

**CREDIT RISK MANAGEMENT AND PROFITABILITY OF NEPALESE
COMMERCIAL BANKS**

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CERTIFICATE OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **CREDIT RISK MANAGEMENT AND PROFITABILITY OF NEPALESE COMMERCIAL BANKS**. 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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ABBREVIATIONS

ATM	: Automated Teller Machine
AVG	: Average Rate of Return
B.S.	: Bikram Sambat
CAPM	: Capital Asset Pricing Model
CEO	: Chief Executive Officer
CML	: Capital Market Line
CPI	: Consumer Price Index
CS	: Common Stock
CV	: Coefficient of Variation
DJIA	: Dow Jones Industrial Average
DJTA	: Dow Jones Transportation Average
EBL	: Everest Bank Limited
EPS	: Earning Per Share
ERM	: Expected Market Return
I.E	: That Is
IPO	: Initial Public Offering
KBL	: Kumari Bank Limited
LTD.	: Limited
MBVR	: Market Book Value Ratio
MD	: Medium
MPPS	: Market Price Per Share
NABIL	: Nabil Bank Limited
NBL	: Nepal Bank Limited
NEPSE	: Nepal Stock Exchange
NIDC	: Nepal Industrial Commercial Corporation
NIM	: New Issue Market
NIMB	: Nepal Investment Mega Bank Limited
NO	: Number of Observations
NPV	: Net Present Value
ROE	: Return on Equity
SCBNL	: Standard Chartered Bank Limited
SEBON	: Security Board of Nepal

SEC : Security Exchange Centre
SMC : Security Market Centre

ABSTRACT

This study explores the credit risk management practices of commercial banks in Nepal, specifically focusing on loan loss provisions and non-performing loans (NPLs). Commercial banks in Nepal, buoyed by substantial deposits, extend loans and advances to a wide customer base, strategically attracting deposits to generate profits. However, the effectiveness of loan loss provisions appears to be declining gradually across all joint venture banks, indicative of the challenging economic conditions. This situation has resulted in borrowers facing difficulties in generating adequate returns on investments, thereby delaying loan repayments. The study employs a combination of historical, descriptive, and analytical research methodologies. Descriptive techniques are used to evaluate the credit risk management strategies adopted by commercial banks, employing a quantitative approach. The sample comprises financial data from three commercial banks over a decade, selected from the 20 banks established under the oversight of the central bank in Nepal. Annual reports from these banks and publications from the Nepal Rastra Bank (NRB) provide the primary data sources, which are meticulously tabulated and analyzed using Excel. The research underscores the importance of using appropriate data collection instruments to enhance the credibility and robustness of the findings. In Nepal, the liberalization policy has significantly increased the monetarist environment, with a surge in deposits facilitated by substantial remittances. However, security concerns have led to the withdrawal of several projects, impacting economic stability. This study sheds light on the evolving landscape of credit risk management within Nepal's commercial banking sector, emphasizing the challenges posed by economic conditions and the necessity for effective risk mitigation strategies.

Key: Credit Risk Management and Profitability Nepalese Commercial Banks.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

The banking sector plays a crucial role in the economic development of countries. Banking institutions are essential for mobilizing resources and facilitating economic activities across all sectors. They gather savings from households through various types of deposits and redistribute them within society by providing credit to individuals and businesses. This process fosters economic confidence and enables diverse segments of the economy to access necessary funds for growth and development. Banking services have expanded extensively, reaching even the most remote areas of many countries. This outreach has significantly contributed to economic expansion by channeling resources into small-scale industries through intensive banking programs. These initiatives have allowed banks to actively participate in and support the overall economic growth of the nation (Bhattarai, 2016). The presence and functioning of a robust banking sector are pivotal in ensuring financial stability and fostering sustainable economic progress on a national scale.

Risk management in the banking sector involves a complex integration of processes and models that banks rely on to formulate and implement risk-based policies and practices. This framework is supported by scientific research findings, enabling banks to navigate the intricacies of managing assets and liabilities within an environment characterized by a wide array of innovative financial products. Today's global banking landscape is dynamic and dynamic, requiring banks to continuously evolve their risk management strategies to mitigate risks effectively. Traditional notions of financial intermediation have shifted significantly in this environment, where regulations are less stringent and risks are inherently higher (Mark, Sergio, Carolina, & Tarazona, 2020). Banks now operate within a framework where proactive risk management is essential to safeguarding their stability and ensuring sustainable growth amidst a constantly evolving financial landscape.

Banks employ a sophisticated array of techniques and management tools to assess, track, and mitigate various types of risks inherent in their operations. These risks are primarily classified into categories such as credit risk, market risk, interest rate risk, liquidity risk, and legal risk. Each of these categories represents potential uncertainties

that could lead to financial losses. Effectively managing these risks is crucial as it can significantly enhance the overall return profile of a bank's portfolio. A key focus and advancement in risk management involve developing new quantitative measures for these risk categories. This includes identifying emerging risks and devising more accurate indicators to gauge their impact. By continually refining risk management practices, banks strive to adapt to evolving market conditions and regulatory landscapes, thereby strengthening their resilience and optimizing their performance (Pandey, 2019). This proactive approach not only mitigates potential losses but also supports sustainable growth and stability in the banking sector.

The necessity of rigorous risk measurement in banking cannot be overstated, given that risks today could manifest as losses tomorrow, sometimes without immediate visibility. This underscores the critical role of dedicated risk management departments in ensuring the survival and stability of financial institutions. The rapid evolution of risk-based practices has been driven by several key factors: regulatory frameworks that prescribe guidelines for risk measurement and define capital requirements based on risk levels, and significant advancements in the array of models and tools available for managing various types of risks. Commercial banks, as pivotal financial intermediaries, play a central role in the financial system by holding deposits from individuals, governments, and businesses alike. They facilitate economic activities by channeling these funds into lending and investment activities, supporting businesses, industries, and individuals. This function not only fosters economic growth but also instills confidence across various segments of society by extending crucial credit facilities (Pradhan and Shah, 2019). In essence, the integration of robust risk management practices, bolstered by regulatory frameworks and advanced modeling tools, ensures that banks can effectively navigate uncertainties, safeguard their stability, and continue to serve as vital pillars of economic activity and confidence in society.

In the current scenario, the Nepalese joint venture banks (JVBs) are facing a challenge of high liquidity in the market coupled with limited profitable investment opportunities, which has led to very low deposit interest rates offered by banks and financial institutions. To thrive in this competitive environment, JVBs must innovate and explore new avenues for investment. While banks can foster entrepreneurship, they also need to align with national interests and government priorities aimed at

fostering economic growth through industrial, trade, and business development while striving for profitability (Subedi, 2019).

To navigate these challenges effectively, it is essential for banks to review their risk management systems comprehensively. This includes assessing their exposure to credit risk, market risk, and other forms of risk. Based on this evaluation, banks should provide strategic advice and recommendations to their boards regarding management actions necessary to achieve optimal effectiveness and compliance. This proactive approach ensures that banks like NABIL, NIBL, KBL, EDB, and SDBL can maintain resilience, uphold regulatory standards, and contribute positively to the economic landscape.

