

**IMPACT OF LIQUIDITY MANAGEMENT ON PROFITABILITY OF
DEVELOPMENT BANK IN NEPAL**

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CERTIFICATE OF AUTHORSHIP

I hereby corroborate that I have not researched and submitted the final draft of dissertation entitled **Impact of Liquidity Management on Profitability of Development Bank in Nepal**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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REPORT OF RESEARCH COMMITTEE

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The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor **Bhoj Raj Ojha** and submit the thesis for evaluation and vice-voce examination.

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We, the undersigned, have examined the thesis entitled **“Impact of Liquidity Management on Profitability of Development Bank in Nepal** presented by **Daya Lohani** a candidate for the degree of Master of Business Studies (MBS Semester) and conducted the Viva- Voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

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ABBREVIATION

CAR	:	Capital Adequacy Ratio
CRR	:	Cash Reserve Ratio
D/Y	:	Dividend Yield
DPR	:	Dividend Payout Ratio
DPS	:	Dividend per Share
E/Y	:	Earning Yield
EPS	:	Earning Per Share
GBBL	:	Garima Bikash Bank Limited
GDP	:	Gross Domestic Product
GDS	:	Gross Domestic Savings
JBBL	:	Jyoti Bikash Bank Limited
KDBL	:	Karnali Development Bank Limited
MBBL	:	Muktinath Bikash Bank Limited
MPS	:	Market Value per Share
MV	:	Market Value
MV/BV Ratio	:	Market Value to Book Value Ratio
NBL	:	Nepal Bank Limited
NEPSE	:	Nepal Stock Exchange Limited
NIBL	:	Nepal Investment Bank Limited
NRB	:	Nepal Rastra Bank
P/E Multiple	:	Price Earning Multiple
ROA	:	Return on Assets
ROE	:	Return on Equity
SBBL	:	Sindhu Bikash Bank Limited
T.U.	:	Tribhuvan University

ABSTRACT

This study examines the effect of Non-Performing Assets (NPAs) on the profitability of selected development banks in Nepal. Data for the analysis were collected from the annual reports of five development banks and analyzed using various statistical methods, including descriptive statistics, averages, standard deviation, coefficient of variation, correlation, and regression analysis to explore the dynamic relationships between financial indicators.

The descriptive analysis revealed several key findings. Profitability ratios can be enhanced by identifying and addressing factors that reduce income, and these factors should be regularly monitored to determine whether they are operational or misleading. From the perspective of the coefficient of variation, the profitability ratios of Muktinath Bikash Bank Limited (MBBL), Garima Bikash Bank Limited (GBBL), and Sindhu Bikash Bank Limited (SBBL) appear more volatile compared to Jyoti Bikash Bank Limited (JBBL), which demonstrates more stability. Such volatility can hinder the banks' ability to attract funds efficiently and may negatively impact their credit ratings.

Based on these findings, the study concludes that JBBL and other banks have recorded relatively sufficient earnings and maintain lower levels of non-performing assets compared to MBBL and GBBL. The Return on Assets (ROA) for JBBL falls slightly below the standard benchmark of 2%, indicating a need for management to optimize asset utilization. Despite this, the overall profitability position of the bank remains satisfactory.

Furthermore, the risk levels at MBBL, GBBL, JBBL, and SBBL are higher than average, reflecting the financial principle of high risk coupled with the potential for high returns. Improving asset utilization should remain a priority to enhance financial performance. Over the past ten years, the non-performing loan ratios of these banks have generally been lower when compared to MBBL and GBBL, indicating better credit management and asset quality.

Keywords: quick ratio, capital adequacy ratio, non performing loan ratio, credit risk ratio, credit deposit ratio, weight average interest spread ratio, return on assets, return on equity.

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

Financial institutions play a pivotal role in driving a nation's economic development. The progress of any country heavily relies on the effective mobilization and allocation of its resources. Growth in sectors like trade, commerce, and industry is crucial for achieving economic, social, and political goals. Among various functions required in a planned economy, financial activities often take center stage. In underdeveloped economies, a common challenge is the scarcity of financial resources. This is not due to a lack of natural resources, but rather because these resources often remain underused or unused altogether especially in productive sectors or for social welfare (Bhandari, 2003).

Although countries in the developing world possess ample natural resources such as land, water, minerals, forests, and power, these assets frequently remain untapped and underutilized. This underutilization often stems from a lack of awareness or other constraints. Hoarding is another factor that restricts the effective use of resources. Financial institutions, especially banks, play a critical role in combating such inefficiencies by encouraging savings, reducing hoarding tendencies, and promoting economic habits among the population. By consolidating scattered funds and directing them toward productive investments, these institutions contribute significantly to national development. They also offer financial support by enabling individuals to borrow based on future income, thus improving economic well-being and supporting sustained economic growth (Koirala, 2014).

Liquidity refers to the ease with which assets can be converted into cash without a significant loss in value. Cash is the most liquid asset. Assets that are difficult to convert into cash quickly are considered illiquid. Effective liquidity management entails accurately forecasting liquidity needs and fulfilling them cost-efficiently. Banks can manage liquidity using both asset-side and liability-side strategies, as well as through off-balance-sheet instruments. A well-rounded liquidity plan considers all available sources,

avoiding over-reliance on costly options or exposure to market volatility (Khubchandani, 2002).

In banking, liquidity is crucial to meet depositors' demands for cash. Banks maintain primary reserves, which consist of non-earning assets like vault cash, balances with central and correspondent banks, and items in the collection process. These reserves are key for ensuring solvency and meeting legal obligations set by monetary authorities (Sinkey, 1983).

Determining the appropriate level of liquidity is one of the core challenges in bank management. Excess liquidity means missed opportunities for earning income, while insufficient liquidity can lead to disastrous consequences such as bank runs, which could shake the stability of the entire financial system (Reed, 2002).

For development banks, maintaining a high level of liquidity is essential. This includes holding cash and liquid instruments such as government securities and statutory reserves like SLR and CRR. The main sources of liquidity are the bank's capital and various forms of deposits. While deposits are a liability for banks, they represent the public's trust in the financial system. Since banks must pay interest on deposits and cannot keep all funds idle, they invest in a range of sectors. These investments vary in terms of duration and risk. Long-term investments typically yield higher returns but come with increased risk. Therefore, banks develop strategic investment plans guided by their long-term vision.

Bank portfolios face several types of risks, including credit risk (uncertainty in loan repayments), interest rate risk (due to fluctuating market rates), market risk, operational risk, and liquidity risk. Among these, liquidity risk is particularly important because it relates to a bank's ability to meet short-term obligations without incurring substantial losses (Dahal & Dahal, 2002).

Liquidity management involves making investment decisions that offer long-term returns. Financial investment, in essence, refers to the allocation of funds to others in exchange for income through interest or a share in profits. In the current economic environment of Nepal, depositors prefer the safety of bank savings over riskier options like stocks, real estate, or entrepreneurship. While this reflects confidence in the banking sector, it poses

challenges for banks, which now face excess deposits but fewer viable investment opportunities.

Despite offering relatively low interest rates, development banks continue to attract significant deposits. However, much of this capital remains idle due to limited investment avenues. Factors such as political instability, unfavorable taxation policies, and declining performance in key industries like tourism and agriculture have worsened the situation.

This study explores the deposit mobilization and investment strategies of four development banks in Nepal: Muktinath Bikash Bank Limited, Garima Bikash Bank Limited, Jyoti Bikash Bank Limited, and Sindhu Bikash Bank Limited. It aims to understand how surplus funds can be effectively managed to create wealth and generate income. The research also investigates the challenges banks face in investing their assets, explores solutions, and identifies new sectors for investment to help rejuvenate Nepal's economy.

This study examines four national-level development banks in Nepal: Muktinath Bikas Bank Limited, Garima Bikas Bank Limited, Jyoti Bikas Bank Limited, and Sindhu Bikas Bank Limited. These institutions play a significant role in various financial sectors, including rural banking, microfinance, SME financing, infrastructure and hydropower lending, and digital banking services. The central focus of the study is on deposit mobilization, liquidity management, reinvestment of surplus funds, and the identification of new, productive investment sectors. Despite having a growing customer base and expanding networks, these banks face several pressing challenges such as idle surplus liquidity due to limited investment avenues, rising portfolio risks, lack of innovation in financial products, and external economic pressures including political instability, regulatory shifts, and underperformance in key sectors like tourism and agriculture. These issues hinder optimal fund utilization and reduce the banks' contribution to broader economic growth. The study aims to analyze these challenges and provide insights on strategic approaches for enhancing investment efficiency, ensuring financial sustainability, and supporting inclusive economic development across Nepal.

1.2 Problem Statement

Development banks play a crucial role in the financial ecosystem by channeling savings from surplus holders to deficit users, thereby supporting economic activities and promoting financial stability. Their profit-driven nature requires them to extend credit while ensuring the productive use of funds. However, achieving a proper balance between liquidity and profitability remains a persistent challenge. Banks must hold enough liquidity to meet short-term obligations such as customer withdrawals and loan disbursements, but excess liquidity can lead to underutilization of resources and reduced profitability. On the other hand, aggressive lending in pursuit of profit increases exposure to credit risk, which in turn can result in liquidity shortages, particularly when capital reserves are inadequate.

One of the central issues is the difficulty in determining the optimal level of liquidity that a bank should maintain what is sufficient for one institution may be inadequate for another, depending on its size, risk profile, and business model. Furthermore, limited investment avenues, rising credit defaults, and regulatory constraints exacerbate the complexity of liquidity management. In the context of Nepal, where economic volatility and external shocks frequently affect key sectors such as agriculture, tourism, and infrastructure, these challenges are even more pronounced.

Inadequate capital, poorly diversified loan portfolios, and insufficient risk management practices contribute to increased financial vulnerability. When funds are not recycled effectively into productive assets, it leads to both credit and liquidity constraints. This situation not only restricts lending capacity but also increases the likelihood of systemic risk in the banking sector. As the banking landscape in Nepal evolves, with increased competition and dynamic regulatory changes, development banks must become more proactive and strategic in managing financial risks.

Therefore, there is a pressing need to examine the internal financial parameters that influence liquidity, identify the factors contributing to liquidity and credit risk, and evaluate how these affect the stability and performance of development banks. The study aims to explore these challenges, focusing on how effective liquidity and risk

management can support sustainable banking operations and contribute to broader economic resilience.

- What is the pattern or trend of liquidity in relation to other financial variables in development banks?
- Does a significant relationship exist between liquidity and profitability in the context of selected development banks?
- What extent to do liquidity and profitability influence key financial indicators in the selected development banks?

1.3 Objectives of the Study

The primary objective of this study is to investigate the effect of liquidity management on the profitability of development banks operating in Nepal. In addition, the study aims to achieve the following specific objectives:

- To assess the trends and patterns of liquidity and profitability in selected development banks.
- To explore the relationship between liquidity and profitability within these financial institutions.
- To determine the extent to which liquidity influences the profitability of the selected development banks.

1.4 Rationale of the Study

Development banks in Nepal are operating in a highly competitive and evolving financial landscape. To sustain their presence and performance, these institutions must adopt effective strategies that align with market demands and internal capabilities. A critical aspect of this strategic management is the efficient coordination of various business functions, particularly the management of working capital. Working capital plays a vital role in determining a bank's financial health and strategic direction. This study provides an opportunity to evaluate how effectively development banks are utilizing their deposit base, offering meaningful insights for policymakers and academic professionals to guide future planning and regulatory frameworks. The findings of this research are also relevant for a broad range of stakeholders, including investors, depositors, borrowers, bank

personnel, competitors, stockbrokers, and market intermediaries. It assists them in making informed decisions regarding savings, credit, and investment opportunities. Liquidity management, in this context, refers to the ability of a bank to use available financial resources to achieve long-term benefits. From a financial perspective, investment entails the allocation of current funds with the expectation of future returns, whether in the form of fixed income or a share in potential profits.

Despite offering relatively low interest rates, development banks continue to attract depositors due to the perceived safety and reliability of their services. However, a significant portion of these deposits remains underutilized. This situation has been worsened by economic challenges in Nepal, including political instability, changes in taxation policies, and a downturn in major sectors such as tourism and agriculture. As a result, banks are left with idle surplus funds, highlighting a need for more strategic and efficient liquidity and investment management to ensure that available financial resources contribute to economic growth and institutional sustainability.

1.5 Limitations of the Study

The limitations of the study are:

- The study analyzes data covering a period of ten fiscal years, from 2012/13 to 2021/22.
- Although there are 17 development banks operating in Nepal, this research focuses on only four selected banks: Muktinath Bikash Bank Limited, Garima Bikash Bank Limited, Jyoti Bikash Bank Limited, and Sindhu Bikash Bank Limited.
- The study primarily relies on secondary data, which may limit the scope and depth of the analysis.
- The research concentrates specifically on the impact of liquidity management on the profitability of development banks in Nepal.
- The study was conducted within a limited timeframe and is constrained by the availability of data.
- Only a limited number of analytical tools were used, and no experimental or primary data collection methods were applied.

CHAPTER-II

LITERATURE REVIEW

This chapter provides a comprehensive review of literature related to liquidity management in development banks in Nepal. The objective of this review is to develop a strong understanding of the topic, identify existing research contributions, and gather ideas to inform the research design. Reviewing past studies is essential as they offer a foundation for the current study. This chapter examines relevant academic papers, journal articles, and previous theses that address the subject, helping to contextualize the research and highlight key findings in the field.

2.2 Theoretical Review

2.2.1 Concept of Liquidity Management

Liquidity refers to how quickly and easily an asset can be converted into cash without significant loss of value. Cash is considered the most liquid asset, whereas assets that require a lengthy process to find a buyer are classified as illiquid. Effective liquidity management involves forecasting the bank's cash needs and ensuring these needs are met in the most cost-efficient way. Banks can generate liquidity from both the asset and liability sides of the balance sheet, as well as from off-balance-sheet activities. Skilled liquidity managers evaluate all possible sources to develop and execute a comprehensive liquidity strategy (Khubchandani, 2002).

In banking, liquidity primarily means the bank's ability to honor its commitments to depositors by providing cash when needed. To meet these obligations, banks rely on primary reserves, which include legal reserves mandated by monetary authorities and working reserves managed internally. These reserves consist of non-interest-earning assets such as cash held in vaults, balances with correspondent banks and the central bank, and cash items like checks that are in the process of collection. The primary purpose of these reserves is to maintain liquidity and solvency within the banking system (Sinkey, 1983).

Determining the optimal level of liquidity for a development bank or the banking sector is a critical challenge for bank management. Holding excessive liquidity results in lost

income opportunities, while insufficient liquidity can be disastrous not only for individual banks but also for the entire banking system, the country's financial infrastructure, and the broader economy. A lack of adequate liquidity can trigger bank runs, where depositor demands overwhelm the bank's cash reserves, leading to instability and loss of confidence (Reed, 2002).

