	7311115.53			9846131.4			12118282				16788726.82			21631282		

S.N	Components	Necessary Requirement	Qtrts	Mukthinath Bikash Bank ('000)														
				2071/72	real71/72	ROAA/E	2072/73	real72/73	ROAA/E	2073/74	real73/74	ROAA/E	2074/75	real74/75	ROAA/E	2075/76	real75/76	ROAA/E
1	Net income (NI)	Nil	Q1	43463.46	43463.46		68576.08	68576.08		99706.46	99706.46		135447	135447		200378	200378	
			Q2	102507.74	59044.28		159017.09	90441.01		223220.01	123513.55		264381.69	128934.69		404830	204452	
			Q3	160414.2	57906.46		248296.56	89279.47		355125.22	131905.21		427573	163191.31		602075	197245	
			Q4	217644	57229.8		358879.62	110583.06		496316.21	141190.99		575475	147902		807047.32	204972.32	
		operating income	Q1	127048.26	127048.26		179925.65	179925.65		262471.54	262471.54		332768.15	332768.15		585080	585080	
			Q2	268345.37	141297.11		375631.42	195705.77		566517.84	304046.3		725895.24	393127.09		1173078	587998	
			Q3	421503.86	153158.49		591393.83	215762.41		889481.11	322963.27		1163604	437708.76		1767982	594904	
			Q4	588884	167380.14		849832.17	258438.34		1251630.9	362149.74		1664420	500816		2441984.2	674002.18	
2	ROAA	Beginning Shareholder's Assets	Q1	6313194.59	6460252.98	0.67%	9078857.8	9404996.895	0.73%	13043789	14048245.82	0.71%	19760356.4	21581630.53	0.63%	34949337	37605676.5	0.53%
			Q2	6607311.37	6754369.76	0.87%	9731136	10268611.4	0.88%	15052703	16263267.05	0.76%	23402904.66	24635816.01	0.52%	40262016	42568378.5	0.48%
			Q3	6901428.15	3833692.86	1.51%	10806087	11141598.25	0.80%	17473831	17702940.73	0.75%	25868727.36	27399240.68	0.60%	44874741	47244327	0.42%
			Q4	765957.57	4922407.705	1.16%	11477110	12260449.31	0.90%	17932050	18846203.22	0.75%	28929754	31939545.5	0.46%	49613913	50995615.61	0.40%
		Ending Shareholder's Assets	Q1	6607311.37			9731136			15052703			23402904.66			40262016		
			Q2	6901428.15			10806087			17473831			25868727.36			44874741		
			Q3	765957.57			11477110			17932050			28929754			49613913		
			Q4	9078857.84			13043789			19760356			34949337			52377318		
3	ROAE	Beginning Shareholder's Equity	Q1	616674.22	653753.445	6.65%	982488.75	1024507.3	6.69%	1341816.7	1492660.74	6.68%	2321926.43	2688235.995	5.04%	3539676	3627444	5.52%
			Q2	690832.67	727911.895	8.11%	1066525.9	1099018.745	8.23%	1643504.8	1809440.34	6.83%	3054545.56	3143868.8	4.10%	3715212	3817438	5.36%
			Q3	764991.12	816084.21	7.10%	1131511.6	1181372.63	7.56%	1975375.9	2076494.865	6.35%	3233192.04	3314787.02	4.92%	3919664	4018286.5	4.91%
			Q4	867177.3	924833.025	6.19%	1231233.6	1286525.15	8.60%	2177613.9	2249770.14	6.28%	3396382	3468029	4.26%	4116909	4215558.445	4.86%
		Ending Shareholder's Equity	Q1	690832.67			1066525.9			1643504.8			3054545.56			3715212		
			Q2	764991.12			1131511.6			1975375.9			3233192.04			3919664		
			Q3	867177.3			1231233.6			2177613.9			3396382			4116909		
			Q4	982488.75			1341816.7			2321926.4			3539676			4314207.9		
4	NIM	Net Interest income	Q1	102458.95	102458.95		146276.9	146276.9		212605.61	212605.61		257960.82	257960.82		425776	425776	