1.1.1 Profile of Sample Company

A) Kumari Bank Limited (KBL)

Kumari Bank Limited commenced operations on April 3, 2001, marking its establishment as the fifteenth commercial bank in Nepal. The bank was founded with the aim of delivering competitive and modern banking services within the Nepalese financial sector. It boasts a substantial paid-up capital of NPR 13.87 billion, enabling robust financial operations. Presently, Kumari Bank operates through a wide network comprising 246 points of representation spread across urban, semi-urban, and rural areas nationwide. This network includes 196 branches, 14 extension counters, and 36 Branchless Banking Units, ensuring accessibility to banking services across diverse geographical regions. The bank has been a pioneer in introducing modern banking conveniences such as Internet Banking and Mobile Banking. It has implemented the advanced Core Banking Software, FINACLE (version 10), to provide a state-of-the-art banking platform accessible to all customers across the country. Additionally, Kumari Bank offers Domestic and International Visa Debit and Credit Cards, usable at all VISA-linked ATMs in Nepal and India. The bank's network also includes 175 ATMs and POS terminals distributed throughout the country. Embracing digital transformation, the bank provides contemporary digital banking services like Mobile Banking, Internet Banking, Viber Banking, and QR payments. Kumari Bank Limited is renowned for its commitment to innovation and rapid expansion. The acquisition of Kasthamandap Commercial Bank Ltd., Paschimanchal Finance

Co. Ltd., Mahakali Bikash Bank Ltd., and Kankrebihar Bikash Bank Ltd. in Asadh 2074 was a strategic move to comply with Nepal Rastra Bank's directive to achieve a paid-up capital of NPR 8 billion. Subsequently, the acquisition of Deva Bikas Bank Limited further expanded the bank's reach, resulting in a branch network totaling 203 branches and significantly increasing its loan investments to NPR 112 billion and deposit base to NPR 124 billion as of Asadh 28, 2077. Kumari Bank Limited prides itself on transparent business practices, professional management, adherence to corporate governance principles, and a commitment to Total Quality Management. These attributes underscore its dedication to customer satisfaction and its position as a dynamic and customer-centric financial institution in Nepal.

B) Standard Chartered Bank Limited (SCBL)

Standard Chartered Bank Nepal Limited (SCBL) commenced operations in Nepal in 1987 under a joint-venture structure. Over the years, it has evolved into an essential component of the Standard Chartered Group, with the group holding a majority stake of 75% in the bank, while 25% of its shares are owned by the Nepalese public. Today, SCBL stands as the largest international bank operating within Nepal's financial landscape. The bank operates through a network comprising 15 branch offices and 4 extension counters strategically located across Nepal. Its headquarters is situated in New Baneshwor, Kathmandu, centralizing its administrative and operational functions. SCBL is recognized for its robust presence and contribution to Nepal's banking sector, offering a range of comprehensive financial services tailored to meet the diverse needs of its clientele.

C) Nabil Bank Limited (NABIL)

Nabil Bank Limited, established in July 1984, stands as Nepal's inaugural foreign joint venture bank. Its inception aimed to introduce high-quality modern banking services aligned with international standards across diverse sectors of Nepalese society. Nabil Bank has been a trailblazer in the domestic banking sector, pioneering innovative products and marketing strategies that have reshaped Nepal's banking landscape. Central to its operations is a steadfast commitment to customer satisfaction, a cornerstone of its business philosophy. Operating through a network of 48 points of representation, Nabil Bank offers a comprehensive range of commercial banking services. It maintains a

significant nationwide presence facilitated by over 1300 Nabil Remit agents, enhancing accessibility and convenience for its customers across Nepal. The bank's headquarters is located in Durbar Marg, Kathmandu, serving as a strategic hub for its administrative and operational activities. Nabil Bank Limited continues to lead the way in setting standards for modern banking practices in Nepal, driven by a mission to deliver excellence and innovation in financial services.

D) Everest Bank Limited (EBL)

Everest Bank Limited (EBL) was established in 1994 with a mission to provide professional and efficient banking services to diverse segments of society in Nepal. In 1997, EBL formed a joint venture with Punjab National Bank (PNB), India, solidifying its commitment to international collaboration and expertise. The bank's ownership structure comprises local Nepalese promoters holding 50% of the equity, PNB contributing 20%, and the remaining 30% owned by the public. EBL distinguishes itself by offering customer-friendly services facilitated by its network connected through the ABBS system. This system allows customers to conduct operational transactions seamlessly across all branches. The bank operates a network of 50 branches, 73 ATM counters, 5 extension counters, and 22 revenue collection points nationwide, ensuring widespread accessibility and efficiency for its clientele. The headquarters of Everest Bank Limited is located in Lazimpat, Kathmandu, serving as a strategic center for its administrative and operational functions. EBL continues to uphold its commitment to excellence in banking services, leveraging international partnerships and innovative technologies to meet the evolving needs of its customers across Nepal.

E) Nepal Investment Mega Bank Limited (NIMB)

Nepal Investment Bank Limited (NIBL) was established in 1986 through a joint venture between Nepalese and French partners under the name Nepal Indosuez Bank Ltd. The French partner, Credit Agricole Indosuez, initially held 50% of the bank's capital. In 2002, a consortium of Nepalese companies comprising bankers, professionals, industrialists, and businessmen acquired the 50% stake held by Credit Agricole Indosuez. Subsequently, the bank was rebranded as Nepal Investment Bank Ltd. (NIBL). After 36 years of successful operation, NIBL entered a new phase in response to Nepal Rastra Bank's policy aimed at consolidating commercial banks across the country. On June 10, 2022, NIBL signed a Memorandum of Understanding

(MoU) with Mega Bank Nepal Ltd. to merge operations. Mega Bank Nepal Ltd., established on July 23, 2010, had a paid-up capital of NPR 16.12 billion after 12 years of operation in the banking sector. The joint operations of Nepal Investment Bank and Mega Bank Nepal commenced on January 11, 2023, under the unified name Nepal Investment Mega Bank Ltd. (NIMB). This merged entity aims to continue providing exemplary banking services to its growing clientele, thereby making a significant contribution to Nepal's financial sector.

1.2 Problem Statement

The success or failure of commercial banks hinges significantly on their credit risk management practices. Understanding the factors influencing credit risk management and their effective management is crucial. This study aims to explore how Nepal's banking sector handles credit risk amidst a landscape of increasing financial institutions and maximum liquidity.

As financial institutions proliferate, there is heightened competition to extend credit, particularly to sectors with limited opportunities. This intense competition has led to a decline in credit recovery rates, resulting in a rise in non-performing loans (NPLs) across banks annually. To address this issue, Nepal's regulatory body for banks and financial institutions, the Nepal Rastra Bank (NRB), has revised its directives on credit loss provisions.

Commercial banks operate with the primary objectives of wealth maximization and contributing to the national economy's growth. This study seeks to uncover insights into how these objectives are pursued and achieved amidst evolving credit risk dynamics. Specifically, it aims to address the following research questions:

- What impact do Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP) have on the credit risk performance of commercial banks in Nepal?
- How is Return on Equity (ROE) related to Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP) in the context of commercial banks in Nepal?
- What are the effects of Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss

Provision Ratio (LLP) on the credit risk performance of commercial banks in Nepal?