2.2.2 Importance of Liquidity Management

Liquidity plays a crucial role in managing a company's short-term obligations, as higher liquidity reduces the risk of being unable to meet immediate debt payments. Financial managers strive to find an optimal balance between maintaining sufficient liquidity and achieving profitability to maximize shareholder returns. Currently, liquidity risk presents a more significant challenge for banks than in the past. This is due to increased competition for consumer deposits, the availability of diverse wholesale and capital market funding options, and technological advancements that have fundamentally changed how banks raise funds and handle risk (Khubchandani, 2002).

Two key developments have made active liquidity risk management even more essential for banks: the growing reliance on credit-sensitive wholesale funding sources and the expansion of off-balance-sheet activities (Mishra, 2003). Traditionally, banks have depended heavily on retail transaction and savings accounts, which are typically stable and inexpensive sources of funds. However, the rise of internet banking and other digital technologies is accelerating changes in consumer behavior. These advancements enable customers to easily compare interest rates and transfer funds quickly between competing banks, potentially increasing funding volatility (Mishra, 2003).

2.2.3 Types of Liquidity

Liquidity refers to the availability of cash and a company's ability to quickly convert its current assets into cash without substantial loss in value. Firms typically do not hold all their funds as cash because idle cash does not generate income. Instead, they invest in interest-bearing securities or deposits that can be readily and quickly converted back into cash to ensure sufficient liquidity. There are different methods used to manage liquidity effectively (Mishra, 2003).

a) Cash Balance In Account

Cash represents the most liquid form of asset, though it does not earn any interest since it is not held for a fixed term. Typically, companies keep around five percent of their total assets in cash, but this amount varies depending on the nature of the business. For businesses that are cash-intensive, such as trading and financial firms, cash balances can be as high as twenty percent of total assets. Manufacturing companies also tend to hold more cash, especially if their operating cycles are longer, while service-based companies usually require smaller cash reserves (Mishra, 2003).

b) Overdraft arrangement with Banks

This facility is provided to businesses that maintain current accounts, where the idle funds usually do not earn any interest. Based on the business's creditworthiness and through negotiation, banks set a specific overdraft limit. The business cannot exceed this limit for borrowing or making payments at any time. Furthermore, the overdraft amount is repayable on demand by the bank. For larger overdraft facilities, banks may require the company to provide collateral as security (Mishra, 2003).

c) Marketable Securities

Marketable securities are short-term investment options used to earn returns on temporarily idle funds. Their liquidity depends on two key factors: the availability of an active market and the safety of the principal amount. A ready market ensures that the security can be quickly sold and converted into cash, while minimal risk of principal loss preserves the investment's value over time. Only securities that can be easily liquidated without a reduction in principal are suitable as short-term investments. Because of the low risk involved, these securities typically offer lower returns. When choosing marketable securities, financial managers must evaluate several factors, including credit risk, interest rate risk, tax implications, liquidity, and yield. Common types of marketable securities include treasury bills, mutual fund units, and bankers' acceptances (Mishra, 2003).

d) Factoring

Factoring is a financing method where a company uses its accounts receivable as collateral by selling them outright to a financial institution, typically without the option to reclaim the receivables if unpaid. This approach provides quick access to cash, improving liquidity, supports advance payments during busy periods, and helps strengthen the company's financial standing (Mishra, 2003).

e) Inter-Company Deposits

These are short-term deposits made with other companies, offering an attractive return on temporary funds. However, since they usually require about a month to be converted into cash, careful planning is necessary to ensure availability for any immediate financial needs (Mishra, 2003).

f) Money Market Mutual Funds/Liquid funds

Money market mutual funds, while technically a type of marketable security, are often considered separately because they offer very high liquidity. These funds consist of professionally managed portfolios of short-term securities and allow investors to access their money quickly. Their appeal has grown significantly due to their competitive returns and ease of converting investments into cash (Mishra, 2003).

2.2.4 Policies of Liquidity Management

Credit unions establish policies and procedures to manage liquidity risk according to the risk tolerance set by their board of directors. These liquidity policies are clearly documented and communicated throughout the organization. The board reviews and approves these policies at least once a year, ensuring that senior management effectively manages liquidity risk within these guidelines. Depending on the credit union's size, complexity, and scope, policies address limits and targets for the sources, types, and levels of liquid assets needed to meet both operational and regulatory requirements. They also focus on identifying potential liquidity risks, ensuring all cash outflows both on- and off-balance sheet are met, and maintaining liquid assets that can be quickly converted into cash without significant capital loss or excessive costs. Additionally, credit unions monitor funding concentrations, diversify funding sources, recognize long-term liquidity

needs during unusual business conditions, and address structural mismatches between illiquid assets and long-term debt. Oversight also extends to risks linked to wholesale funding sources such as municipal, university, school, and hospital (MUSH) deposits, brokered deposits, foreign exchange, investments, derivatives, and securitization activities (Sinkey, 1983).

2.2.5 Practice of Liquidity Management in Nepalese Development Banks

Nepal Rastra Bank (NRB) is the central regulatory authority overseeing the banking sector in Nepal, responsible for issuing rules and regulations to ensure smooth banking operations. One of the critical regulations imposed on development banks is the Cash Reserve Ratio (CRR), which mandates that banks maintain a specific portion of their deposits as liquid reserves, either in cash held in their vaults or deposited with the central bank. This requirement helps banks manage their daily transactions and serves as a key monetary policy tool to control the overall money supply in the economy, adjusting according to changing economic conditions. When calculating the CRR, development banks must include various types of deposits such as liquid deposits, savings accounts, fixed deposits, call money deposits, and certificates of deposit (CDs), while excluding convertible foreign currency deposits, employee guarantee amounts, and margin accounts. Fixed deposits are defined as local currency deposits with a fixed term, repayable after a stipulated period, while liquid and savings deposits include all deposit types except fixed deposits. The cash held in vaults includes local and foreign currency but excludes clearing cheques. Compliance with CRR regulations involves weekly monitoring of reserve requirements based on the average deposit balances from prior weeks, with special considerations for holidays. Only balances in ordinary accounts at NRB are counted towards the reserve, excluding special purpose and foreign currency accounts. All branches of a bank are treated as a single entity for CRR purposes. NRB actively monitors adherence to these rules and imposes penalties, including high-interest charges, on banks that fail to meet the requirements. This regulatory framework ensures that development banks maintain adequate liquidity to meet operational needs while supporting the central bank's monetary policy objectives.

2.2.6 Liquidity Monitoring Framework of Nepal Rastra Bank

For effective liquidity monitoring, banks consider liquid assets as those that can be quickly converted into cash without significant loss. These include cash on hand, bank balances, money at call and short notice, investments in government securities, reverse repo agreements, and placements maturing within 30 days. Importantly, only unencumbered liquid assets those free from any debt obligations or liens and readily marketable are counted. On the other hand, short-term liabilities represent the bank's obligations expected to fall due within the next 30 days. These include a portion of current deposits, savings deposits, call deposits, margin deposits, fixed deposits maturing within the period, borrowings from Nepal Rastra Bank and other financial institutions, and other contractual payables. Off-balance sheet items such as letters of credit, irrevocable loan commitments, and acceptance liabilities maturing within 30 days are also included. A bank is regarded as having a healthy liquidity position if the ratio of liquid assets to short-term liabilities exceeds 100%, indicating it holds enough liquid assets to cover its immediate obligations comfortably. This ratio is reviewed weekly, and any other assets or liabilities not explicitly categorized are included based on their remaining maturity period. Reporting on this ratio must be submitted weekly by Tuesday for the prior week.

Banks also monitor concentration in deposits and credit exposure by tracking their top ten corporate depositors, top ten individual depositors, and top ten funded borrowers. This data is compiled monthly and submitted by the seventh day of the following month, helping banks manage risk and avoid over-dependence on a few clients.

Inter-bank transactions form another important aspect of liquidity management. Banks report the frequency of borrowings during the week, the number of rollovers from the same institution, outstanding borrowings at week-end, the maximum amount borrowed in a single transaction, and the average borrowing per transaction. These details are submitted weekly to ensure transparency and control over inter-bank funding activities.

Regarding borrowings from Nepal Rastra Bank (NRB), banks provide detailed reports on their use of repo facilities and the Standing Liquidity Facility (SLF). These reports include the number of times each facility was used, outstanding balances, and transaction

size metrics. Additionally, banks report on refinance facilities and outright sales monthly. These frequent reports allow NRB to oversee liquidity support mechanisms and ensure that banks maintain adequate funding and liquidity levels.

Banks must also prepare a liquidity profile or structural liquidity table, categorizing assets and liabilities without fixed maturity dates into specified time buckets. This categorization helps identify mismatches in cash flows over different periods. If negative net asset positions exceed regulatory limits—5% for one week, 10% for one month, 15% for 31–90 days, and 20% for 91–180 days—the bank is required to disclose its plans to finance the gap and realign its liquidity position. This monthly reporting, submitted by the seventh day of the following month, is crucial for ongoing liquidity risk management.

Overall, these requirements and reporting mechanisms mandated by Nepal Rastra Bank ensure that banks maintain sufficient liquid assets to meet their short-term obligations, manage concentration risks, monitor inter-bank activities, and keep a balanced and well-structured liquidity profile. These controls support the stability of the banking sector and the wider economy.

2.2.7 Legal Provision: Regarding NRB

Provisions Regarding Compulsory Reserve and Statutory Liquidity

Under the authority granted by Section 79 of the Nepal Rastra Bank Act, 2002, the Nepal Rastra Bank (NRB) has issued directives concerning the compulsory reserves and liquid assets that licensed financial institutions must maintain based on their deposit and borrowing liabilities.

(A) Compulsory Reserve Requirements

1. For "A", "B", "C", and "D" Class Banking Institutions Accepting Public Deposits:

- Class "A" institutions, as well as "B" and "C" class institutions that accept current or call deposits, are required to maintain a compulsory reserve amounting to 5.5% of their total deposit liabilities with NRB. In contrast, "B" and "C" class institutions accepting deposits other than current deposits, and "D" class microfinance institutions that collect public deposits, must maintain a mandatory balance of 2% of their total deposit liabilities.

- Where "B", "C", and "D" class institutions operate in locations without an NRB office, they may maintain the compulsory reserve in a separate current account with a nearby "A" class institution. However, deposits in "A" class institutions that earn interest do not qualify as compulsory reserves. Details of such accounts must be reported to the Bank and Financial Institution Regulation Department and the relevant Supervision Department of NRB.
- If an institution fails to maintain the required compulsory reserve, penalties apply as follows:
 - For the first instance, a fine equal to the prevailing bank rate percentage on the shortfall amount.
 - For the second instance, twice the prevailing bank rate percentage.
 - For the third and subsequent instances, three times the prevailing bank rate percentage.
- These penalty counts reset annually based on the fiscal year. If a licensed institution fails to maintain the compulsory reserve for three consecutive weeks, penalties increase weekly, corresponding to the sequence described above.
- Fines are calculated on a weekly basis by multiplying the shortfall amount by the bank rate, then dividing by 52.
- Compulsory reserve balances are reviewed weekly (Sunday to Saturday) and calculated against the average deposit liabilities over the preceding two weeks. If a full holiday occurs during this period, the prior week's data is used instead.
- Weekly average deposit liabilities and balances held with NRB are computed by summing daily balances from Sunday to Saturday and dividing by seven. If holidays occur, the previous day's balance is used for that day.
- Institutions must submit weekly reports detailing balances for each day of the week (or previous day's balance if a holiday) to the relevant Supervision Department using the prescribed Directives Form No. 13.1 within seven days after the week's end.
- All branches and offices of a licensed institution are consolidated as a single unit for compulsory reserve calculation.

- Local currency amounts in transit for credit to the NRB account are included in the balance. For this purpose, "total deposits" encompass current, savings, fixed deposits, and other financial instruments as defined by NRB.
- Only balances in ordinary NRB accounts qualify for compulsory reserves; balances in special accounts or foreign currency accounts are excluded.

Definitions:

- Current Account: Demand deposit accounts with withdrawal facilities.
- Savings Deposit: Deposit accounts primarily for saving purposes.
- Fixed Deposit: Deposit accounts held for a fixed term.

Cash in transit maintained with the note funds of Rastriya Banijya Bank or Nepal Bank Limited, where NRB lacks offices, may also be counted, with details sent to the Currency Management and Supervision Departments.

2. For "D" Class Licensed Institutions:

- These institutions must maintain a compulsory reserve of at least 0.5% of funds collected from individual group members, special savings, and borrowed funds, held with NRB or in a special current account at an "A" class institution when no NRB branch exists locally. Details of such accounts must be provided to NRB's Regulation and Supervision Departments.
- "Borrowed funds" refer to amounts borrowed by the institution from other licensed institutions, individuals, firms, domestic or foreign corporate.
- Additionally, "D" class institutions are required to maintain liquid assets equivalent to a minimum of 2.5% of total deposit liabilities, including:
 - Cash held in their vaults,
 - Investments in government securities,
 - Investments in NRB bonds,
 - Deposits with "A" class licensed institutions.

Any surplus amounts deposited as compulsory reserves (per the 0.5% requirement) may be counted towards the liquid asset requirement.

- Compulsory reserves and liquid assets are calculated monthly based on daily averages. Fixed deposits with "A" class institutions count as 90% of their value towards liquid assets.
- Borrowed amounts secured by fixed deposits, government securities, or NRB bonds are deducted from liquid assets calculations up to the borrowing amount.
- Monthly returns on compulsory reserves and liquid assets must be submitted by the 15th day following each month using Directives Form No. 13.2.
- Penalties for failing to meet compulsory reserve and liquid asset requirements are imposed as outlined above.
- Exemptions may apply for certain loan and advance transactions transferred to microfinance development banks under specified conditions.
- Retail microfinance institutions collecting public deposits must adhere to the compulsory reserve provisions outlined for classes "A", "B", and "C", rather than those specific to class "D".

3. Additional Provisions:

Licensed institutions in classes "A", "B", and "C" (excluding market makers) may pay principal and interest on government bonds and claim reimbursement from NRB. Pending reimbursements or delays due to public holidays count toward the compulsory reserve ratio for the period concerned.

(B) Statutory Liquidity Ratio (SLR) Provisions

- Banks and financial institutions in classes "A", "B", and "C" must maintain the statutory liquidity ratio as prescribed periodically by NRB.
- Eligible instruments for maintaining SLR include government securities, call deposits with "A" class development banks (beyond the compulsory reserve requirement), and other qualifying assets.
- The SLR is calculated based on domestic deposit liabilities as of the end of the preceding month.
- Monthly statements detailing compliance with the SLR must be submitted as per NRB's directive forms.

Penalties for falling short of the SLR follow a tiered structure:

- First shortfall incurs a fine at the prevailing bank rate percentage,
- Second shortfall doubles the rate,
- Third and subsequent shortfalls triple the rate.
- Penalty counts reset at the start of each fiscal year.
- Fines are calculated monthly by multiplying the shortfall amount by the bank rate, then dividing by twelve.
- The prevailing bank rate published by NRB is used as the basis for penalty calculations.