			Q2	218066.92	115607.97		308767.27	162490.37		460355.66	247750.05		558276.08	300315.26		858778	433002	
			Q3	341859.02	123792.1		481897.54	173130.27		731067.32	270711.66		882827	324550.92		1291247	432469	
			Q4	485447	143587.98		690857.93	208960.39		1030808.5	299741.21		1258103	375276		1815777.4	524530.36	
		beginning earning assets	Q1	6348471.11	6401378.295	1.60%	8932883.8	9223440.185	1.59%	12689464	13509123.83	1.57%	19287036.3	20947247.94	1.23%	34289107	36467147	1.17%
			Q2	6454285.48	6560099.855	1.76%	9513996.5	10053998.63	1.62%	14328783	15657110.57	1.58%	22607459.57	23942701.12	1.25%	38645187	41135809	1.05%
			Q3	6665914.23	7069768.39	1.75%	10594001	10825391.85	1.60%	16985438	17217032.83	1.57%	25277942.67	26787363.34	1.21%	43626431	45818223	0.94%
			Q4	7473622.55	8203253.195	1.75%	11056783	11873123.57	1.76%	17448628	18367832.16	1.63%	28296784	31292945.5	1.20%	48010015	49317919.88	1.06%
		ending earning assets	Q1	6454285.48			9513996.5			14328783			22607459.57			38645187		
			Q2	6665914.23			10594001			16985438			25277942.67			43626431		
			Q3	7473622.55			11056783			17448628			28296784			48010015		
			Q4	8932883.84			12689464			19287036			34289107			50625825		
5	NPL (GIVEN)	Non PERFORMANCE LOAN RATIO	Q1	0.52%	0.0052%		0.31%	0.0031%		0.18%	0.0018%		0.03%	0.0003%		0.02%	0.0002%	
			Q2	0.48%	0.0048%		0.26%	0.0026%		0.18%	0.0018%		0.01%	0.0001%		0.05%	0.0005%	
			Q3	0.39%	0.0039%		0.41%	0.0041%		0.10%	0.0010%		0.01%	0.0001%		0.03%	0.0003%	
			Q4	0.19%	0.0019%		0.09%	0.0009%		0.02%	0.0002%		0.00%	0.0000%		0.07%	0.0007%	
6	CDR(Given)	credit to deposit ratio	Q1	77.59%	0.7759%		77.84%	0.7784%		78.79%	0.7879%		76.89%	0.7689%		78.43%	0.7843%	
			Q2	78.64%	0.7864%		75.89%	0.7589%		79.11%	0.7911%		78.00%	0.7800%		77.99%	0.7799%	
			Q3	75.89%	0.7589%		77.93%	0.7793%		70.37%	0.7037%		79.21%	0.7921%		79.06%	0.7906%	
			Q4	76.37%	0.7637%		78.63%	0.7863%		70.52%	0.7052%		74.57%	0.7457%		76.42%	0.7642%	
7	deposit to total assets ratio(DTA)	deposits	Q1	5881955.9	0.890219269		8302453.3	0.853184387		12881759	0.855777169		19542614.34	0.835050803		33256987	0.826013953	
			Q2	5851915.97	0.847928261		9235773.4	0.854682506		14582139	0.834512978		21739380.88	0.840373033		38138258	0.849882521	
			Q3	6479748.23	0.845966994		9846866.1	0.857956959		15148365	0.844764817		24546248	0.848477592		41804969	0.842605763	
			Q4	7781557.59	0.857107549		11276653	0.864522813		16775223	0.848933244		30354845	0.868538508		46129022	0.880706069	
		total assets	Q1	6607311.37			9731136			15052703			23402904.66			40262016		
			Q2	6901428.15			10806087			17473831			25868727.36			44874741		
			Q3	7659575.7			11477110			17932050			28929754			49613913		
			Q4	9078857.84			13043789			19760356			34949337			52377318		

Note: 'real' with fiscal year represents the non-cumulative data of respective bank whereas only fiscal year denote its cumulative form.