1.3 Objectives of the Study

This analysis seeks to comprehensively explore various aspects of credit cards. Initially, the study aims to trace the evolution of credit card operations over time and to thoroughly examine the current structure and operational dynamics of credit card systems. Furthermore, it endeavors to analyze significant challenges and issues associated with credit cards, proposing effective measures to address them. Taking into account these dimensions, the specific objectives of the study include:

The primary objectives of this study are outlined as follows:

- To explore how Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP) influence the credit risk performance of Commercial Banks in Nepal.
- To analyze the relationships between Return on Equity (ROE) and Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP) in the context of Commercial Banks in Nepal.
- To examine the impact of Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP) on the credit risk performance of Commercial Banks in Nepal.

1.4 Rationale of the Study

Research holds significant importance as it aims to expand knowledge and contribute new insights to existing fields. The primary objective of this study is to fulfill the academic requirements for a master's degree. However, its relevance extends beyond academia to various stakeholders including commercial banks, researchers, scholars, investors, government entities, and others interested in the banking sector.

This research intends to enhance understanding of Commercial banks and their capital structure, which is crucial given that banking involves measuring, managing, and accepting risks. Credit risk management is particularly critical as it addresses

uncertainties associated with borrowers' ability to repay loans. When borrowers' assets exceed their debts, repayment is likely; conversely, when asset values are insufficient, repayment becomes uncertain. Thus, accurately valuing borrowers' assets and estimating default probabilities are essential for lenders.

The study emphasizes the necessity for lenders to gather comprehensive borrower information before granting loans. Effective commercial lending requires strong communication skills and a clear vision to assess borrowers' plans and capacities. Despite its importance in financial management, research in this area remains relatively scarce. Joint venture banks, characterized by efficient management and professional services, are increasingly pivotal in driving economic growth.

This research aims to provide valuable insights into credit risk management practices, risk management styles of Commercial banks, and adherence to guidelines set by regulatory bodies such as Nepal Rastra Bank (NRB). It is expected to benefit shareholders, bank management, external stakeholders like financial institutions, potential investors, and stockbrokers by providing critical information.

Furthermore, this study offers insights beneficial to investors and depositors seeking to understand the credit risk management practices of banks they engage with. It also serves as a valuable resource for students, educators, and individuals with a keen interest in Nepal's financial and banking sectors. This research endeavor seeks to enrich understanding and facilitate informed decision-making in the dynamic landscape of commercial banking in Nepal.

1.5 Limitations of the Study

The limitations of this study are as follows:

- This study focuses exclusively on analyzing the credit risk management practices of specific Commercial banks, namely Kumari Bank Limited, Standard Chartered Bank Limited, Nabil Bank Limited, Everest Bank Limited, and Nepal Investment Mega Bank Limited (NIMB).
- It relies solely on secondary data and information provided by these banks.
- The study encompasses data spanning a period of 10 years, from fiscal year 2013/2014 to 2022/2023.

CHAPTER II

LITERATURE REVIEW

The literature review plays a critical role in shaping the study by examining existing research in the area of the research problem and identifying gaps in the field. To conduct this review, the researcher has consulted a variety of sources including books, reports, journals, and research studies published by various institutions, as well as unpublished dissertations submitted by master's level students.

This chapter provides a conceptual review of credit risk management, encompassing different types of risks inherent in banking operations, the credit risk management system, and the framework and techniques employed in managing credit risk. It also discusses regulations set forth by central banks concerning risk management practices. The literature reviewed in this chapter is pertinent to the scope of the study.

The conceptual framework outlined in this chapter includes essential concepts such as banking, Commercial banks, joint venture banks, the concept of credit, and various techniques utilized in credit risk management. It incorporates insights gathered from books, journal articles, and other scholarly sources specifically related to Commercial banks and joint venture banks. Overall, the literature review provides a comprehensive foundation for understanding the theoretical underpinnings and practical applications of credit risk management within the banking sector, guiding the direction and focus of the research study.

2.1 Theoretical Review

Theoretical literature review serves to delineate existing theories, their interrelationships, the extent of their exploration, and to propose new hypotheses for investigation. This section of the study is underpinned by four key theories: asymmetric information theory, transaction cost theory, portfolio theory, and loanable funds theory. Asymmetric information theory posits that disparities in knowledge between borrowers and lenders influence credit markets. It suggests that lenders face higher risks due to incomplete information about borrowers' creditworthiness (Espy, 2005). Transaction cost theory contends that the costs associated with executing transactions influence economic behavior, including credit transactions. These costs can affect credit availability and terms. Portfolio theory emphasizes the importance of diversification in managing risk. It suggests that banks can mitigate credit risk by

diversifying their loan portfolios across different sectors and asset classes. Loanable funds theory asserts that the equilibrium interest rate is determined by the interaction of supply and demand in the credit market. It posits an inverse relationship between interest rates and the supply of loanable funds. Changes in credit demand and supply alter interest rates based on movements along the demand and supply curves. According to this theory, credit demand emanates from various sources such as foreign borrowers, consumers, domestic borrowers, and government entities.

Conversely, credit supply originates from domestic savings, funds generated through foreign borrowing, and resources mobilized by the banking sector. Overall, these theories provide a framework for understanding how credit markets function, the dynamics of interest rates, and the factors influencing credit availability and terms. They guide the study in exploring the complexities of credit risk management within the broader context of banking and financial systems. Over the long term, interest rates are influenced by broader economic and financial conditions within the economy (Gorder, 2009). This theory will be applied in the study to elucidate how client appraisal practices impact the financial performance of microfinance institutions.

A. Asymmetric Information Theory

The asymmetric information theory, initially articulated by Akerlof in 1970, posits that information disparities exist during the assessment of banking lending applications (Ekumah and Essel, 2003). This theory elucidates situations where critical information is not equally known to all parties involved in a transaction (Espy, 2005). It highlights the challenges faced by financial institutions due to this information asymmetry, particularly in dealing with moral hazard where monitoring entrepreneurial behavior becomes difficult and adverse selection resulting in lending errors to unsuitable borrowers. Transaction cost theory offers a valuable framework for decision-making regarding organizational boundaries. Williamson (2000) explains that transactions occur when goods or services are exchanged across technologically distinct interfaces, with one activity concluding before another begins. This theory, initially advanced by Schwartz (1974), underscores how suppliers, possessing superior information on customer creditworthiness, can monitor and ensure timely debt repayment. This advantage enables suppliers to manage costs more effectively compared to traditional lenders. These theories provide foundational insights into the complexities of information asymmetry and transaction costs within financial

transactions, shaping understanding of how financial institutions manage risks and make lending decisions.