2.2.8 Anticipated Income Theory

This theory suggests that a bank can effectively manage its liquidity by carefully scheduling and structuring the loan repayments made by its borrowers. Liquidity planning is possible when loan repayments are aligned with the borrower's expected future income. According to Ibe (2013), the focus of this theory is on the borrower's ability to generate income and maintain creditworthiness, which serves as a key assurance for maintaining sufficient liquidity. Khasharmeh (2018) highlights that this approach encourages banks to favor self-liquidating loans loans that generate the funds needed to repay themselves over time. Consequently, many development banks have adopted investment strategies resembling a "ladder" to optimize liquidity management.

Compared to the real bills doctrine and the shiftability theory, this approach is considered superior because it addresses the three critical banking objectives: liquidity, safety, and profitability. Liquidity is ensured because borrowers regularly save and make installment payments, providing a steady inflow of funds to the bank. The safety aspect is upheld because loans are granted not only based on collateral but also on the borrower's proven ability to repay. Additionally, the bank can effectively deploy surplus funds by issuing term loans, which generate consistent income. This lending approach also benefits businesses by offering medium-term financing options that support their growth (Khasharmeh, 2018).

However, the anticipated income theory is not without limitations. Firstly, it is less of a comprehensive theory and more a technique for assessing the borrower's creditworthiness. It primarily offers a framework for evaluating whether a borrower can meet their repayment obligations on time. Secondly, while installment repayments provide a predictable liquidity stream, they may not be sufficient to cover unexpected or urgent cash demands faced by the lending bank (Khasharmeh, 2018).

2.2.9 Shift Ability Theory

This theory asserts that a bank can maintain liquidity by holding assets that are easily transferable or saleable to other lenders or investors in exchange for cash. The core idea is that liquidity improves when a bank consistently possesses marketable assets, provided that the central bank or discount market is willing to purchase these assets when needed. Therefore, the theory emphasizes that the shiftability or marketability of a bank's assets is fundamental to ensuring liquidity. Highly liquid securities are considered valuable sources of liquidity. According to Ray and Mitra (2018), to facilitate quick conversion to cash with minimal loss, such assets must meet specific criteria.

Liability Management Theory, as described by Kumar (2015), involves activities related to raising funds from depositors and creditors and determining the optimal mix of these funds to support a bank's operations efficiently.

The shiftability theory holds valid points, particularly in the modern context where banks acquire quality assets that can be transferred to other financial institutions. Instruments like shares and debentures of major companies, treasury bills, and bills of exchange are recognized as liquid assets, which encourages banks to undertake term lending.

Nonetheless, the theory has notable drawbacks. Firstly, the ability to shift assets alone does not guarantee liquidity, as liquidity is highly dependent on the broader economic environment. Secondly, during economic downturns or financial crises, the market for shares and debentures may dry up, preventing banks from selling these assets. Thirdly, even if an individual bank holds enough shiftable assets, selling them during a bank run could negatively impact the entire banking sector. Finally, if all banks attempt to liquidate their assets simultaneously, it could lead to severe consequences for both lenders and borrowers (Ray & Mitra, 2018).

2.2.10 Development Loan Theory

The development loan theory, also known as the real bills doctrine, suggests that development banks should provide only short-term, self-liquidating loans to business enterprises. These loans finance the production process and the movement of goods through various stages such as manufacturing, storage, transportation, and distribution. Because these loans are tied directly to the sale of goods, they are expected to repay themselves naturally over a short period (Malik et al., 2016).

According to this theory, when development banks issue such short-term productive loans, the central bank should support these banks by lending against the security of these loans. This system is intended to ensure that each bank maintains adequate liquidity while simultaneously regulating the overall money supply in the economy.

The central bank manages liquidity by rediscounting approved loans. During periods of economic growth and increased trade activity, banks can expand their reserves by rediscounting bills with the central bank. Conversely, during downturns, reduced rediscounting leads to a contraction in bank reserves, credit availability, and money supply (Malik et al., 2016).

Short-term self-liquidating loans offer three main benefits. First, their short maturity ensures automatic repayment, thus providing inherent liquidity. Second, because they finance productive activities, the risk of becoming bad debts is minimized. Third, these loans contribute to the bank's income through productive use.

However, this theory has certain limitations. For instance, if a bank refuses to issue a new loan until the previous one is fully repaid, borrowers may reduce their production, which can negatively impact overall economic activity. If many banks adopt this strict approach, it can reduce the money supply and harm the broader community by making it difficult for borrowers to meet repayment schedules (Malik et al., 2016).

Additionally, the theory assumes loans will be self-liquidating under normal economic conditions. During economic depressions, production and trade decline, and borrowers may default on loan repayments at maturity. The theory also overlooks the fact that a bank's liquidity depends more on the marketability of its liquid assets than on the

maturity of trade bills. While it aims to ensure safety, liquidity, and profitability, banks cannot rely solely on loan maturities during financial crises. Furthermore, the concept that loans are always self-liquidating is flawed because, for example, a loan given to a retailer does not liquidate itself if the purchased goods remain unsold. In such cases, successful loan repayment depends on the involvement of a third party the consumer in addition to the lender and borrower (Malik et al., 2016).

2.2.11 Walker's Theory of Profit

Walker's Theory of Profit, also known as the Rent Theory of Profit, was introduced by F.A. Walker. He proposed that profit can be understood as a type of rent earned due to the varying abilities of entrepreneurs. According to this theory, profit arises from the difference in efficiency among entrepreneurs, similar to how land rent is determined by the difference in productivity between the least and most fertile lands. In this analogy, the entrepreneur with the lowest ability merely covers production costs, while a more capable entrepreneur earns additional income due to superior skills. Therefore, profit is seen as a "rent" on the unique or exceptional abilities of an entrepreneur compared to others (Khasharmeh, 2018).

The theory assumes a perfectly competitive market where all firms possess similar managerial skills. In such a scenario, the compensation for managerial ability is considered a normal wage and is not counted as pure profit. As a result, under perfect competition, pure profit disappears, leaving firms to earn only normal profit, which is the wage for management efforts.

However, Walker's theory faces criticism for its limited scope in explaining the true nature of profit. It mainly measures profit differences rather than revealing what profit fundamentally is. Additionally, the assumption that profit arises solely from differences in entrepreneurial ability is challenged, as profits can also increase due to factors like market monopoly, which the theory does not account for (Khasharmeh, 2018).

2.2.12 Knight's Theory of Profit

Frank H. Knight developed the Theory of Profit, which views profit primarily as a reward for bearing uncertainty rather than just risk. In his perspective, profit is the leftover income an entrepreneur earns by facing unpredictable business conditions that cannot be precisely measured or insured.

Knight made a clear distinction between risk and uncertainty. Risk refers to situations where the likelihood of outcomes can be estimated using statistical methods. For example, events like fires, thefts, or accidents are considered calculable risks since their probabilities can be predicted, allowing insurance companies to cover them in exchange for a premium. These costs can be factored into the overall production expenses (Jihadi et al., 2021).

On the other hand, uncertainty involves situations where probabilities cannot be accurately determined. Examples include unpredictable actions by competitors or the unclear costs of overcoming competition. Because these scenarios are not measurable or insurable, they fall under uncertainty rather than risk.

This uncertainty places a significant responsibility on entrepreneurs or managers, who must make decisions without complete knowledge of future outcomes. If these decisions prove successful, the entrepreneur earns a profit; if not, losses occur. Thus, Knight's theory suggests that profit arises from the entrepreneur's ability to navigate uncertain environments effectively (Jihadi et al., 2021).

Knight further argued that profit can result from strategic decisions related to market conditions, such as expanding monopoly power, managing inventory in ways that create unexpected gains, or introducing innovative products and technologies.

However, one key criticism of Knight's theory is that it attributes the entirety of profit to uncertainty bearing, overlooking other important factors. Elements such as innovation, negotiation skills, and efficient coordination of business operations also play crucial roles in generating profit, which Knight's model does not fully consider (Jihadi et al., 2021).

2.2.13 Hawley's Risk Theory of Profit

F.B. Hawley introduced the Risk Theory of Profit, which argues that profit is the reward earned by individuals who take on risks in the process of production. In essence, profit serves as society's compensation for those willing to bear the uncertainties inherent in business operations. These risks can stem from various sources, including product obsolescence, shortages of essential materials, sudden price declines, the emergence of superior substitutes by competitors, as well as unforeseen events like wars, fires, or natural disasters.

According to Hawley, entrepreneurs expect to receive compensation that exceeds the expected loss covered by standard insurance premiums, which relate to calculable risks. This additional profit reflects the discomfort, stress, and other negative effects that entrepreneurs endure by taking on such risks. Therefore, profit represents a reward above and beyond the predictable costs of risk-bearing (Abbas et al., 2019).

Hawley divides profit into two components: one compensates for the anticipated losses associated with various business risks, while the other serves as an incentive for entrepreneurs to face the unpredictable outcomes of their ventures.

The theory is grounded in the idea that profit arises from ownership that involves risk. Entrepreneurs must personally accept this risk to be eligible for profit. If they transfer or insure away these risks, they no longer qualify as entrepreneurs and, consequently, do not earn profit. Essentially, profit is derived from the portion of risk that remains uninsured.

Hawley viewed profit as a residual income the amount left after all costs, including insured risks, are accounted for. Since the final profit depends on whether the product sells successfully, it cannot be precisely known beforehand. Because of this residual nature, Hawley's approach is often referred to as the Residual Theory of Profit (Abbas et al., 2019).

2.3 Empirical Review

Kumar and Yadav (2013) examined liquidity risk management in banks and defined liquidity as a bank's ability to finance asset growth and fulfill both anticipated and unexpected cash and collateral obligations at a reasonable cost without incurring

unacceptable losses. Liquidity plays a crucial role in banking since it ensures that institutions can meet their commitments as they arise. Because liquidity and solvency are closely linked, effective liquidity management lowers the risk of insolvency, thereby minimizing the chances of bank failures and runs. In this way, maintaining sound liquidity is essential for the overall stability and health of the banking sector. By managing liquidity risk effectively, banks improve their ability to meet obligations on time and reduce the likelihood of adverse financial conditions. The study supported the Basel Committee and Reserve Bank of India's recommendations regarding liquidity risk management and outlined the meaning of liquidity, liquidity risk, and related management processes. Additionally, it discussed how to establish a liquidity risk management framework within banks.

Ibe (2013) researched the effects of liquidity management on bank profitability in Nigeria, motivated by the need to address liquidity challenges in the country's banking sector. Three banks were randomly chosen to represent the industry, and liquidity management was proxied by cash and short-term funds, bank balances, treasury bills, and certificates. Profitability was measured by profit after tax. The study applied the Elliot Rothenberg Stock (ERS) unit root test to assess the stationarity of the variables and used regression analysis to test the hypotheses. Results demonstrated that liquidity management is a significant issue within Nigerian banks. Based on the findings, the study recommended that banks employ competent professionals to ensure optimal liquidity levels are maintained while maximizing profits.

Pandit (2014) conducted a study focusing on fund collection and deposit mobilization in development banks, with a particular emphasis on GBBL. The research aimed to evaluate the performance of selected development banks in fund collection, analyze determinants of funds mobilization, and assess the growth ratios of credit, advances, total investment, deposits, and net profit. The findings showed that GBBL had a higher average return on loans and advances compared to other banks. Moreover, the variability of returns was lower for GBBL, indicating more stable returns. GBBL also exhibited higher average returns on total working funds and earned more interest compared to its peers. It managed to mobilize its working funds effectively, resulting in greater earning capacity. The interest expenses relative to total working funds were lower for GBBL, reflecting better

cost management. Capital base analysis revealed that GBBL possessed significantly higher capital than its counterparts, contributing to its higher profitability. While GBBL maintained higher liquidity levels which is positive for meeting short-term obligations it also meant a trade-off against income generation. In terms of investment strategies, GBBL invested more successfully across different sectors and held a larger share of investments compared to other banks. Conversely, it lent comparatively less in loans and advances.

Nimer et al. (2015) investigated how liquidity impacts profitability in Jordanian banks by analyzing the return on assets (ROA). They noted that liquidity and profitability share a close but inverse relationship, as increasing liquidity often reduces profitability and vice versa. Bank profitability is defined as the ability to generate revenue exceeding costs relative to capital. A robust banking sector that maintains profitability is better equipped to absorb shocks and supports financial stability. Using data from 15 banks listed on the Amman Stock Exchange between 2005 and 2011, the study found a significant positive relationship between liquidity measured through the quick ratio and profitability via ROA. This implies that liquidity management has a meaningful effect on bank profitability in Jordan.

Malik et al. (2016) analyzed the trade-off between liquidity and profitability in Pakistan's private banking sector, focusing on 22 banks registered with the State Bank of Pakistan from 2009 to 2013. Employing Ordinary Least Squares (OLS) regression models, the study revealed a significant correlation between liquidity indicators and return on assets. However, this relationship became statistically insignificant when return on equity and return on investment were used as profitability measures. The authors recommended that banks revise their liquidity management strategies to enhance shareholder returns and optimize asset utilization.

Poudel (2017) conducted a study on the liquidity and profitability of joint venture development banks in Nepal, specifically examining Global IME Bank Ltd and NIBL Bank Ltd. The study aimed to assess how deposit growth influences liquidity and lending, and to evaluate lending efficiency's contribution to profit. Using statistical tools like mean, median, standard deviation, and correlation, the research found no standard

ratio for liquid assets maintenance among development banks. Instead, liquidity management decisions are often made based on managerial judgment, the nature of fund sources, and statutory requirements, which vary from one bank to another.

Khasharmeh (2018) explored how liquidity affects profitability in Islamic banks in Bahrain by examining six banks over the period from 2010 to 2015. The study employed liquidity ratios such as cash and due from banks to total assets (CDTA), cash and due from banks to total deposits (CDTD), investment to total assets (INVSTA), and investment to total deposits (INVSTD). The adjusted R-squared values showed that liquidity variables had mixed correlations with profitability measures like return on assets (ROA), return on equity (ROE), and return on deposits (ROD). For example, CDTD and INVSTD positively correlated with ROE, while CDTA and INVSTA showed negative correlations. Statistical tests indicated some autocorrelation issues in residuals, but overall, the liquidity model was significantly related to return on deposits (ROD), though not strongly linked to ROE.

Kaitibi et al. (2018) assessed the effect of efficient liquidity management on the profitability of development banks in Sierra Leone, focusing on Rokel Development Bank. Data from five years of financial statements and annual reports were analyzed both quantitatively and qualitatively using ratio analysis and charts. The results revealed that effective credit management significantly influences the profitability of development banks in Sierra Leone.