APPENDICES-II

		Correlations					
		DTA	NPL	CDR	ROAA	ROAE	NIM
DTA	Pearson Correlation	1	-.407**	.128	.274**	.283**	.228*
	Sig. (2-tailed)		.000	.203	.006	.004	.022
	N	100	100	100	100	100	100
NPL	Pearson Correlation	-.407**	1	-.693**	-.193	-.065	-.332**
	Sig. (2-tailed)	.000		.000	.055	.523	.001
	N	100	100	100	100	100	100
CDR	Pearson Correlation	.128	-.693**	1	-.068	-.197*	.162
	Sig. (2-tailed)	.203	.000		.500	.050	.108
	N	100	100	100	100	100	100
ROAA	Pearson Correlation	.274**	-.193	-.068	1	.856**	.754**
	Sig. (2-tailed)	.006	.055	.500		.000	.000
	N	100	100	100	100	100	100
ROAE	Pearson Correlation	.283**	-.065	-.197*	.856**	1	.688**
	Sig. (2-tailed)	.004	.523	.050	.000		.000
	N	100	100	100	100	100	100
NIM	Pearson Correlation	.228*	-.332**	.162	.754**	.688**	1
	Sig. (2-tailed)	.022	.001	.108	.000	.000	
	N	100	100	100	100	100	100

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

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

		Statistics					
		ROAA	ROAE	NIM	DTA	NPL	CDR
N	Valid	100	100	100	100	100	100
	Missing	0	0	0	0	0	0
Skewness		1.132	1.635	2.783	-.787	2.760	-2.827
Std. Error of Skewness		.241	.241	.241	.241	.241	.241
Kurtosis		2.349	4.481	13.309	.679	10.952	10.176
Std. Error of Kurtosis		.478	.478	.478	.478	.478	.478

		Statistics					
		ROAA	ROAE	NIM	DTA	NPL	CDR
N	Valid	100	100	100	100	100	100
	Missing	0	0	0	0	0	0
Mean		.0065757	.0538856	.0131472	.8405271	.011975	.757678
Median		.0062162	.0498375	.0123237	.8459511	.005350	.767700
Mode		-.00004 ^a	-.00032 ^a	.00363 ^a	.78029 ^a	.0041	.7589 ^a
Std. Deviation		.00287756	.02585200	.00426167	.02166670	.0157717	.0366990
Minimum		-.00004	-.00032	.00363	.78029	.0000	.5683
Maximum		.01642	.15730	.03807	.89022	.1033	.7931

a. Multiple modes exist. The smallest value is shown

Regression-1

Model	Variables Entered/Removed ^a		Method
	Variables Entered	Variables Removed	
1	CDR, DTA, NPL ^b		Enter

a. Dependent Variable: ROAA

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.373 ^a	.139	.112	.00271168

a. Predictors: (Constant), CDR, DTA, NPL

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	3	.000	5.161	.002 ^b
	Residual	.001	96	.000		
	Total	.001	99			

a. Dependent Variable: ROAA

b. Predictors: (Constant), CDR, DTA, NPL

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.008	.016		.508	.613
	DTA	.023	.014	.172	1.615	.110
	NPL	-.065	.027	-.356	-2.429	.017
	CDR	-.026	.011	-.337	-2.496	.014

a. Dependent Variable: ROAA

Regression-2

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	CDR, DTA, NPL ^b	.	Enter

a. Dependent Variable: ROAE

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.400 ^a	.160	.133	.02406667

a. Predictors: (Constant), CDR, DTA, NPL

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.011	3	.004	6.078	.001 ^b
	Residual	.056	96	.001		
	Total	.066	99			

a. Dependent Variable: ROAE

b. Predictors: (Constant), CDR, DTA, NPL

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.034	.143		.242	.809
	DTA	.280	.126	.234	2.224	.028
	NPL	-.398	.237	-.243	-1.677	.097
	CDR	-.278	.094	-.395	-2.961	.004

a. Dependent Variable: ROAE

Regression-3

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	CDR, DTA, NPL ^b		Enter

a. Dependent Variable: NIM

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.355 ^a	.126	.099	.00404602

a. Predictors: (Constant), CDR, DTA, NPL

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	3	.000	4.612	.005 ^b
	Residual	.002	96	.000		
	Total	.002	99			

a. Dependent Variable: NIM

b. Predictors: (Constant), CDR, DTA, NPL

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.008	.024		.339	.735
	DTA	.018	.021	.093	.863	.390
	NPL	-.099	.040	-.366	-2.478	.015
	CDR	-.012	.016	-.104	-.762	.448

a. Dependent Variable: NIM