In the credit market, information asymmetry between banks and borrowers gives rise to two primary challenges: adverse selection and moral hazard. Adverse selection occurs before the loan agreement is signed, stemming from the unequal information known to the borrower compared to the bank. This imbalance can lead the borrower to withhold critical information such as market position, competition, potential liabilities, or the sustainability of their business sector, which could affect loan repayment. This lack of transparency creates a situation where the bank cannot accurately assess the borrower's true risk profile. Once the loan agreement is signed and credit is extended, information asymmetry transforms into a moral hazard issue. Moral hazard arises when the borrower, now having secured the loan, may alter their behavior, taking on greater risks or acting irresponsibly knowing that the consequences may not fully impact them due to the asymmetric information advantage. For instance, a borrower might conceal relevant details that could affect their ability to repay the loan, such as existing debts or declining market conditions. This behavior undermines the integrity of the credit market by distorting the information available to lenders, leading to suboptimal lending decisions. These scenarios illustrate the challenges posed by ex-ante information asymmetry in credit markets, highlighting how adverse selection and moral hazard can hinder efficient lending practices and necessitate robust risk management strategies by financial institutions.

Akerlof (1970) posits that adverse selection, occurring prior to the loan agreement, arises because borrowers conceal information about their true characteristics. In a credit relationship, lower-quality borrowers may intentionally withhold information to appear as better-quality clients, thereby presenting themselves as less risky than they actually are. These borrowers may even accept higher interest rates and increased costs, demonstrating a willingness to obtain loans without sincere concern for repayment. This behavior not only harms the lenders but also adversely affects the creditworthiness of other borrowers who are genuinely of good quality. It can negatively impact the performance ratings of companies in specific sectors and their relationships with economic partners. Consequently, the credit market operates with a moral hazard where lenders struggle to distinguish between high-quality and low-

quality borrowers. This difficulty complicates the selection of financially sound and secure projects for financing. In addressing ex-ante information asymmetry, interest rates serve as a crucial mechanism for screening loan applicants. Banks can effectively differentiate between applicants based on their willingness to accept higher interest rates and comply with stringent approval conditions, close monitoring, and strict repayment deadlines. Those applicants willing to bear these terms are typically associated with riskier projects. The use of interest rates as a tool for assessing borrower quality underscores the importance of rigorous credit evaluation processes in mitigating adverse selection and ensuring prudent allocation of credit resources in the financial market.

On the contrary, loan applicants who are unwilling to accept loans at high interest rates may negotiate terms of approval until a balanced agreement is reached, allowing them to propose projects that require less risky financing. Consequently, banks attempt to mitigate the effects of information asymmetry by categorizing financing projects into two groups: highly risky and less risky.

Addressing and effectively managing information asymmetry should be a primary concern for any bank. It is crucial for banks to identify appropriate strategies to understand and manage the causes of information asymmetry, particularly adverse selection and moral hazard. According to Stiglitz and Weiss (1981), borrowers are also motivated to minimize the adverse effects of information asymmetry. Borrowers and banks perceive information asymmetry differently. Quality borrowers view adverse selection as a potential reason for their loan applications being rejected. For banks, increased exposure to credit risk stems from borrower behavior and undisclosed information.

These foundational theories of trade credit highlight its origins from imperfections in financial markets (Emery, 1984). Various versions of trade credit theories include the information advantage theory, liquidity (and financial distress) theory, asset liquidation theory, and monetary policy effects. The information advantage theory asserts that suppliers possess superior information compared to traditional financial intermediaries, allowing them to engage in financial transactions at lower costs (Petersen and Rajan, 1997). Suppliers acquire information about their customers through regular interactions, enabling them to assess creditworthiness before extending credit and to monitor and enforce credit agreements effectively after

issuance (Emery, 1984). In cases of default, suppliers can distinguish between intentional and unintentional defaults, informing appropriate actions (Ng et al., 1999). Moreover, suppliers deal with relatively homogeneous customer bases, simplifying the collection of information compared to banks with heterogeneous clientele portfolios.

B. Asset Liquidation Theory

The asset liquidation theory posits that firms have an advantage over traditional financial intermediaries when seizing and liquidating the assets of defaulting borrowers at lower transaction costs. This advantage arises because suppliers and buyers operate within the same or similar value chains (Emery, 1984).

In contrast, the liquidity theory emphasizes that firms with excess liquidity invest in trade credit to generate returns. According to Schwartz (1974), firms with easy access to credit in capital markets may borrow funds to finance purchases for customers who face credit constraints. This function is known as the 'redistributive' role of trade credit (Meltzer, 1960). The optimal level of trade credit occurs when the marginal revenue from supplying trade credit equals the marginal cost (Emery, 1984).

Changes in monetary policy affect trade credit at a macroeconomic level. During tight monetary policy regimes, interest rates rise and credit rationing increases, limiting firms' access to capital markets. Consequently, credit-constrained firms rely more on suppliers to finance their purchases. As a result, trade credit usage tends to increase under tight monetary policy and decrease under loose monetary policy conditions (Meltzer, 1960; Schwartz, 1974; Mateut et al., 2006).

Economic downturns and financial crises also heighten trade credit activity (Lin and Chou, 2015), reflecting firms' increased reliance on trade credit when alternative financing sources become scarce or expensive.

C. Portfolio Theory

Portfolio theory emerged in the 1950s and early 1970s as a significant advancement in the mathematical modeling of finance. However, since its inception, the theory has faced both practical and theoretical criticisms. One prominent critique is that financial returns do not adhere to a Gaussian distribution or any symmetrical distribution (Michael and Sproul, 1998).

According to portfolio theory, asset returns are often modeled as elliptically or normally distributed, with risk defined as the standard deviation of returns. The theory posits that a portfolio can be constructed by combining different assets whose returns are not perfectly positively correlated. This diversification allows the theory to reduce the variance of portfolio returns. Additionally, portfolio theory assumes that markets are efficient and that investors make rational decisions (Sharpe, 1964).

Despite its foundational role in modern finance, portfolio theory's reliance on these assumptions has been debated, particularly in light of real-world complexities and deviations from its idealized models.

2.2 Empirical Review

Natufe and Esther (2023) conducted a study on credit risk management and financial performance among deposit money banks (DMBs) in Nigeria, focusing on data spanning twelve years (2010–2021) post the adoption of a common yearend mandated by the Central Bank of Nigeria (CBN) in 2009. Their research analyzed independent variables such as Capital Adequacy Ratio (CAR), Liquidity Ratio (LQR), Loan-to-Deposit Ratio (LDR), Risk Asset Ratio (RAR), Non-Performing Loans Ratio (NPLR), Loan Loss Provision Ratio (LLP), and Size (SZ), with Return on Equity (ROE) as the dependent variable. Through panel data regression analysis, the study identified CAR, RAR, NPLR, and SZ as significant determinants influencing ROE in Nigerian DMBs. The research highlighted a notable reliance by these banks on offshore borrowings through Eurobonds to finance risk assets, a strategy circumventing CBN restrictions on using local depositors' funds for such purposes. Moreover, the study indicated that shareholders of DMBs with international banking licenses in Nigeria did not receive significantly higher compensation for risk exposure compared to investments in risk-free assets like treasury bills. The findings underscored the importance of CBN's regulatory oversight, advocating for regular reviews to enhance DMBs' credit risk management systems and mitigate potential loan cycle failures. Additionally, the study recommended a review of the current regulatory Cash Reserve Ratio (CRR) set at 37.5% to reduce DMBs' dependency on offshore funding and associated foreign exchange risks. These measures are suggested to bolster the stability and resilience of Nigeria's banking sector amid evolving financial landscapes.