Noor et al. (2018) examined how credit risk management affects the financial performance of four different development banks. The descriptive and analytical study relied on secondary data and simple regression analysis to evaluate the relationship between classified loan percentages and financial indicators like ROI, ROE, and ROA. The findings indicated a significant short-run relationship between credit risk management and financial performance.

Abbas et al. (2019) studied the effects of bank capital, liquidity, and credit risk on the profitability of development banks in the post-crisis period from 2011 to 2017, comparing Asian developed economies with the U.S. banking industry. The study found that bank capital and credit risk had similar effects on profitability across both regions.

However, liquidity's impact was negative on large U.S. banks' profitability but positive for Asian banks. Their analysis suggested that a 6% increase in capital corresponded to a 1% rise in profit, while a 3.5% increase in liquidity led to a 1% profit increase. Additionally, profitability responses to liquidity varied by bank size, with small banks experiencing the greatest benefit. Overall, liquidity had a stronger influence on profitability than capital, although the signs of the coefficients remained consistent across different bank sizes. The simultaneous equations model further revealed that bank capital positively affected profitability in large and medium banks, whereas profitability influenced bank capital positively in large banks but negatively in medium banks.

Pokharel and Pokhrel (2019) conducted a study examining the effect of liquidity on the profitability of Nepalese development banks. The primary aims of the research were to evaluate the profitability status of these banks, assess their liquidity positions, and analyze how liquidity impacts their profitability. Profitability was measured using return on assets (ROA) and return on equity (ROE), while liquidity was assessed through indicators such as current ratio, cash reserve ratio (CRR), cash balance to total deposits (CBBISD), and investment to gross secured assets (IGSCA). A variety of statistical and financial tools were employed for data analysis. The findings revealed that liquidity ratios of the banks fell below prescribed standards. Additionally, the CRR was significantly higher than the limits set by the monetary policy of 2016/17. Positive correlations were found between CRR and IGSCA with ROA, whereas CRR and CBBISD showed negative correlations with ROA.

Pandey (2020) investigated the impact of liquidity on the profitability of Nepalese development banks. This study aimed to determine how liquidity influences profitability, using investment ratio, capital ratio, and liquidity ratio as independent variables, and return on assets as the dependent variable. Secondary data from annual reports of selected banks were utilized, and regression models were applied to test liquidity's effects on performance. The results indicated a negative relationship between investment and liquidity ratios with ROA, implying that higher investment and liquidity ratios are associated with lower ROA. Conversely, a positive relationship was observed between capital ratio and ROA, indicating that banks with higher capital ratios tend to achieve higher profitability. The beta coefficient for capital ratio was significantly positive,

reinforcing its positive impact on bank performance. However, beta coefficients for investment and liquidity ratios were negatively associated with ROA, showing that increases in these ratios tend to decrease profitability.

Budhathoki et al. (2020) studied the impact of liquidity, leverage, and bank size on profitability in Nepalese development banks. The study aimed to explore how these factors influence profitability, which was measured by return on assets (ROA), return on equity (ROE), and net interest margin (NIM). Leverage was measured using the ratio of total loans to total deposits, while bank size was gauged through equity capital to total assets. Correlation and multiple regression analyses were applied to the data. The study's regression results demonstrated that a higher loan-to-deposit ratio, indicating lower liquidity, negatively affected ROA, ROE, and NIM, although the effects on ROE and NIM were statistically insignificant. The second regression model showed that a higher equity-to-assets ratio (reflecting lower leverage) positively influenced ROA and NIM significantly, but was negatively related to ROE without statistical significance. The final model revealed that larger bank size positively affected all three profitability indicators (ROA, ROE, and NIM), benefiting Nepalese development banks.

Khatri (2020) conducted a study to explore the relationship between liquidity and profitability in Nepalese development banks. Profitability was measured by indicators including ROA, ROE, earnings per share (EPS), and net interest margin (NIM), while liquidity was assessed through credit-deposit ratio (CDR), cash-deposit ratio (CADR), and asset quality ratio (AQR). Statistical tools such as mean, standard deviation, correlation, and regression analyses were utilized. The findings showed that asset quality negatively and significantly impacted ROA but had a positive and significant relationship with ROE. Cash deposit ratio had a positive yet insignificant relationship with both ROA and ROE. Credit-deposit ratio was positively but insignificantly related to ROA and negatively but insignificantly related to ROE.

Shrestha and Jha (2020) examined how liquidity affects profitability in foreign joint venture development banks in Nepal, specifically JBBL, MBBL, and NBB. Liquidity was measured using ratios such as loans and advances to deposits, loan reserves, non-resident account balances to total deposits, liquid assets to current liabilities, and current assets to

total assets. Profitability was measured using ROA and ROE. Correlation and regression analyses were applied to assess the strength and direction of relationships and to identify cause-and-effect links. The results indicated that liquidity ratios of these banks were below the prescribed standards. The loans-to-advances ratio (LADR) significantly affected both ROA and ROE across all banks. The ratio of NRBT deposits to CRR showed a weak but significant impact on ROA, while its effect on ROE was negative for NBB and positive for the other two banks.

Adhikari (2020) studied the impact of liquidity on the profitability of Nepalese development banks. The study aimed to calculate the aggregate mean and standard deviation of different liquidity and profitability indicators, analyze the partial correlation among variables, and assess the dependency of profitability on liquidity. Various liquidity and profitability ratios were employed for measurement. Descriptive statistics and regression analysis were used for data interpretation. Findings showed that cash-deposit ratio (CDR) and CRR negatively influenced net profit margin (NPM), although these effects were not statistically significant. EPS was negatively impacted by CDR (significant at 1%), but positively influenced by CRR without statistical significance. ROA was negatively affected by CDR (significant at 5%) but positively influenced by CRR and capital adequacy ratio (CAR), though these latter effects were not significant.

Sharma (2021) researched deposit management, liquidity, and their impact on profitability of joint venture banks in Nepal, focusing on NIBL Bank Limited and Himalaya Bank Limited. The study aimed to analyze asset and liability compositions, assess asset utilization, and evaluate deposit and loan trends. Various financial and statistical tools were applied, including percentage changes, averages, trend analysis, and visual presentations through tables, pie charts, and graphs. The findings revealed that NIBL, MBBL, and JBBL performed well in deposit collection, enabling profitability through productive deposit mobilization. Cash and bank balance relative to total deposits showed better performance in these banks compared to SBI, indicating readiness to meet customer withdrawals. However, an excessively high ratio of cash and bank balances might indicate excess idle funds. Therefore, these banks could improve profitability by investing excess cash in productive assets such as marketable securities and treasury bills.

Teixeira et al. (2021) studied the influence of government bonds on liquidity risk and profitability in Cape Verde's banking sector. The research aimed to assess how government debt instruments affected both liquidity risks and profitability, using data from all development banks operating until 2017, covering the period from 2000 to 2017. The study applied ordinary least squares (OLS) estimation with lagged variables. The findings indicated that government bonds had no significant impact on liquidity risk but positively influenced profitability in the long term. However, when Consolidated Securities of Financial Mobilization were considered, a negative effect on profitability was observed in both short and long-term perspectives. The study concluded that holding conventional government securities served as a prudent strategy for utilizing surplus liquidity, improving profitability over time. The negative effects associated with Consolidated Securities helped explain the relatively lower profitability of Cape Verdean banks compared to other sub-Saharan countries like Mauritius and Seychelles.

Dahiyat et al. (2021) analyzed how liquidity and solvency management impacted the financial performance of Jordanian manufacturing firms listed on the Amman Stock Exchange over a ten-year span from 2010 to 2019. The indicators used to assess financial performance were return on assets and earnings per share, while liquidity and solvency were measured using the current ratio and the total debt-to-assets ratio. The study employed correlation and multiple regression techniques for data analysis. The results revealed that liquidity and solvency, along with firm size, had a statistically significant effect on financial performance. Liquidity had a negative but statistically insignificant impact, while solvency showed a significant negative influence, and firm size had a significant positive effect on financial performance.

Jihadi et al. (2021) investigated how liquidity, activity, leverage, and profitability affected firm value, also considering the role of corporate social responsibility (CSR) as a moderating variable and firm size as a control. The study adopted a purposive sampling method, and multiple linear regression analysis was conducted using SPSS. The results showed that all financial ratios significantly influenced firm value. CSR acted as a moderator, enhancing the impact of financial performance indicators on firm value. The findings suggested that firms engaging more in CSR attracted greater investor interest,

which helped increase firm value. Larger firms tended to implement CSR initiatives more actively, contributing to higher market valuation.

Sharma et al. (2022) explored the challenges of liquidity management in the Indian banking system, focusing on how various policy tools affected liquidity, profitability, and economic growth. The study utilized the Auto-Regressive Distributed Lag (ARDL) model to analyze variables such as fiscal deficit, lending and deposit rates, and credit growth. Results indicated that fiscal deficit negatively influenced both liquidity and GDP but positively affected bank profitability. Deposit rates had a positive impact on liquidity but adversely affected profitability, and initially boosted GDP growth, although this effect became negative after a lag. Credit growth contributed positively to liquidity and GDP but reduced profitability. The study also found that profitability of Indian Scheduled Development Banks declined following the demonetization event. These findings are intended to support policymakers and financial institutions in making informed decisions related to liquidity management.

Tandukar (2022) conducted a study to evaluate the role of Nepal Rastra Bank (NRB) in enhancing deposit mobilization among development banks. The research covered a five-year period from 2015/16 to 2020/21 and used both primary and secondary data. The researcher applied financial tools such as liquidity and profitability ratios, risk assessments, and statistical methods including correlation and trend analysis. Out of 27 development banks, NBBL and JBBL were selected as samples. The findings suggested that NRB's updated directives were generally beneficial for the financial sector and national economy. However, some provisions, particularly those related to loan classification and provisioning, posed challenges for development banks. While NBBL showed stronger performance in deposit and loan mobilization, JBBL was more effective in allocating funds to investment sectors, indicating better fund mobilization despite smaller deposit volumes.

Table 1

Review of Empirical Studies

Author and Date	Article	Objectives	Methodology	Findings
Ibe (2013)	The impact of liquidity	To find solution to liquidity	Elliot Rothenberg Stock (ERS) stationary test model was used	The result of this study has shown that liquidity management is

	management on the profitability of banks in Nigeria.	management problem in Nigerian banking industry.	to test the run association of the variables under study while regression analysis was used to test the hypothesis.	indeed a crucial problem in the Nigerian banking industry. The study ensures that right decisions are adopted especially with the optimal level of liquidity and still maximize profit.
Kumar and Yadav (2013)	Liquidity risk management in bank.	This study examined the sound practices for the liquidity risk management in banks.	Regression and correlation analysis has been adopted. The Ordinary Least square model was used.	Ultimately, prudent liquidity management as part of the overall risk management of the banking institutions ensures a healthy and stable banking sector. Effective liquidity risk management helps ensure a bank's ability to meet its obligations as they fall due and reduces the probability of an adverse situation developing.
Nimer Warrad and Omari (2015)	The impact of liquidity on Jordanian banks profitability through return on assets.	To find out the liquidity through quick ratio, To analyze the impact on Jordanian banks profitability through return on asset (ROA).	This section presents research methodology adopted in this study. It explains sample selection criteria, variables of the study and research model, hypotheses.	The study revealed that there is significant impact of independent variable quick ratio on dependent variable return on asset (ROA). That means profitability through return on assets (ROA) in Jordanian banks is significantly influenced by liquidity through quick ratio.
Malik, Awais and Khursheed (2016)	Impact of liquidity on profitability: a comprehensive case of Pakistan's private banking sector.	To analyze the inspect the trade-off between liquidity and profitability in private sector banks of Pakistan	Three models were specified and estimated using Ordinary Least Squares (OLS) technique. The empirical results revealed that there is a statistically significant relationship between bank liquidity measures and return on assets.	Results revealed that there is a statistically significant relationship between bank liquidity measures and return on assets. However, when return on equity and return on investment was used as proxy for profitability, the relationship became statistically insignificant.
Poudel (2017)	A Study on Liquidity and Profitability Position of Joint Venture Development Banks in Nepal	To determine the impact of growth in deposit on liquidity and lending practices, to examine the lending efficiency and its contribution to profit.	Research Tools Statistical tools mean, median, standard deviation, co-relation were used.	There is no standard and uniform rate or ratio for maintaining liquid assets by the development banks. The manager may decide to maintain an appropriate level of liquid assets based on his own judgment. Liquidity management decision should be made based on the relation to the source offends and statutory obligation.
Khasharmeh (2018)	Liquidity influence profitability in Islamic banks of Bahrain.	To examines the impact of liquidity on Islamic banks profitability during the years from 2010 to 2015.	Multiple regression analysis is used in the study to test the impact of liquidity on profitability. There was regression analysis used. Hypothesis test were used.	The results of the study show that CDTD and INVSTD are correlated positively with ROE. In addition, CDTD, INVSTA indicate a negative correlation with ROE. Thus, only INVSTA and INVSTD found to be significant with ROE at 0.05 significant levels.
Abbas, Iqbal, and Aziz	The impact of bank capital,	To explore the influence of bank	Multiple regression analysis is used in the study to test the	The findings show that liquidity influences profitability more

(2019)	bank liquidity and credit risk on profitability in post crisis period: a comparative study of US and Asia.	capital, bank liquidity level and credit risk on the profitability.	impact of liquidity on profitability. There was regression analysis used. Hypothesis test were used.	intensively than capital, whereas the sign of coefficients is similar for large, small and medium-size banks. The results of this paper indicate that liquidity and bank capital have a positive impact on profitability, while credit risk has a negative influence on the profitability of banks. The findings of the simultaneous equations model indicate that bank capital has a positive impact on profitability in large and medium banks, whereas the profitability of banks influences the bank capital positively in case of large banks and negatively in case of medium banks.
Jihadi, Vilantika, Hashemi, Arifin, Bachtiar and Sholichah (2021)	The effect of liquidity, leverage, and profitability on firm value: empirical evidence from Indonesia.	To examine the effect of liquidity, activity, leverage, and profitability	The sampling technique used in this study is a purposive sampling method with certain criteria, to obtain a sample of 22 LQ45 index companies listed on the Indonesia Stock Exchange in 2014–2019. The data analysis method in this study used was the Multiple Linear Regression Analysis with the SPSS 18 Program.	The results show that the ratios of liquidity, activity, leverage, and profitability are significant to firm value in accordance with the initial hypothesis of the study. Corporate Social Responsibility (CSR) plays a role as a moderating variable and company size variable as a control variable on the effect of financial ratios (liquidity, activity, leverage, and profitability) on firm value.
Sharma (2021)	Management of Deposit and Liquidity and Its Impact on Profitability of Joint Venture Banks, i.e. NIBL Bank Limited and Himalaya Bank Limited.	To analyze the composition of assets and liabilities of joint venture banks in Nepal to examine the utilization of assets to evaluate the trend of deposits and loans of joint venture banks in Nepal. To evaluate liquidity, profitability, capital structure activity and capital adequacy position of joint venture banks in Nepal.	Research Tools to achieve the objectives of the study the researcher used different financial as well statistical tools like, percentage changes, average, trend analysis and present the data table in the different table figure, Pie charts and graphs.	The major findings from the study were from the deposit analysis it may be concluded that both the NIBL and MBBL perform best in collecting the total deposits thus they could get profit by mobilizing their deposits in productive sector.
Dahiyat, Weshah and Aldahiyat (2021)	Liquidity and Solvency Management and its Impact	To examine the impact of liquidity and solvency	Correlation and multi regression analyses have been applied to analyze the data.	The results show a statistically significant impact of independent and control variables (liquidity and solvency management and the size

	on Financial Performance: Empirical Evidence from Jordan.	management on the financial performance of Jordanian manufacturing companies.		of the company) on financial performance, while the detailed results of the hypotheses indicate that liquidity has an insignificant reverse impact on financial performance. With respect to other variables, there is a significant positive impact of size on performance and a significant negative impact of solvency on performance.
Teixeira, Carlos and Paulo (2021)	The effects of government bonds on liquidity risk and bank profitability in cape Verde.	To analyze the effects of government debt securities on the liquidity risk and profitability of banks in Cape Verde.	The study employs models with lagged repressors, estimated by the ordinary least squares estimation method.	These result show the negative effect of government debt securities when the Consolidated Securities of Financial Mobilization are included, which helps to explain the low average profitability rates of Cape Verde's banks.
Sharma et. al. (2022)	Issues in liquidity management in banking system: empirical evidence from Indian development banks	To explores the impact of various interventions of policy-makers to maintain the optimal liquidity by simultaneously insulating the banks' profitability and overall economic growth.	Correlation and regression analysis were used.	The Credit growth rate has a positive relationship with the Liquidity deficit, augments GDP growth, and reduces Banks' profit. It is also observed that the profit of Indian Scheduled Development banks has reduced after the demonetization.

2.4 Research Gap

The relationship between liquidity and profitability in development banks has received considerable attention in financial research. Numerous studies have explored various aspects such as credit risk, lending practices, financial performance, and liquidity management (Pokharel & Pokhrel, 2019; Pandey, 2020; Budhathoki et al., 2020; Khati, 2020). However, several limitations and unresolved issues remain that warrant further investigation.

First, most existing studies rely on a narrow set of liquidity indicators—such as the current ratio, credit-to-deposit ratio, and cash reserve ratio—to assess the liquidity position of banks. These indicators, while useful, may not fully capture the complex dynamics of liquidity mobilization and its broader impact on profitability. Liquidity in the banking sector is influenced by a wide range of variables including non-performing

assets, interest rate spreads, capital adequacy, and regulatory compliance—factors that are often overlooked or inadequately analyzed in past studies.

Second, prior research tends to focus on individual ratios or isolated variables without integrating them into a comprehensive analytical framework. For example, some studies report inconsistent findings regarding the influence of liquidity on profitability; while certain studies observe a positive correlation between liquidity and return on assets (ROA), others find either a negative or insignificant relationship (Shrestha & Jha, 2020; Adhikari, 2020; Sharma et al., 2022). This inconsistency highlights the need for a more robust and multidimensional approach that incorporates both descriptive and inferential statistics, including correlation and regression models, to derive meaningful conclusions.

Third, limited attention has been given to the comparative performance of multiple development banks across time. Most studies either focus on a single institution or cover a short time frame, which restricts the generalizability of their findings. A comparative and longitudinal analysis would provide a deeper understanding of how different banks manage their liquidity under varying economic and regulatory conditions.

Moreover, the impact of recent macroeconomic changes and policy interventions—such as the implementation of new NRB directives or changes in monetary policy—has not been sufficiently integrated into the analysis. As regulatory environments evolve, it becomes essential to reassess how these shifts influence liquidity strategies and overall financial performance in development banks.

This study seeks to address these gaps by systematically analyzing multiple determinants of liquidity and their effects on the profitability of Nepalese development banks. By using a comprehensive set of financial indicators and applying advanced statistical tools, the research aims to offer deeper insights and practical implications for both financial institutions and policymakers.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Research Design

This chapter presents the methodology used to analyze the data and derive findings from the study. The primary objective is to explore the determinants influencing the liquidity of selected Nepalese development banks, namely Muktinath Bikash Bank Limited, Garima Bikash Bank Limited, Jyoti Bikash Bank Limited, and Sindhu Bikash Bank Limited. To meet this objective, a descriptive-cum-causal-comparative research design has been adopted. This approach helps assess the financial performance of the selected banks and determine how various financial ratios influence their liquidity and overall profitability. This design was applied to summarize and interpret the collected data in an organized and meaningful way. It is commonly used in exploratory studies and was employed here to describe the trends, structures, and characteristics of liquidity in the selected development banks. The descriptive design allowed financial indicators to be represented using numerical analysis, facilitating interpretation and comparison across the banks. This design was used to examine the cause-and-effect relationships between independent financial variables (such as liquidity ratios) and dependent outcomes (such as profitability indicators). It helped in comparing how different financial variables influenced the performance of each bank. By observing differences and similarities across the banks, meaningful conclusions were drawn regarding the impact of these variables. The data were analyzed to understand the degree to which liquidity determinants affected financial performance. Patterns, trends, and correlations were identified using this integrated research framework. The analysis was based on secondary data extracted from annual reports and financial statements of the selected banks. In conclusion, the combination of descriptive and causal-comparative designs provided a comprehensive understanding of the liquidity conditions in Nepalese development banks. This methodological approach allowed for both quantitative description and analytical interpretation, ensuring the study's findings were both reliable and relevant for academic and policy-related purposes.

3.2 Population and Sample, and Sampling Design

In this study, data were collected using a multistage sampling method. From the total of 17 development banks in Nepal, four banks were selected as the sample: Muktinath Bikash Bank Limited, Garima Bikash Bank Limited, Jyoti Bikash Bank Limited, and Sindhu Bikash Bank Limited. This approach made the study more manageable in terms of resources and ensured that the research objectives were adequately covered.

3.3 Nature and Sources of Data, and the Instrument of Data Collection

To achieve the study's objectives, secondary data were collected from various sources, including publications of the selected development banks, the Nepal Rastra Bank Bulletin (issued by the Central Bank of Nepal), the annual audited financial statements of the development banks, and the yearly economic survey. Ten-year average ratios, covering the period from 2012/13 to 2021/22, were analyzed to evaluate the key liquidity indicators and financial performance of the development banks in Nepal. Two types of data were gathered, but the primary focus remained on secondary data obtained from official publications and reports.

3.4 Methods of Analysis

In this study, selected ratios based on an established framework were utilized to identify the determinants of liquidity in Nepalese development banks. An econometric multivariate regression model, accompanied by a correlation matrix, was employed to test the significance of the selected variables affecting liquidity. The liquidity ratio, specifically the Cash Reserve Ratio (CRR), was designated as the dependent variable, while the independent variables included the current ratio, non-performing loan to total loan ratio, interest expenses on total deposits and borrowings, weighted average interest rate spread, and credit deposit ratio. In the regression equation, α represents the constant term, β denotes the coefficients of the explanatory variables, and ε signifies the residual error term. All estimations were carried out using SPSS software, with supplementary calculations performed in Excel. The analytical tools applied in this study are as follows:

3.4.1 Financial Tools

In this study, several financial tools were employed. The liquidity ratio, specifically the Cash Reserve Ratio (CRR), was treated as the dependent variable. The independent variables included the current ratio, capital adequacy ratio, ratio of interest expenses to total deposits and borrowings, weighted average interest rate spread, credit deposit ratio, and the non-performing loan to total loan ratio. The data utilized for the analysis were obtained from the annual reports of the selected sample companies.

3.4.2 Statistical Tools

To draw valid conclusions from the collected data, it is essential to choose appropriate statistical tools. These tools enable researchers to analyze the data accurately and derive meaningful interpretations, findings, and conclusions. Careful and proper use of statistical techniques is necessary to ensure the analysis is effective and the results are reliable.

A. Correlation Analysis

Correlation analysis is a statistical method used to evaluate the strength of the relationship between two continuous variables measured numerically. This method is applied when it is necessary to determine whether connections exist between variables. It is often mistakenly believed that correlation analysis establishes cause-and-effect relationships; however, this is incorrect because other unmeasured variables may influence the results. When a correlation is identified between two variables, it indicates that a systematic change in one variable is accompanied by a systematic change in the other, meaning the variables vary together over time. The correlation can be positive or negative, depending on the numerical value, and it ranges from -1 to +1.

B. Regression analysis

In this research study, financial performance was treated as the dependent variable, while asset liability management components were considered as independent variables. Because the sample size was greater than 30, the researcher applied a two-tailed t-test with a 5% level of significance. The correlation coefficient (r), coefficient of determination (r^2), and analysis of variance (ANOVA) were calculated using the

regression model presented below. The study hypothesized that asset liability management has a positive effect on the financial performance of banks.

C. Regression Model

The empirical model is defined as shown below:

The model is: $(\hat{Y}) = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \beta_5 * X_5 + X_6 * \beta_6 \dots T_n$

Assume that,

X0= Return on Assets (ROA): Dependent Variable

X0= Return on Equity (ROE): Dependent Variable

X1 = Quick Ratio (QR): Independent Variable

X2= Capital Adequacy Ratio (CAR): Independent Variable

X3 = Non- performing Loan ratio (NPLR): Independent Variable

X4 = Credit Risk Ratio (CRR)

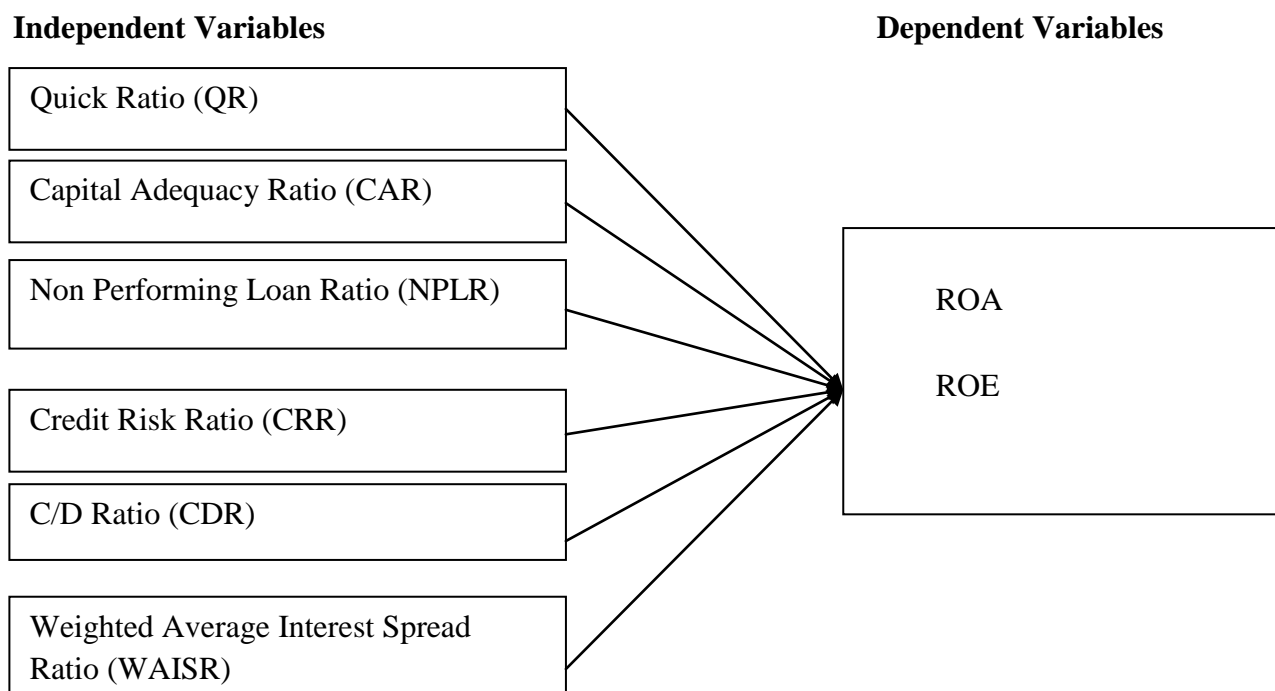
X5 = Credit Deposit Ratio (C/DR): Independent Variable

X6 = Weighted Average Interest Spread Rate (WAISR): Independent Variable

3.5 Research Framework and Definition of Variables

The empirical model employed in this study is designed to examine the relationship between various financial indicators and bank performance. In this model, return on assets (ROA) and return on equity (ROE) serve as the dependent variables representing financial performance. The independent variables include several key ratios: Quick Ratio (QR), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPLR), Credit Risk Ratio (CRR), Credit Deposit Ratio (C/DR), and Weighted Average Interest Spread Rate (WAISR). These variables have been selected to assess their impact on the profitability and overall financial health of development banks. The model expresses the dependent variables as a function of these independent variables, with coefficients estimating the strength and direction of each relationship. This study involves two categories of variables: dependent and independent variables. The dependent variables are influenced or determined by the independent variables.

Figure 1: Research Framework



Source: Kaitibi, et. al. (2018)

3.6 Definition of Variables

a. Dependent Variables

i. Return on Assets

Return on Assets (ROA) is used to represent the efficiency of asset utilization and indicates the net income generated from the bank's assets. The ability of bank management to generate profits by effectively using the available assets is reflected by this measure. According to Emekekue (2008), ROA is defined as a ratio that measures the profit earned from the total assets of a firm.

ii. Return on Equity

Return on Equity (ROE) measures how efficiently a company's management uses the shareholders' invested capital. It reflects the profitability generated from the equity provided by stockholders. A higher ROE indicates that the company's management is more effective in generating profits and growth from the shareholders' funds.

b. Independent Variables

i. Quick Ratio

The quick ratio is used to assess a company's ability to meet its current liabilities without relying on the sale of inventory or additional financing. It is considered a more conservative liquidity measure compared to the current ratio, as it only includes the most liquid assets such as cash, cash equivalents, marketable securities, and accounts receivable. Assets like prepaid expenses and inventory are excluded because they are less easily converted to cash or may require significant discounts to be liquidated. A higher quick ratio indicates stronger liquidity and better financial health, while a lower ratio suggests potential difficulties in covering short-term obligations.

ii. Capital Adequacy Ratio (CAR)

The capital adequacy ratio (CAR) is used to measure the capital a bank holds in relation to its risk-weighted credit exposures, expressed as a percentage. It is designed to ensure that banks maintain adequate capital reserves to absorb potential losses, thereby minimizing the risk of insolvency.

iii. Non Performing Loan Ratio

The ratio of nonperforming loans to total gross loans is calculated by dividing the total amount of nonperforming loans (the gross loan value recorded on the balance sheet) by the entire loan portfolio, which includes nonperforming loans before any deductions for loan loss provisions are made.

iv. Credit Risk Ratio (CRR)

Credit risk refers to the possibility of financial loss arising when a borrower fails to repay a loan. It occurs when the lender does not receive the expected principal and interest payments, leading to disruptions in cash flow and increased collection costs. This risk can be mitigated by evaluating the borrower's creditworthiness, which includes assessing their current debt levels and income. Although it is impossible to predict exactly who will default, proper assessment and management of credit risk can reduce the extent of potential losses. The interest payments received from the borrower or debt issuer serve as compensation to the lender or investor for taking on this risk.

v. Credit Deposit Ratio (C/DR)

The credit-deposit ratio (CD ratio) measures the proportion of a bank's deposits that are lent out to borrowers. While the Reserve Bank of India (RBI) does not set a specific minimum or maximum level for this ratio, a very low CD ratio suggests that banks are not fully utilizing their available resources.

vi. Weighted Average Interest Spread Rate Ratio

The weighted average interest rate refers to the combined interest rate paid on all outstanding debt. It is determined by totaling all interest payments made within a specific period and dividing that sum by the total debt amount.