Bagale (2023) investigated the relationship between credit risk management and profitability among commercial banks in Nepal, emphasizing that effective credit risk management plays a crucial role in enhancing financial performance. The study underscored that sound credit risk practices not only mitigate significant risks but also contribute to rewarding employees and shareholders for their investments and contributions to the bank's operational environment. Data were gathered from a sample comprising 15 commercial banks operating in the Nepali economy over the period from 2011 to 2020. The analysis employed statistical measures such as mean, standard deviation, correlation, and regression analysis. The primary analytical tool used was pooled regression analysis, specifically Ordinary Least Squares (OLS) within a panel data framework. Return on Equity (ROE) served as the key indicator of bank profitability, while Capital Adequacy Ratio, Cash Reserve Ratio, Loan Loss Provision Ratio, Non-Performing Loan Ratio, and Bank Size were examined as indicators of credit risk management. The findings indicated that credit risk management significantly impacts the profitability of commercial banks in Nepal. Specifically, the study revealed that Cash Reserve Ratio, Loan Loss Provision Ratio, and Non-Performing Loan Ratio exerted an insignificant negative influence on Return on Equity. Conversely, Bank Size and Liquidity Ratio were found to have a positive impact on Return on Equity. Notably, Liquidity Ratio demonstrated a significant positive effect on Return on Equity in Nepali commercial banks. Additionally, Capital Adequacy Ratio was found to have a significant negative impact on Return on Equity. This study highlighted that effective credit risk management serves as a pivotal predictor of a bank's profitability. The success of a bank in terms of profitability is intricately linked to its ability to manage credit risks effectively, thereby ensuring stability and sustainable financial performance in the competitive banking sector of Nepal.

In Brahmaiah's study (2022), the focus was on evaluating the credit risk management practices within the Indian banking industry. The primary objective of the research was to investigate the techniques and strategies employed by Indian commercial banks in managing credit risks during the periods from 2017 to 2020-2021. Additionally, the study aimed to compare these practices between public sector banks (PSBs) and private sector banks (PVBs). The study sample included twelve banks, comprising the six largest PSBs and six largest PVBs, collectively representing

approximately 78% of the banking business in India. The research highlighted that scheduled commercial banks (SCBs) encountered various risks, including credit risk, market risk, and operational risk. The credit risk management processes observed in the study encompassed risk identification, assessment, analysis, evaluation, monitoring, and control.

According to the findings, private sector banks (PVBs) exhibited more robust credit risk management practices compared to public sector banks (PSBs). Specifically, PSBs tended to have higher levels of Non-Performing Assets (NPAs) than PVBs. Conversely, PVBs demonstrated better asset quality and profitability ratios throughout the study period.

Brahmaiah's study underscored the critical differences in credit risk management practices between PSBs and PVBs in India. It highlighted the challenges and strategies employed by these banks in mitigating credit risks and emphasized the superior performance metrics of PVBs in terms of asset quality and profitability compared to their PSB counterparts.

Odion, Yusuf, and Shuaibu (2022) conducted a study on the impact of credit risk management on the profitability of deposit money banks in Nigeria. Despite the recognized importance of credit risk management in enhancing firm profitability, there remains a gap in empirical studies, particularly in developing economies such as Nigeria. Therefore, their research aimed to explore how credit risk management practices affect bank profitability using non-performing loans (NPL), loan loss provisions (LLP), and growth in interest earnings from loans and advances as proxies. The study analyzed data spanning five years, from 2015 to 2021, employing correlation and regression analyses conducted with STATA 13 statistical software. Three null hypotheses were formulated and tested to examine the relationships between the selected proxies of credit risk management and bank profitability. The findings revealed several insights: Firstly, there was a positive but non-significant relationship between non-performing loans and bank profitability. Secondly, the study found a positive but insignificant relationship between loan loss provisions and bank profitability. In contrast, a negative yet significant relationship was identified between the growth in interest earnings on loans and advances and bank profitability. Based on these empirical results, the study suggested that credit risk managers should prioritize the management of growth in interest earnings on loans and advances over

adjustments in non-performing loan ratios and loan loss provisions. This recommendation stems from the significant impact observed on bank profitability from the growth in interest earnings, despite its negative direction. This study contributes valuable insights into the dynamics of credit risk management and its implications for bank profitability in Nigeria, highlighting the need for targeted strategies in managing credit risk factors to enhance overall financial performance.

Piao and Xiao (2022) explored the analysis of risk management in modern Commercial banks using behavioral finance. They highlighted the backdrop of increasing economic globalization and China's ongoing efforts towards interest rate liberalization, which have led to heightened financial market volatility. Among the various risks facing Commercial banks, credit risk emerges as the most significant challenge. The study noted advancements in methods and technologies for Commercial bank risk management amid accelerating financial globalization. However, it also pointed out a limitation in the rationality of risk managers who execute daily management, as their decisions can be influenced by emotions and personal will. This emotional influence may hinder the implementation of unbiased risk management practices, compromising the optimal application of risk management objectives in daily operations. Moreover, the complexity and importance of Commercial bank credit risk management have grown alongside the increasing intricacies of financial markets. The authors argued that traditional credit risk assessment models are becoming inadequate in meeting the demands of contemporary financial risk management systems. Therefore, research into more sophisticated credit risk assessment models is deemed essential both theoretically and practically. In essence, Piao and Xiao's study underscores the evolving challenges and complexities faced by Commercial banks in managing credit risk amid global financial dynamics, emphasizing the critical need for more advanced risk management approaches that account for behavioral and emotional factors among risk managers.

Riak and Bill (2022) conducted a study on the role of credit management in enhancing financial performance. Credit management refers to the set of practices within banks or companies aimed at controlling credit policies to enhance revenues and mitigate financial risks. According to scholars such as Parrenas (2005), effective credit management hinges on the intelligent and efficient management of customer credit lines. This involves gaining deep insights into customer financial strength, credit

history, and evolving payment behaviors to minimize exposure to bad debt, excessive reserves, and bankruptcies. It's important to recognize that a firm's credit policy is significantly influenced by prevailing economic conditions. Changes in economic conditions often necessitate adjustments in the firm's credit policies. Microfinance institutions and other financial entities that extend credit to low-income individuals rely heavily on a well-developed credit policy to govern their credit management operations. Given that these institutions generate revenue primarily through interest on loans extended, the predictability of loan repayments can be uncertain. The success of credit lending hinges on the methodology used to assess and grant credit, which should involve a comprehensive evaluation of lending risks and borrower characteristics. Therefore, making sound credit decisions requires a thorough understanding of both the risk environment surrounding the lending activity and the unique attributes of the borrowers involved.