CHAPTER-IV

RESULTS AND DISCUSSION

This chapter presents an analysis of various financial indicators and study variables. It is focused on the examination and interpretation of secondary data, which aids in drawing conclusions and making recommendations.

4.1 Results

4.1.1 Quick Ratio

The current ratio is a liquidity measure that evaluates a company's ability to pay off its short-term liabilities, typically those due within one year. It reflects how efficiently the company can use its current assets to meet its current debts and obligations.

A current ratio that is at or slightly above the industry average is generally viewed as acceptable. If the ratio falls below the industry average, it may indicate a higher risk of financial difficulty or default. On the other hand, a significantly high current ratio compared to peers could suggest that management is not using the company's assets efficiently. The term "current" refers to the focus on current assets and liabilities.

The quick ratio, also called the acid-test ratio, assesses a company's capacity to cover its current liabilities using its most liquid assets. It is calculated by dividing liquid assets which can be quickly converted to cash at or near their value by current liabilities. A quick ratio below 1 implies that the company may not be able to fully pay off its short-term obligations immediately. Unlike the current ratio, the quick ratio excludes inventory and other less liquid current assets. The current ratio is sometimes known as the working capital ratio.

A quick ratio of less than 1 indicates that the company may struggle to pay its immediate obligations. This ratio provides a more conservative view of liquidity compared to the current ratio.

Table 2

Banks	<i>Quick Ratio</i>										<i>(times)</i>		
	2012/ 013	2013/ 014	2014/ 015	2015/ 016	2016/ 017	2017/ 018	2018/ 019	2019/0 20	2020/ 021	2021/ 022	Mean	SD	C.V
MBBL	1.39	1.27	1.58	1.05	1.03	1.06	1.05	1.06	1.02	1.21	0.17	0.15	0.16
GBBL	1.04	1.26	0.98	0.78	1.36	1.27	0.92	0.94	0.97	2.08	0.16	0.14	0.15
JBBL	1.27	2.39	8.45	1.02	1.25	1.05	10.6	1.05	0.94	2.38	3.04	2.30	3.10
SBBL	1.26	2.37	8.25	1.25	1.39	2.47	2.30	6.27	4.17	1.25	3.08	2.10	2.00

(Source: Annual Report, 2012/013 to 2021/022)

Table 2 shows the Quick Ratios (times) for four banks, Muktinath Bikash Bank Limited (MBBL), Garima Bikash Bank Limited (GBBL), Jyoti Bikash Bank Limited (JBBL), and Sindhu Bikash Bank Limited (SBBL) over the fiscal years 2012/013 to 2021/022.

The data reveals that MBBL and GBBL maintain relatively stable liquidity positions, with average quick ratios of approximately 1.17 and 1.16, respectively. Both banks exhibit low variation over the years, as reflected in their coefficients of variation (C.V.) of 0.16 and 0.15, suggesting consistent liquidity management.

Conversely, JBBL and SBBL show significantly higher average quick ratios 3.04 and 3.08, respectively but their liquidity levels have fluctuated considerably throughout the period. This volatility is evident from their high standard deviations (2.30 for JBBL and 2.10 for SBBL) and coefficients of variation (3.10 for JBBL and 2.00 for SBBL). Such variations may indicate irregularities or changes in liquidity strategy for these banks.

In summary, MBBL and GBBL demonstrate steady and consistent liquidity, while JBBL and SBBL's liquidity ratios vary widely from year to year.

4.1.2 Analysis of Capital Adequacy Ratio

The Capital Adequacy Ratio (CAR) measures the capital a bank holds as a percentage of its risk-weighted credit exposures. Also referred to as the capital-to-risk weighted assets ratio (CRAR), this ratio is used to safeguard depositors and ensure the stability and efficiency of the banking sector's financial system.

Table 3

Capital Adequacy Ratio (CAR)

Banks											(Times)		
	2012/013	2013/014	2014/015	2015/016	2016/017	2017/018	2018/019	2019/020	2020/021	2021/022	Mean	S.D	C.V
MBBL	11.02	11.55	11.23	11.14	10.84	14.15	12.46	12.60	14.89	13.89	12.37	10.23	12.10
GBBL	11.10	11.10	11.14	11.30	11.20	11.58	11.97	12.17	11.28	11.24	11.40	8.12	9.12
JBBL	13.14	18.12	17.25	14.29	15.23	16.06	14.93	15.71	14.00	14.70	15.32	14.20	13.27
SBBL	14.20	19.26	20.30	16.32	24.20	15.20	17.24	13.47	16.20	18.25	17.46	16.27	17.31

(Source: Annual Report, 2012/013 to 2021/022)

Table 3 displays the Capital Adequacy Ratio (CAR) for four development banks over the period from 2012/013 to 2021/022. CAR measures the amount of capital a bank holds as a percentage of its risk-weighted assets, indicating the bank's ability to absorb losses and maintain financial stability.

Among the banks, Sindhu Bikash Bank Limited (SBBL) recorded the highest average CAR of 17.46%, suggesting a strong capital base and greater resilience against financial risks. Jyoti Bikash Bank Limited (JBBL) follows with an average CAR of 15.32%, which also reflects solid capital adequacy. Muktinath Bikash Bank Limited (MBBL) showed a moderate average CAR of 12.37% but with relatively high fluctuations over the years, as indicated by its standard deviation of 10.23. Garima Bikash Bank Limited (GBBL) maintained the lowest average CAR of 11.40%, with more stability and less variation across the period.

Overall, all banks maintained CAR values above regulatory minimums, but SBBL and JBBL demonstrated stronger capital adequacy levels, while MBBL and GBBL showed comparatively lower capital buffers. The variability in CAR among these banks suggests differences in their capital management policies and risk exposure throughout the studied years.

4.1.3 Non-Performing Loan Ratio

The Non-Performing Loan (NPL) ratio is calculated by dividing the total amount of non-performing loans by the bank's total outstanding loan portfolio. This ratio is often expressed as a percentage, representing the proportion of loans that are not being repaid

as scheduled. Financial analysts commonly use the NPL ratio to assess and compare the quality of loan portfolios across different banks. A higher NPL ratio is generally viewed as an indicator of riskier lending practices, which may increase the likelihood of financial instability or bank failure.

Table 4

Banks	<i>Non-Performance Loan Ratio</i>										<i>(Times)</i>		
	2012/ 013	2013/ 014	2014/ 015	2015/ 016	2016/ 017	2017/ 018	2018/ 019	2019/ 020	2020/ 021	2021/ 022	Mean	SD	C.V
MBBL	2.09	2.89	1.96	3.22	1.23	0.85	1.4	1.12	1.01	0.48	1.62	0.12	0.23
GBBL	0.92	0.66	0.61	0.62	0.78	0.77	0.48	0.34	0.32	0.19	0.56	0.45	0.24
JBBL	0.68	0.48	0.16	0.34	0.84	0.62	0.97	0.66	0.38	0.25	0.53	0.44	0.55
SBBL	0.51	0.72	0.67	0.84	0.73	0.58	0.73	0.65	0.55	0.89	0.68	0.67	0.66

(Source: Annual Report, 2012/013 to 2021/022)

Table 4 shows the Non-Performing Loan (NPL) ratios of four development banks from the fiscal year 2012/013 to 2021/022. Muktinath Bikash Bank Limited (MBBL) had the highest average NPL ratio at 1.62%, indicating a larger share of its loans were non-performing compared to the others. This suggests MBBL faced greater difficulties in managing loan defaults during this period.

Garima Bikash Bank Limited (GBBL) recorded the lowest average NPL ratio of 0.56%, reflecting stronger loan portfolio quality and better credit risk control. Jyoti Bikash Bank Limited (JBBL) and Sindhu Bikash Bank Limited (SBBL) had average ratios of 0.53% and 0.68% respectively, indicating moderate levels of non-performing loans.

The standard deviation shows that SBBL experienced higher fluctuations in its NPL ratio (0.67), while MBBL had relatively stable ratios (0.12). Overall, the data suggest that MBBL had the highest credit risk exposure among the banks, whereas GBBL demonstrated more effective asset management.

3.1.4 Credit Risk Ratio (CRR)

Credit risk is defined as the likelihood of financial loss due to a borrower's failure to repay a loan. It is the risk that the principal and interest owed to the lender may not be received, causing disruptions in cash flow and higher collection expenses. Credit risk

can be mitigated by assessing the borrower's creditworthiness, which includes evaluating factors such as their existing debt levels and income.

Table 5

Credit Risk Ratio

Banks											Ratio in %		
	2012/ 013	2013/0 14	2014/0 15	2015/0 16	2016/0 17	2017/0 18	2018/0 19	2019/0 20	2020/0 21	2021/0 22	Mean	SD	C.V
MBBL	17.12	16.39	15.30	12.39	10.27	8.39	7.26	8.25	10.20	14.25	11.98	10.14	11.23
GBBL	19.30	18.26	16.39	15.26	18.25	19.2	12.0	7.2	10.5	8.2	14.45	13.25	13.88
JBBL	14.25	11.30	9.12	7.25	8.45	9.32	11.32	14.15	6.77	10.02	10.19	12.12	11.39
SBBL	12.23	14.20	8.12	16.23	18.27	11.23	14.26	16.30	8.27	10.20	12.93	13.24	13.44

(Source: Annual Report, 2012/013 to 2021/022)

Table 5 also shows the Cash Reserve Ratio (CRR) for the sample banks. Jyoti Bikash Bank Limited (JBBL) recorded an average CRR of 10.19%, with its highest value at 14.25% in 2012/013 and the lowest at 6.77% in 2020/021.

Garima Bikash Bank Limited (GBBL) had an average CRR of 14.45%, peaking at 19.30% in 2012/013 and dropping to 7.2% in 2019/020. Overall, JBBL maintained the lowest CRR among the banks, while Muktinath Bikash Bank Limited (MBBL) showed the highest CRR, indicating stronger liquidity management.

This implies that JBBL utilized its assets more efficiently, whereas MBBL underutilized its assets compared to the other banks over the ten-year period. From a variability perspective, JBBL performed better than the other banks. Regarding consistency, MBBL demonstrated more stability compared to the rest, while GBBL appeared to carry higher risk.

The coefficient of variation (C.V.) for MBBL was 11.23%, which is lower than that of the other banks, showing greater consistency. The mean, standard deviation (S.D.), and coefficient of variation (C.V.) for MBBL were 11.98%, 10.14%, and 11.23%, respectively.

4.1.5 Credit-Deposit Ratio

This ratio indicates the extent to which banks successfully utilize depositors' funds to generate profit through loans and advances. In other words, it measures how quickly the total collected deposits are converted into loans and advances extended to clients for income generation. The Credit-Deposit (CD) ratio serves as a key indicator of the efficiency of fund deployment by development banks. It is calculated by dividing the total loans and advances by the total deposits. A higher CD ratio reflects more effective utilization of funds, while a lower ratio suggests that a portion of the deposits remains idle or unutilized. Although a greater CD ratio signifies better use of deposits and higher earnings, liquidity requirements must also be carefully considered.

Table 6

<i>Total Credit- Deposit Ratio</i>											<i>in %</i>		
Banks	2012/ 013	2013/ 014	2014/ 015	2015/ 016	2016/ 017	2017/ 018	2018/ 019	2019/ 020	2020/ 021	2021/ 022	Mean	SD	C.V
MBBL	65.28	75.16	66.47	54.29	58.14	58.12	56.23	41.12	66.25	64.12	60.51	56.23	57.12
GBBL	63.27	69.58	70.19	68.29	75.26	74.90	74.55	64.43	70.49	65.38	69.63	61.10	63.47
JBBL	74.23	77.5	71.3	77.8	65.5	71.9	72.8	76.8	77.6	74.71	74.01	66.45	68.12
SBBL	78.20	66.30	72.45	66.89	75.20	74.25	76.30	79.28	67.45	67.28	72.36	65.12	68.12

(Source: Annual Report, 2012/013 to 2021/022)

Table 6 displays the total credit-deposit ratios of the sample banks. GBBL recorded an average credit-deposit ratio of 69.63%, with its highest ratio of 75.26% in the year 2016/017 and the lowest at 63.27% in 2012/013. NBB showed an average ratio of 74.01%, peaking at 77.8% in 2015/016 and reaching its lowest value of 65.5% in 2016/017. NMB had an average credit-deposit ratio of 60.52%, with the highest ratio of 75.16% in 2013/014 and the lowest of 41.12% in 2019/020. The credit-deposit ratio serves as an important measure of how efficiently development banks deploy deposited funds. It is calculated by dividing total loans and advances by total deposits. A higher ratio indicates better fund utilization, whereas a lower ratio suggests that some deposits remain idle or unutilized. Despite the benefits of a higher ratio in terms of earnings and

fund usage, maintaining sufficient liquidity is crucial. The mean, standard deviation, and coefficient of variation for the banks' credit-deposit ratios are 60.51%, 56.23%, and 57.12%, respectively.

4.1.6 Weighted Average Interest Spread Ratio

In banking, the weighted average interest rate spread refers to the difference between the interest income generated from loans, securities, and other interest-earning assets and the interest expenses incurred on deposits and other interest-bearing liabilities.