Yeasin (2022) conducted an analysis on the impact of credit risk management on the financial performance of Commercial banks in Bangladesh. Given that credit risk significantly influences the banking sector in Bangladesh, the study aimed to assess how credit risk management practices affect the financial performance of these banks. The research adopted a deductive research design and focused on six Commercial banks in Bangladesh, utilizing ten years of data from 2010 to 2019 through secondary sources. Panel regression analysis was employed to analyze the data. The study used Return on Assets (ROA) as the primary metric to measure bank performance, while Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Loan to Deposit Ratio (LDR) were selected as indicators of credit risk. The findings from the panel data regression analysis revealed several significant relationships. Specifically, Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) were found to have a negative and statistically significant impact on the financial performance of Commercial banks. Conversely, Loan to Deposit Ratio (LDR) showed a positive and statistically significant impact on financial performance. Therefore, the study concluded that credit risk, as indicated by NPL and CAR, adversely affects the financial performance of Commercial banks in Bangladesh. On the other hand, LDR was identified as a factor positively contributing to their financial performance. These findings underscore the critical importance of effective credit risk management

strategies in enhancing the overall financial health and performance of Commercial banks operating in Bangladesh.

Bussmann et al. (2021) conducted a study on the application of explainable machine learning techniques in credit risk management. The research introduces an explainable Artificial Intelligence (AI) model designed specifically for evaluating credit risks associated with peer-to-peer lending platforms. This model utilizes correlation networks and Shapley values to group AI predictions based on similar underlying explanations. The empirical analysis focused on a dataset comprising 15,000 small and medium-sized companies seeking credit. It was found that both risky and non-risky borrowers could be categorized into distinct groups based on a set of common financial characteristics. These characteristics were crucial in explaining variations in their credit scores and, consequently, in predicting their future credit behaviors. Overall, the study highlights the potential of explainable AI models in enhancing transparency and understanding in credit risk assessment processes, particularly within peer-to-peer lending contexts. By leveraging these advanced techniques, financial institutions can better identify and manage risks associated with lending, thereby improving decision-making and reducing potential losses.

Enoch, Digil, and Arabo (2021) conducted a comparative evaluation focusing on the impact of credit risk control on the profitability of microfinance banks. The study addresses the challenge faced by banks in evaluating lending applications due to insufficient information about potential borrowers, which increases the risk exposure for the banks. Therefore, effective credit management is crucial before undertaking lending activities. The research utilized both primary and secondary sources, employing a multi-stage sampling method to select 21 respondents from a population of 52 credit officers. Data was collected through questionnaires, and both descriptive and inferential statistics, including simple percentages and regression analysis, were employed to analyze the data. Statistical analysis was conducted using SPSS (Statistical Package for Social Sciences). The findings underscored the importance of robust credit risk control measures for microfinance banks to enhance profitability by reducing the incidence of payment defaults. Effective credit management was identified as a key factor in improving the financial performance of microfinance banks, ensuring operational efficiency and liquidity availability. This study emphasizes the critical role of sound credit management practices, particularly client

appraisal, in mitigating risks and enhancing the overall profitability of microfinance banks.

Orichom and Omeke (2021) conducted a study focusing on the interplay between capital structure, credit risk management, and financial performance of microfinance institutions (MFIs) in Uganda, grounded in agency theory. The research employed a cross-sectional research design involving 64 MFIs in Uganda. Data analysis utilized correlation and multiple regression techniques. The findings of the study indicate that effective credit risk management significantly enhances the financial performance of MFIs. Specifically, strategies such as credit risk appraisal, monitoring, and mitigation were found to be crucial in achieving sound financial outcomes. On the other hand, the study found that capital structure whether through debt or equity did not demonstrate a significant relationship with financial performance among MFIs. Therefore, while the structure of financing (debt versus equity) does not impact financial performance directly, implementing robust risk management practices remains critical for mitigating credit risks and ensuring positive financial outcomes for MFIs. The study emphasizes the importance of proactive risk management strategies in enhancing the financial health of MFIs in Uganda, suggesting that managers should prioritize effective risk prevention and control mechanisms to achieve sustainable financial performance.

Olobo et al. (2021) conducted a study focusing on Credit Risk Management Practices and their impact on the performance of commercial banks in South Sudan. The research aimed to assess the influence of Credit Risk Management (CRM) practices, specifically Credit Risk Identification (CRI), Credit Risk Assessment (CRA), and Credit Risk Control (CRC), on bank performance. Employing a cross-sectional survey design, the study engaged 124 respondents involved in the credit processes across seven selected banks in Juba, South Sudan. Data collection utilized structured questionnaires and interview guides, employing a combination of cluster, purposive, and random sampling techniques. The findings revealed a robust positive correlation between Credit Risk Management practices and bank performance, significant at a level below 0.01. Specifically, Credit Risk Assessment (CRA), Credit Risk Identification (CRI), and Credit Risk Control (CRC) all demonstrated statistically significant impacts on bank performance. The study further indicated that an increase in the effectiveness of CRI, CRA, and CRC directly contributed to enhanced bank

performance. The study underscores the critical role of effective Credit Risk Management practices in enhancing the performance of commercial banks in South Sudan. It suggests that improving the processes of identifying, assessing, and controlling credit risks can lead to better overall performance outcomes for banks operating in challenging economic environments like South Sudan.

Rafał and Marta (2021) conducted a study focusing on the Drivers of Individual Credit Risk of Retail Customers, using the Polish Cooperative Banking Sector as a case study. The primary objective of their research was to identify the key factors influencing the credit risk levels of individual clients in cooperative banks. The study examined several customer attributes, including transaction characteristics, socio-demographic profiles, financial situations, histories of cooperation with the applying bank, and interactions with other financial institutions. Data were collected from 1000 credit applications submitted by individual customers across five different cooperative banks for analysis. The researchers employed logit regression models to assess credit risk among retail clients, supplemented by the use of scorecards. The findings of the study highlighted that certain factors, particularly those related to the client's history of cooperation with the specific cooperative bank where they applied for a loan, exhibited significant predictive power in determining credit risk. This suggests that cooperative banks, given their local focus and close customer relationships, may possess advantages over other financial institutions in assessing credit risks associated with individual customers. The research underscores the importance of understanding local customer dynamics and historical interactions within cooperative banking contexts when evaluating individual credit risks. This local insight appears crucial for cooperative banks in effectively managing and mitigating credit risks among their retail clientele.

Tunji and Kameel (2021) conducted a study on credit risk management and its impact on the financial sustainability of listed Deposit Money Banks (DMBs) in Nigeria. The research aimed to assess how effective credit risk management practices influence the financial sustainability of these banks, focusing on indicators such as Loan Deposit Ratio (LDR), Non-performing Loans (NPL), Assets Growth Percentage (AGP), Bank Size (BS), and their relationship with Capital Adequacy Ratio (CAR) and Return on Capital Employed (ROCE). The study utilized an Ex-post facto research design, selecting a purposive sample of 12 out of the 14 listed DMBs in Nigeria, based on the

availability of complete data spanning from 2010 to 2019. Secondary data extracted from financial statements were analyzed using both descriptive and inferential statistics. Key findings from the study indicated that credit risk management, as measured by LDR, NPL, and AGP, had a positive and significant impact on the CAR of listed DMBs. Additionally, Bank Size was found to moderate this relationship positively, enhancing the influence of credit risk management on CAR. However, the study did not find a significant direct effect of credit risk management on ROCE. Nevertheless, Bank Size was identified as a significant moderator in this context as well, positively affecting the relationship between credit risk management practices and ROCE. In conclusion, the research emphasized that effective credit risk management practices positively contribute to the financial sustainability of listed DMBs in Nigeria. The study recommended that regulatory authorities adopt a risk-based approach in setting capital adequacy requirements, with particular attention to systemically important banks. Moreover, it advised DMB managements to ensure comprehensive training for board members and executive management on the importance and responsibilities associated with credit risk management. The study underscores the critical role of robust credit risk management frameworks in enhancing the financial stability and sustainability of listed DMBs in Nigeria, advocating for continual improvements and regulatory oversight in this area.

Kulchittivej, Pornpundejwittaya, and Silpcharu (2020) conducted a study focusing on credit management guidelines aimed at enhancing the Thai industrial sector. This research investigated these guidelines through a combination of qualitative and quantitative methods, involving 500 questionnaires distributed to executives in industrial businesses across Thailand. The study employed descriptive analysis, which categorized responses from small and medium-sized enterprises (SMEs) as well as large enterprises, and Structural Equation Modeling (SEM) to analyze the data systematically. The findings of the research identified four key factors within the credit management guidelines: characteristics management, financial management, operations management, and assets management. According to the results, the industrial business executives rated these guidelines highly, with an average score of 3.86, indicating significant importance attributed to them. The SEM analysis confirmed that the model aligned well with the empirical data, supported by a Chi-Square probability level assessment. Specifically, the study revealed that

characteristics management directly influenced financial management and operations management. Financial management, in turn, exerted a direct influence on assets management. Moreover, assets management demonstrated a direct impact on operations management. Notably, characteristics management emerged as the foundational component in the SEM model. A significant finding was that financial management exhibited the highest influence on the assets management variable, as evidenced by a substantial standard regression weight of 0.990. In conclusion, the study underscored the critical role of comprehensive credit management guidelines in strengthening the Thai industrial sector. It highlighted the interdependencies among characteristics management, financial management, operations management, and assets management, emphasizing the pivotal role of financial management in optimizing assets within industrial enterprises. The findings provide valuable insights for policymakers and industry leaders aiming to enhance credit management practices and overall sectoral performance in Thailand.

Kule, Kamukama, and Kijjambu (2020) conducted a comprehensive study on the relationship between credit management systems and the financial performance of Savings and Credit Cooperatives (SACCOs) in Mid-Western Uganda. Using a positivist approach and employing a cross-sectional research design, they collected data from 93 SACCOs through a closed-ended questionnaire. The study employed standard linear regression analysis to analyze the data, revealing a significant and positive correlation between effective credit management systems and the financial outcomes of SACCOs in the region. Their findings underscored the importance of implementing robust credit management systems within SACCOs. They recommended that SACCO management focus on establishing favorable credit terms and conditions and enhancing the client appraisal process to improve financial performance. Additionally, the study emphasized the role of government support through training initiatives aimed at strengthening SACCO staff competencies in credit management and client appraisal. Overall, the research highlighted that enhancing credit management practices could significantly contribute to the sustainability and growth of SACCOs in Mid-Western Uganda. By implementing these recommendations, SACCOs can potentially enhance their operational efficiency and better serve their members, thereby fostering economic development at the grassroots level.

Mafumbo's (2020) research delved into the intricate dynamics between credit management practices and the financial performance of Commercial banks in Uganda. Through a causal research design and extensive utilization of secondary data sourced from audited financial statements and annual supervision reports from the Bank of Uganda, the study comprehensively examined the relationships among credit policy, capital adequacy, credit risk control, and financial outcomes. Utilizing universal sampling techniques encompassing all licensed banks operational in Uganda, the study employed multiple regression analysis to dissect the data. Notably, the findings underscored a significant linkage between credit management practices and financial performance, elucidating that these practices elucidated approximately 40.8% of the variability in the banks' financial performance, as indicated by the coefficient of determination (R^2). Specifically, the analysis revealed that while credit policy demonstrated a negligible impact (coefficient of -0.031), both capital adequacy (coefficient of -0.555) and credit risk control (coefficient of -1.005) exerted substantial influences on financial outcomes. However, the study noted a lack of significant correlation between credit policy and bank performance, advocating instead for a balanced approach in credit policy formulation to avoid adverse effects on financial performance. Furthermore, the research emphasized the critical role of effective credit risk management in mitigating non-performing loans, thereby enhancing overall financial health and stability of Commercial banks in Uganda.

Sharifi, Haldar, and Rao (2019) conducted a study focusing on the interplay between credit risk management practices and non-performing assets (NPAs) in India's Commercial banks. The research aimed to evaluate how different components of credit risk management impact the performance of these banks and the growth of NPAs. Primary data were gathered through questionnaires distributed to risk managers in Indian banks, while secondary data on NPAs were sourced from annual reports and the Prowess database compiled by the Centre for Monitoring Indian Economy. Multiple linear regression models were employed to analyze the collected data. The findings revealed that credit risk identification significantly influences the credit risk performance, with a notable negative correlation observed between the identification of credit risk and the annual growth in NPAs or loans. Moreover, the study provided empirical support for the expectation that private banks exhibit better credit risk performance compared to government banks. These outcomes underscored

the urgent need for effective risk management strategies among Indian banks, particularly in light of the persistently high levels of NPAs. The study's implications extend to the regulatory landscape as well, highlighting the potential impact of implementing new Basel Accord norms (Basel III) by the Reserve Bank of India. The authors emphasized that the escalating levels of NPAs pose significant challenges to credit flow within the economy, necessitating prompt intervention from regulatory authorities to enhance institutional frameworks and regulatory infrastructure. Addressing these issues is crucial not only for stabilizing the banking sector but also for sustaining industrial growth, economic stability, and employment generation in India.

Banu, Sayaduzzaman, and Sil (2018) conducted a study on the impact of credit risk management indicators on profitability attributes using state-owned Commercial banks in Bangladesh as a case study. The primary objective was to investigate how credit risk management indicators influence the profitability attributes of these banks. The research analyzed audited annual reports from four sample banks covering the period from 2012 to 2016. Methodologically, the study employed ANOVA, multiple regression models, and correlation matrix to achieve its objectives. The findings indicated significant variations in some credit risk management indicators among the sample banks, while others showed insignificant variations. However, there was consistently insignificant impact observed between various credit risk management indicators such as loan and advance, classified loan, unclassified loan, leverage ratio, bad debt, default ratio, cost per loan asset, and cost to income ratio—and profitability attributes like return on assets, return on equity, and net profit percentage across the study period. Consequently, the study recommended that banking sector management should prioritize the development of robust credit management policies and lending guidelines. This strategic emphasis aims to enhance credit risk management practices, thereby effectively meeting the demands of loan applicants. By implementing smart credit management strategies, banks can potentially improve their overall financial performance and ensure sustainable profitability in the long term.