Table 7

Weighted Average Interest Rate Spread in %

Banks	2012/ 013	2013 /014	2014 /015	2015 /016	2016 /017	2017 /018	2018/ 019	2019/ 020	2020 /021	2021 /022	Mean	SD	C.V
MBBL	5.08	4.12	3.90	5.25	4.39	4.12	4.15	4.20	3.90	3.80	4.29	3.25	4.21
GBBL	5.14	5.30	7.12	6.39	5.21	4.12	7.09	5.27	4.64	5.01	5.52	4.26	5.98
JBBL	8.74	6.24	7.12	6.28	4.88	5.68	5.69	4.76	4.89	4.48	5.87	4.20	5.69
SBBL	4.25	3.69	4.12	7.45	6.23	5.48	5.03	3.97	3.74	4.23	4.81	3.24	4.56

(Source: Annual Report, 2012/013 to 2021/022)

Table 7 illustrates the weighted average interest rate spread, which measures the difference between the interest earned on loans, securities, and other interest-earning assets, and the interest paid on deposits and other interest-bearing liabilities. This ratio is expressed as a percentage. Over the ten-year period, JBBL recorded a higher weighted average interest rate spread compared to GBBL. According to the risk-return principle, both MBBL and JBBL achieved higher but riskier spreads than GBBL. Regarding consistency, MBBL, JBBL, and GBBL demonstrated more uniformity in their spreads. The mean, standard deviation, and coefficient of variation for the spreads were 4.29, 3.25, and 4.21, respectively.

4.1.7 Return on Total Assets

The profitability ratio is assessed by examining the relationship between net profit and total assets. Often referred to as the profit-to-assets ratio, ROA evaluates how efficiently management utilizes the company's assets to generate earnings. A higher return on assets

indicates better performance. The return on assets is calculated using the following formula:

Table 8

ROA of Sample Banks

Banks	2012/ 013	2013/ 014	2014/ 015	2015/ 016	2016/ 017	2017/ 018	2018/ 019	2019/ 020	2020/ 021	2021/ 022	Mean	SD	C.V
MBBL	1.28	1.56	1.14	2.39	2.12	1.34	1.94	2.03	2.19	1.67	1.83	0.47	25.68
GBBL	3.45	2.24	2.14	3.20	2.36	2.30	1.90	2.00	2.10	2.10	2.08	0.15	7.21
JBBL	2.44	2.88	2.47	2.45	2.23	2.89	2.06	2.32	2.69	2.61	2.51	0.32	12.47
SBBL	1.40	1.25	1.23	2.36	2.15	2.51	1.99	1.98	1.84	2.61	2.18	0.32	14.06

Table 8 reveals that JBBL achieved the highest Return on Equity (ROE) at 2.514%, whereas MBBL recorded the lowest Return on Assets (ROA) at 1.834%. All the banks maintained an ROA above 1%, which is generally regarded as acceptable. A higher ROA tends to drive an increase in market value. The accompanying figure illustrates the average ROA of the sample banks over the study period from 2016/017 to 2020/021. The standard deviation indicates the variability in the Quick Ratio among these banks, with MBBL showing the greatest variability at 0.47 and GBBL the least at 0.15.

4.1.8 Return on Common Equity

Return on common equity indicates the profit generated from the investment made by common shareholders in the company. Typically, higher returns signify greater benefits for the owners. The calculation of return on common equity is done using the following formula:

Table 9

ROE of Sample Banks

Banks	2012/0 13	2013/ 014	2014/0 15	2015/0 16	2016/0 17	2017/0 18	2018/0 19	2019/0 20	2020/ 021	2021/ 022	Mean	SD	C.V
MBBL	18.20	16.23	25.14	18.45	16.25	17.06	24.53	21.22	21.58	14.17	19.71	4.07	20.64
GBBL	24.21	30.12	29.65	27.12	26.12	24.49	19.99	15.66	16.66	15.21	18.38	3.90	21.21
JBBL	27.25	26.45	23.22	30.65	28.14	27.97	22.73	25.61	26.65	27.78	26.15	2.14	8.18
SBBL	29.30	32.45	30.12	26.14	29.45	26.27	21.69	17.18	11.98	18.66	19.14	5.42	28.31

Table 9 reveals that JBBL recorded the highest average return on equity (ROE) at 26.15% among the selected banks. The lowest average ROE of 18.15% was observed for

GBBL. Since investors generally prefer higher ROE when choosing investments, JBBL's stock appears to be the most attractive, with SBBL also showing solid performance throughout the study period. The accompanying figure illustrates the average ROE over the five-year period. The standard deviation, indicating volatility in the quick ratio, shows that SBBL had the greatest fluctuation, while GBBL experienced the least, with standard deviations of 5.42 and 0.23, respectively.

4.2 Descriptive Statistics of Study Variables

This section examines the relationships between the Quick Ratio, Capital Adequacy Ratio, Interest Expenses to Total Deposits and Borrowings, Credit Deposit Ratio, Non-Performing Loan to Total Loan Ratio, Weighted Average Interest Rate Spread Ratio, and Credit Risk Ratio with the key components of Quick Ratio and Non-Performing Loans for each of the sampled listed banks. For analytical purposes, the Quick Ratio (QR) and Interest Expenses to Total Deposits (IE/TD) are considered as variables influenced by fluctuations, thus treated as dependent variables. The independent variables include QR, CAR, IE/TD, CDR, NPL/TLR, WAIRSR, and CRR.

Correlation analysis was conducted to assess the relationships among QR, CAR, IE/TD, CDR, NPL/TLR, WAIRSR, and CRR. Both simple correlation coefficients and coefficients of determination were calculated to measure the effects of Quick Ratio, Capital Adequacy Ratio, Interest Expenses to Total Deposits and Borrowings, Credit Deposit Ratio, Non-Performing Loan to Total Loan Ratio, Weighted Average Interest Rate Spread Ratio, and Credit Risk Ratio. To test the hypotheses, multiple correlation coefficients were also computed.

To evaluate the magnitude of the impact of independent variables on the dependent variables, multiple regression analyses were performed, with the effect sizes determined from the regression equations. Additionally, multiple correlation coefficients and coefficients of determination were analyzed during both correlation and regression analyses.

The descriptive statistics in this study cover data from three development banks for the period 2012/013 to 2021/022, including Return on Assets, QR, CAR, IE/TD, CDR, NPL/TLR, WAIRSR, and CRR. Through descriptive analysis, the mean, standard

deviation (S.D.), coefficient of variation (C.V.), maximum, and minimum values for each variable were computed.

Table 10

Descriptive Analysis

Variables	QR	CAR	NPLR	CRR	CDR	WAISR	ROA	ROE
Mean	1.6417	0.85	65.93	80.29	0.84	0.92	0.74	0.42
Std. Deviation	.28.152	0.46	11.61	5.41	0.3.9	0.38	0.56	0.65
C.V.	17.148	0.49	12.30	6.23	0.47	0.32	0.25	0.74
Minimum	1.19	45.20	.81	61.68	35.20	36.80	0.62	0.36
Maximum	2.03	68.17	1.76	83.95	65.30	62.20	67.12	0.47

(Source: Annual Report, 2012/013 to 2021/022)

Table 10 presents the descriptive statistics for the variables over the study period. The Quick Ratio (QR) showed a mean value of 1.17%, with a minimum of 1.78% and a maximum of 2.17%, resulting in a range of 0.39%. The standard deviation of QR over the ten years was 0.76%.

The Cash Reserve Ratio (CRR) recorded an average of 80.29%, ranging from a minimum of 0.81% to a maximum of 1.71%, with a range of 0.95%. Its standard deviation was 5.41% during the period under review.

The Credit Risk Ratio exhibited a mean of 80.29%, with values varying between 61.68% and 83.95%, producing a range of 22.27%. The standard deviation for this variable was also 5.41%.

Lastly, the Capital Adequacy Ratio (CAR) averaged 65.60%, fluctuating between a low of 81.18% and a high of 102.92%, resulting in a range of 21.74%. The standard deviation recorded for CAR was 7.59% over the ten-year period.

4.3 Correlation Analysis

Correlation analysis is a statistical technique employed in research to determine the strength and direction of a linear relationship between two variables. It evaluates how changes in one variable are associated with changes in another. A strong correlation

indicates a significant connection between the variables, while a weak correlation suggests a minimal relationship.

In the context of market research, this method is commonly applied to analyze quantitative data obtained through surveys, live polls, and other data collection tools. Researchers use it to detect relationships, patterns, and trends between datasets or variables. A key statistical measure used in this analysis is the correlation coefficient, which quantifies the degree of association between the variables.

Table 11

Correlations Matrix

Variables		ROA	ROE	QR	NPLR	CRR	WAIRSR	CDR	CAR
ROA	Pearson	1							
	Correlation								
	Sig. (2-tailed)								
ROE	Pearson	-.251	1						
	Correlation								
	Sig. (2-tailed)	.514							
QR	Pearson	.498	-.402	1					
	Correlation								
	Sig. (2-tailed)	-.173	.249						
NPLR	Pearson	.740*	-.761*	.740*	1				
	Correlation								
	Sig. (2-tailed)	.014	.011	.014					
CRR	Pearson	-.430	-.396	-.430	-.155	1			
	Correlation								
	Sig. (2-tailed)	.214	.257	.214	.668				
WAIRSR	Pearson	-.670*	.594	-.670*	-.749*	.230	1		
	Correlation								
	Sig. (2-tailed)	.034	.070	.034	.013	.523			
CDR	Pearson	.712*	-	.712*	.943**	.035	-.783**	1	
	Correlation		.818**						
	Sig. (2-tailed)	.021	.004	.021	.000	.923	.007		
CAR	Pearson	-.562	-.745	.0124	.475**	.245	-.546	-.652	1
	Correlation								
	Sig. (2-tailed)	.004	.001	.032	.0142	.475	.457	.785	

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

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

Table 11 presents the correlation analysis among the key study variables, specifically evaluating the relationship between Credit Risk Ratio (CRR) and Return on Assets (ROA), as well as other relevant financial indicators. The analysis reveals a negative correlation between CRR and ROA, with a coefficient of -0.241. This suggests that higher CRR, possibly due to banks accumulating significant profits and maintaining

optimal capital levels, tends to be associated with lower ROA. However, the corresponding p-value exceeds the 0.05 significance threshold, indicating that this relationship is not statistically significant.

Further analysis shows no significant correlation between the Quick Ratio (QR) and Credit Risk Ratio. Interestingly, CRR is positively associated with the QR, as indicated by a correlation coefficient of 0.430. This implies that banks with higher cash reserves are generally better at managing asset quality. However, this relationship is also statistically insignificant, as the p-value of 0.014 exceeds the standard significance level of 0.05. Hence, despite the numerical correlation, the relationship between QR and CRR is not statistically supported.

Additionally, the correlation coefficient of 0.430 between CRR and QR contradicts the negative association found between CRR and ROA. The negative coefficients in the correlation matrix suggest an inverse relationship between the Credit Risk Ratio and other variables. Although CRR displays a positive correlation with QR, it is again deemed statistically insignificant due to a p-value of 0.034, which is higher than 0.05. Similarly, there is no significant correlation between QR and the Weighted Average Interest Rate on Short-term Resources (WAIRSR), based on the corresponding p-value.

Regression analysis using Ordinary Least Squares (OLS) was also performed to validate the model. The model's validity, assessed using the F-statistic, yielded a value of 2.052 with a p-value of 0.253. As this value is greater than the 0.05 significance level, the model is not statistically significant overall. However, the Variance Inflation Factor (VIF) values for all independent variables are below 10, indicating no multicollinearity issues among the predictors.

The R-squared value of the model is 71.9%, suggesting that approximately 71.9% of the variance in the dependent variable (Quick Ratio) is explained by the model. This indicates a good model fit. The remaining 28.1% of the variability in the Quick Ratio is due to other factors not included in the model.

Regarding the regression coefficients, ROA and Return on Equity (ROE) have a joint coefficient of -0.005. This means that for every 1 rupee increase in ROE or ROA, there is

a predicted 0.5% decrease in current assets. However, the associated p-value is 0.285, which is greater than 0.05, indicating the relationship is not statistically significant.

The regression coefficient for Credit Risk Ratio is -0.019, implying that a 1% increase in CRR leads to a predicted 1.9% rise in ROA. Nonetheless, the p-value of 0.200 again suggests that this relationship lacks statistical significance.

Conversely, the Cash Reserve Ratio (CRR) exhibits a statistically significant relationship with the Quick Ratio. Its regression coefficient is -0.076, indicating that a 1% increase in CRR results in a 7.6% rise in ROA, with a p-value of 0.037, which is less than 0.05.

The coefficient for the number of bank branches is 0.102, suggesting that a 1% increase in the number of branches may lead to a 10.2% rise in ROA. However, the corresponding p-value of 0.422 means the relationship is not statistically significant.

Finally, the Capital Adequacy Ratio (CAR) shows a coefficient of 0.109, indicating that a 1% increase in CAR leads to a projected 10.9% increase in ROA. Despite this, the p-value is reported as 2.952, which is far above the 0.05 level, confirming that the relationship is statistically insignificant.

4.4 Regression Analysis

To explore the relationships among the study variables, Pearson's correlation analysis was conducted. This statistical method is employed to assess the strength and direction of linear associations between two variables. In this study, it was applied to evaluate the connections between the dependent and independent variables within selected development banks over the period from fiscal year 2012/13 to 2021/22.

The analysis focuses on two dependent variables: Return on Assets (ROA) and Return on Equity (ROE). ROA is defined as the ratio of net income to total assets and is used as a key indicator of financial performance, contributing to 69% of the variation in the model.

The independent variables include the Quick Ratio, Capital Adequacy Ratio, Non-Performing Loans (NPL), Credit Risk Ratio, Credit-to-Deposit (C/D) Ratio, and the Weighted Average Interest Spread Ratio (WAISR), all expressed as percentages. The correlation coefficients derived from the analysis provide insights into how these

financial indicators are linearly related to the performance metrics of the banks under review.

Table 12

Co-efficient Table for selected development banks

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
Constant	3.296	.435		7.569	.000
QR	.159	.059	.564	2.707	.010
CAR	.016	.010	.245	1.624	.112
NPLR	.003	.019	.020	.141	.888
CRR	-.005	.003	-.188	-1.421	.162
CDR	.241	.002	-.244	.1524	.755
WAIRSR	-.042	.010	-.901	-4.124	.000

a. Dependent Variable: ROA

Table 12 presents the regression coefficients of the independent variables Quick Ratio (QR), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPLR), Credit Risk Ratio (CRR), Weighted Average Interest Spread Ratio (WAIRSR), and Credit-to-Deposit Ratio (CDR against the dependent variable, Return on Assets (ROA), for selected development banks.

The regression coefficient (β) for NPLR is 0.159, indicating that a 1% increase in NPLR results in a 0.159% increase in ROA. The corresponding p-value is 0.010, which is below the 5% significance level, indicating a statistically significant positive relationship between NPLR and ROA.

In the case of CRR, the coefficient is 0.016. This suggests that a 1% increase in CRR leads to a 0.016% rise in ROA. However, the p-value of 0.112 exceeds the 5% threshold, indicating that the relationship is statistically insignificant. Thus, CRR does not have a meaningful effect on ROA within the sampled banks.

The coefficient for CAR is 0.003, implying a minimal increase of 0.003% in ROA for every 1% increase in CAR. With a p-value of 0.888, this relationship is also statistically insignificant, confirming that CAR has no substantial impact on profitability in the observed sample.

Loan Loss Provision (LLP) shows a regression coefficient of -0.005, suggesting that a 1% rise in LLP results in a 0.005% decline in ROA. However, the associated p-value of 0.162 indicates that this negative relationship is statistically insignificant at the 5% level, and thus LLP does not significantly affect the banks' profitability.

Lastly, the coefficient for the Credit-to-Deposit Ratio (CDR) is -0.042, indicating that a 1% increase in CDR leads to a 0.042% decrease in ROA. The p-value for this variable is 0.000, which is statistically significant at the 1% level. Therefore, a strong and significant negative relationship exists between CDR and profitability.

Table 13

ANOVA Tests

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.504	5	1.501	6.275	.000 ^b
	Residual	10.524	44	.239		
	Total	18.028	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), QR, CAR, NPLR, CRR, CDR and WAISR

Table 13 presents the results of multiple regression models analyzed under a single regression command. This table outlines the distribution of variance across different sources: regression, residual (or error), and total. The total variance is divided into the portion explained by the independent variables (regression) and the portion unexplained (residual or error).

The sum of squares values represents the variation attributed to each source regression, residual, and total. These values help in understanding how much of the variation in the dependent variable is accounted for by the model. As expected, the sum of squares for regression and residual components equals the total sum of squares, highlighting the partitioning of variance.

Each source of variance is associated with a specific degree of freedom (df). The total variance has degrees of freedom equal to $n - 1$. In this analysis, data from 10 fiscal years were used, giving the total df as 49. The degrees of freedom for the model correspond to the number of predictors, k , minus one. Although six independent variables were included in the model (Quick Ratio, Capital Adequacy Ratio, Non-Performing Loan Ratio, Credit Risk Ratio, Credit-to-Deposit Ratio, and Weighted Average Interest Spread Ratio), the intercept is automatically included in regression models. Therefore, the model df is calculated accordingly.

The mean square values are obtained by dividing the sum of squares by their respective degrees of freedom. For the regression component, the mean square is 7.504 divided by 5, resulting in 1.501. For the residual component, 10.524 is divided by 44, yielding a mean square of 0.239. These mean squares are used to compute the F-ratio, which evaluates the overall significance of the model. The F-value is derived by dividing the regression mean square by the residual mean square ($1.501 / 0.239$), resulting in an F-value of 6.275.

The significance of this F-value is determined by comparing the corresponding p-value to the standard threshold of 0.05. Since the p-value is 0.000 less than 0.05 it indicates that the set of independent variables collectively has a statistically significant effect on the dependent variable, Return on Assets (ROA). Therefore, the variables QR, CAR, NPLR, CRR, C/DR, and WAISR jointly exert a significant influence on the profitability of the development banks during the study period.

Table 14

Estimated regression analysis for selected development banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.645 ^a	.416	.350	.48906

a. Predictors: (Constant), QR, CAR, NPLR, CRR, C/DR and WAISR

Table 14 presents the model summary, which highlights the relationship between the dependent variables Return on Assets (ROA) and Return on Equity (ROE) and the independent variables: Quick Ratio (QR), Capital Adequacy Ratio (CAR), Non-

Performing Loan Ratio (NPLR), Credit Risk Ratio (CRR), Credit-to-Deposit Ratio (CDR), and Weighted Average Interest Spread Ratio (WAISR).

The correlation coefficient (R) reflects the strength and direction of the linear relationship between the observed and predicted values of the dependent variable. In this case, the R value is 0.645, indicating a moderately strong positive correlation between the independent variables and the dependent variables (ROA and ROE).

The R-squared (R^2) value, also known as the coefficient of determination, explains how much of the variance in the dependent variable can be accounted for by the independent variables in the model. An R^2 value of 41.60% suggests that approximately 41.6% of the variability in ROA and ROE is explained by the model. This means the selected variables QR, CAR, NPLR, CRR, CDR, and WAISR collectively account for a substantial portion of changes in profitability.

The adjusted R-squared, which adjusts for the number of predictors in the model, is reported as 35%. This indicates that, after accounting for the number of explanatory variables, about 35% of the variation in ROA and ROE is explained by the model. The remaining 65% is attributed to other factors not included in the analysis.

The standard error of the estimate, also known as the root mean square error, measures the average distance between the observed values and the predicted values. It reflects the model's accuracy and is calculated as the square root of the mean square residual.

Overall, the model demonstrates a moderate ability to predict the dependent variables, with the included financial indicators significantly contributing to the explanation of ROA and ROE across the selected development banks.

4.5 Discussion

The primary objectives of this study were to examine the relationship between liquidity and other financial indicators, assess the impact of liquidity on selected financial variables, and analyze the liquidity trends among development banks.

In the correlation analysis, the relationship between Return on Assets (ROA) and Return on Equity (ROE) was found to be negative, though statistically insignificant. This indicates no meaningful correlation between these two profitability indicators. In

contrast, ROA showed a statistically significant positive correlation with the Quick Ratio (QR), suggesting that higher liquidity is associated with improved asset returns. Similarly, ROA demonstrated a significant positive relationship with the Non-Performing Loan Ratio (NPLR), implying that better-performing assets may contribute to stronger returns.

On the other hand, ROA was negatively correlated with the Credit Risk Ratio (CRR), Weighted Average Interest Spread Ratio (WAISR), and Capital Adequacy Ratio (CAR). Among these, only the relationships with WAISR and CAR were statistically significant, while the correlation with CRR was not. Interestingly, the ROA-CDR (Credit-to-Deposit Ratio) relationship was positive and statistically significant, highlighting that increased credit issuance in relation to deposits may enhance returns on assets.

These mixed results are consistent with prior research by Kaitibi et al. (2018), Abbas et al. (2019), and Pandey (2020), who also reported varying degrees of correlation among these financial indicators. However, findings by Budhathoki et al. (2020) contradicted the outcomes of this study, indicating differences in financial behavior across contexts or datasets.

Regarding ROE, its relationship with ROA was also negative and statistically insignificant. The correlation between ROE and QR was similarly negative and statistically insignificant, implying a weak relationship between equity returns and liquidity. However, a significant negative relationship was observed between ROE and NPLR, aligning with previous studies conducted by Pandit (2014), Nimer et al. (2015), and Khasharmeh (2018), thereby supporting the consistency of findings across studies.

The correlation between ROE and CRR was negative but statistically insignificant, suggesting no strong association. While the relationship between ROE and WAISR was positive, it was not statistically significant. ROE also had a negative but insignificant correlation with CDR, indicating limited explanatory power. However, the relationship between ROE and CAR was negative and statistically significant, consistent with findings from Ibe (2013), which strengthens the reliability of the result.

The regression analysis revealed that, overall, the model was statistically significant, confirming that the independent variables collectively have a substantial impact on ROA.

This supports findings by Malik et al. (2016), who also reported significant relationships in a similar context. When examined individually, QR, CAR, and WAISR had significant impacts on ROA, while NPLR, CRR, and CDR did not show statistically significant effects. These findings align with those reported by Nimer et al. (2015). However, Kumar and Yadav (2013) reported differing results, particularly concerning the insignificance of these variables, making their findings inconsistent with the present study.

It is important to note that external macroeconomic conditions—such as the global economic crisis, the Russia-Ukraine war, and domestic policy instability—may have influenced the financial performance and inter-variable dynamics during the study period. These factors should be considered when interpreting the results and their implications for development banks.

CHAPTER-V

SUMMARY AND CONCLUSION

5.1 Summary

The study focuses on examining the impact of Non-Performing Assets (NPAs) on the profitability of development banks in Nepal. The main objectives are to identify factors influencing profitability and to analyze various financial indicators including Quick Ratio (QR), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPLR), Cash Reserve Ratio (CRR), Credit-to-Deposit Ratio (CDR), and Weighted Average Interest Spread Ratio (WAISR) across different portfolios from fiscal years 2012/13 to 2021/22. Data were sourced from the annual reports of four selected banks and analyzed using descriptive statistics (mean, standard deviation, coefficient of variation), correlation, and regression analysis to explore the relationships between these financial variables.

The descriptive analysis indicates that profitability ratios can be improved by timely identifying and addressing factors that reduce income, whether they stem from operational inefficiencies or other causes.

The overall analysis reveals greater consistency among the sample banks, with some exhibiting more uniform profitability ratios compared to others. For example, the coefficient of variation shows that certain banks display less variability, whereas MBBL and GBBL present more fluctuations and irregular patterns in their profitability ratios. Such volatility may hinder effective fund mobilization and adversely affect the banks' credit ratings.

The findings also suggest that some banks maintain sufficient earnings and have lower levels of non-performing assets compared to MBBL and GBBL. The Return on Assets (ROA) for MBBL falls below the standard benchmark of 2%, while other banks perform slightly better relative to this threshold. Accordingly, management should focus on improving asset utilization to enhance profitability. Although the overall profitability of the banks is satisfactory, the higher risk levels observed in some banks compared to MBBL reflect the classic risk-return tradeoff, underscoring the need for careful risk management to optimize asset use. Additionally, the non-performing loan ratios for some

banks have remained lower over the past ten years compared to MBBL and GBBL, indicating more effective credit risk management.

5.2 Conclusion

The study on the impact of liquidity management on the profitability of development banks in Nepal, focusing on MBBL over a ten-year period from 2012/13 to 2021/22, indicates that the sample banks have demonstrated strong profitability performance. Compared to JBBL, GBBL, MBBL, and SBBL, the banks have maintained better positioning in key financial indicators. Therefore, it is crucial that relevant authorities provide timely information regarding these factors to ensure that stock prices are accurately determined.

The Weighted Average Interest Rate for JBBL, GBBL, MBBL, and SBBL remains relatively low, suggesting the need for these banks to actively seek more profitable investment opportunities and strategize to maximize profits by increasing the interest rate spread. Additionally, the profit margins of all sample banks have been gradually improving and should be sustained going forward.

MBBL has a higher Non-Performing Loan (NPL) ratio compared to JBBL, indicating a need for MBBL to better manage and reduce this ratio to expand its market share and strengthen its profit margins. This improvement will contribute positively to the bank's overall financial health and profitability. Furthermore, the sample banks demonstrate sufficient liquidity to meet their current obligations, which reflects a sound profitability position.

Correlation analysis reveals a positive relationship between Return on Assets (ROA) and Non-Performing Loans, while ROA and Weighted Average Interest Rate Spread show a negative correlation. Similarly, regression analysis indicates a positive trend between ROA and Non-Performing Loans and a negative trend between ROA and the Weighted Average Interest Rate Spread among the sample banks.

5.3 Implications

The detailed analysis of the impact of liquidity management on the profitability of development banks in Nepal specifically JBBL, GBBL, MBBL, and SBBL has led to several key recommendations to improve the performance of these institutions:

- JBBL, GBBL, MBBL, and SBBL have not consistently maintained the conventional liquidity ratio standard of 2 times. This shortfall may cause difficulties in meeting short-term obligations promptly. Delays in settling liabilities can damage the banks' goodwill and reduce the confidence of depositors and short-term lenders. Therefore, these banks must ensure they maintain adequate net working capital. Compared to JBBL, GBBL, MBBL, and SBBL have offered higher returns to their shareholders.
- Each bank should clearly establish its dividend policy, whether adopting a stable payout, a constant dividend ratio, or a policy combining regular low dividends with occasional extras. Furthermore, banks should promote a project-oriented lending approach, prioritizing projects that, although riskier, are important for the national economy. MBBL and GBBL need to generate sufficient returns to meet their liability requirements. The non-performing loan ratios of these banks are influenced by both external and internal factors.
- Key factors impacting performance include interest rates, the supply and demand for loans and advances, savings and investment conditions, directives from the central bank, lending policies, management capabilities, strategic planning, and fund flow situations. MBBL and JBBL should work to reduce their non-performing loan ratios to better satisfy current obligations and loan demand. Project financing should empower banks to generate internal funds and repay loans timely. Hence, adopting a project-oriented lending strategy is recommended for all sample banks to improve efficiency and minimize loan losses.
- Additionally, banks should ensure transparency by regularly sharing performance data and relevant information. This openness will allow investors to assess the banks' situations accurately and make informed investment decisions.

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APPENDIX

Current Ratio

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	1.39	1.27	1.58	1.05	1.03	1.06	1.05	1.06	1.02	1.21
GBBL	1.04	1.26	0.98	0.78	1.36	1.27	0.92	0.94	0.97	2.08
JBBL	1.27	2.39	8.45	1.02	1.25	1.05	10.6	1.05	0.94	2.38
SBBL	1.26	2.37	8.25	1.25	1.39	2.47	2.30	6.27	4.17	1.25

Non-Performance Loan Ratio of Banks

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	2.09	2.89	1.96	3.22	1.23	0.85	1.4	1.12	1.01	0.48
GBBL	0.92	0.66	0.61	0.62	0.78	0.77	0.48	0.34	0.32	0.19
JBBL	0.68	0.48	0.16	0.34	0.84	0.62	0.97	0.66	0.38	0.25
SBBL	0.51	0.72	0.67	0.84	0.73	0.58	0.73	0.65	0.55	0.89

Cash Reserve Ratio

Ratio in %

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	17.12	16.39	15.30	12.39	10.27	8.39	7.26	8.25	10.20	14.25
GBBL	19.30	18.26	16.39	15.26	18.25	19.2	12.0	7.2	10.5	8.2
JBBL	14.25	11.30	9.12	7.25	8.45	9.32	11.32	14.15	6.77	10.02
SBBL	12.23	14.20	8.12	16.23	18.27	11.23	14.26	16.30	8.27	10.20

Total Credit- Deposit Ratio

in %

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	65.28	75.16	66.47	54.29	58.14	58.12	56.23	41.12	66.25	64.12
GBBL	63.27	69.58	70.19	68.29	75.26	74.90	74.55	64.43	70.49	65.38
JBBL	74.23	77.5	71.3	77.8	65.5	71.9	72.8	76.8	77.6	74.71
SBBL	78.20	66.30	72.45	66.89	75.20	74.25	76.30	79.28	67.45	67.28

Capital Adequacy Requirement Ratio (CAR)

(Times)

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	11.02	11.55	11.23	11.14	10.84	14.15	12.46	12.60	14.89	13.89
GBBL	11.10	11.10	11.14	11.30	11.20	11.58	11.97	12.17	11.28	11.24
JBBL	13.14	18.12	17.25	14.29	15.23	16.06	14.93	15.71	14.00	14.70
SBBL	14.20	19.26	20.30	16.32	24.20	15.20	17.24	13.47	16.20	18.25

Weighted Average Interest Rate Spread

in %

Banks	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MBBL	5.08	4.12	3.90	5.25	4.39	4.12	4.15	4.20	3.90	3.80
GBBL	5.14	5.30	7.12	6.39	5.21	4.12	7.09	5.27	4.64	5.01
JBBL	8.74	6.24	7.12	6.28	4.88	5.68	5.69	4.76	4.89	4.48
SBBL	4.25	3.69	4.12	7.45	6.23	5.48	5.03	3.97	3.74	4.23

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