Edwin and Omagwa (2018) conducted a study focusing on credit management practices and their impact on the financial performance of microfinance institutions (MFIs) in Nairobi Central Business District, Kenya. The research aimed to address the gap in understanding the relationship between credit management practices and

financial performance specifically within the microfinance sector in Kenya, which has been relatively understudied compared to the banking context. Using a descriptive survey design, the study targeted a population of 165 staff members from the MFIs under investigation. Primary data was collected through questionnaires, employing purposive sampling to select respondents. Out of the 165 questionnaires distributed, 158 were completed and returned. The data analysis utilized descriptive statistics and multiple regression analysis. The findings of the study revealed that credit risk control, client appraisal, collection policy, and terms of credit were all statistically significant factors influencing the financial performance of the MFIs studied. Specifically, these factors demonstrated a positive relationship with financial performance, implying that an increase in effective credit risk control, client appraisal practices, and efficient collection policies and credit terms contributed to improved financial outcomes for the MFIs. The study recommended that MFIs should prioritize investments in robust credit management practices as a strategic approach to enhancing their financial performance. By focusing on these aspects, MFIs can potentially mitigate risks associated with credit operations and thereby bolster their overall operational sustainability and profitability. The study underscored its contribution to advancing knowledge in the field by elucidating the critical role of credit management practices in shaping the financial health of microfinance institutions in Nairobi.

Olabamiji and Michael (2018) conducted a study to investigate the influence of credit management practices on the financial performance of Nigerian banks, focusing specifically on First Bank Plc. Through purposive sampling, data was collected from 30 respondents, comprising a sample that provided insights into various aspects of credit management within the bank. The study employed both descriptive and inferential statistical analyses, including frequency analysis, percentage calculations, weighted mean scores, and multiple regression analysis. The findings of the study revealed a significant positive relationship between credit management practices and the financial performance of First Bank. Notably, effective client appraisal techniques, rigorous credit risk control measures, and well-structured credit collection policies emerged as pivotal factors influencing the bank's financial performance. These findings underscored the critical role of robust credit management strategies in enhancing overall financial health and operational efficiency within banking

institutions. Based on these results, the study recommended that other banks should adopt similar practices observed in First Bank to improve their financial performance outcomes. Enhancing client appraisal methodologies, implementing stringent credit risk control frameworks, and optimizing credit collection policies were emphasized as key strategies for achieving better financial outcomes and mitigating risks associated with credit operations. This study provided valuable insights into how effective credit management practices can positively impact the financial performance of banks. The findings contribute to the body of knowledge aimed at guiding banking institutions in Nigeria and beyond towards implementing more effective credit risk management strategies to achieve sustainable financial success.

Table 1

Summary of Empirical Review

S.N	Author and Date	Title	Objectives	Methods	Variables Dep. Var.	Indep. Var.	Findings
1	Natufe and Esther (2023)	Credit risk management and the financial performance of deposit money banks: some new evidence	To examine the credit risk management and return on equity of Nigerian deposit money banks	Using a panel data regression analysis.	Return on equity (ROE).	Capital adequacy ratio (CAR), liquidity ratio (LQR), loan-to-deposit ratio (LDR), risk asset ratio (RAR), non-performing loans ratio (NPLR), loan loss provision ratio (LLP), and size (SZ)	This study found that CAR, RAR, NPLR, and SZ are the significant determinants of ROE.
2	Bagale (2023)	Credit risk management and profitability of commercial banks in Nepal.	To examine the impact of credit risk management on profitability of the banks.	Pooled regression analysis model (OLS) of panel data analysis is used as a major tool of analysis.	Return on equity (ROE).	Capital Adequacy Ratio (CAR), Liquidity ratio, Loan-to-Deposit Ratio (LDR), Non Performing Loan Ratio (NPL) and Bank Size.	The finding indicates that credit risk has the significant impact on profitability of commercial banks in Nepal. The study reveals that cash reserve ratio, loan loss provision ratio and non-performing loan ratio has insignificant negative impact on return on equity in Nepali commercial bank.
3	Brahmaiah, (2022)	Credit risk management practices of Indian banking industry: an empirical study.	To examine the risk management techniques and practices of credit risk management	There were regression and correlation analysis used.	Capital Structure	Credit Risk Management and Financial performance	The PSBs have more NPAs than PVBs whereas PVBs have better asset quality and better profitability ratios than PSBs during the study period.
4	Odion, Yusuf and Shuaibu (2022)	Effect of credit management on profitability of deposit	To examine the relationship between credit risk management	For a period of 5 years, between 2015 and 2021, the impact of these proxies	ROA	NPL, LLP, GIE	The study found a positive non-significant relationship between non-performing loans and profitability. The study

		money banks in Nigeria.	and profitability, especially in developing economies like that of Nigeria.	on the profitability of posit money banks was analyzed in this study using correlation and regression analysis processed on STATA 13 statistical software. Three hypotheses were formulated in null form and were tested by the study.			also found a positive insignificant relationship between loan loss provision and bank profitability. The study found a negative but significant relationship between growth in interest earnings on loans and advances and the profitability of deposit money banks.
5	Piao and Xiao (2022)	Risk management analysis of modern Commercial banks using behavioral finance	To evaluate the risk management analysis of modern Commercial banks using behavioral finance.	The methods and technologies of Commercial bank risk management have improved with the accelerating process of financial globalization, but the rationality of risk managers who implement daily management is limited and will be influenced by emotion and will.	Borrowers repayment risk	Industry risk, business risk and manage risk.	As a result, they will be unable to implement completely unbiased risk management, i.e., they will not be able to apply risk management objectives to daily risk management in an optimal manner. The importance and measurement complexity of Commercial bank credit risk is growing in tandem with the financial market's increasing complexity.
6	Riak and Bill (2022)	The role of credit management on financial performance.	To explore the role of credit management on financial performance.	In order to minimize exposure to bad debt, over-reserving and bankruptcies, companies must have greater insight into customer financial strength, credit score history and changing payment patterns.	Financial Performance	Credit management, credit standards, credit collection effort, credit procedure	The credit policy of the firm may also change. Microfinance Institutions and other finance institutions must develop a credit policy to govern their credit management operations and since microfinance institutions generate their revenue from credit extended to low income individuals in the form of interest charged on the funds granted the loan repayments may be uncertain.
7	Yeasin (2022)	Impact of credit risk management on financial performance: A study of Commercial banks in Bangladesh.	To analyze the impact of credit risk management on financial performance of Commercial banks.	The study applied a deductive research design with targeting 6 Commercial banks in Bangladesh, all with data spanning ten	ROA	NPL, CAR, LDR.	The result of panel data regression analysis showed that Non-performing Loan (NPL), Capital Adequacy Ratio (CAR) had negative and statistically significant impact on financial performance of Commercial banks.

				years between 2010 to 2019 with secondary data by employing panel regression analysis model.			
8	Bussmann, Giudici, Marinelli and Papenbrock (2021)	Explainable machine learning in credit risk management.	To elaborate the explainable machine learning in credit risk management.	The model applies correlation networks to Shapley values so that Artificial Intelligence predictions are grouped according to the similarity in the underlying explanations.	Capital Structure	Credit Risk Management and Financial performance	Small and medium companies asking for credit reveals that both risky and not risky borrowers can be grouped according to a set of similar financial characteristics, which can be employed to explain their credit score and, therefore, to predict their future behavior.
9	Enoch, Digil, and Arabo (2021)	A Comparative Evaluation of the Effects of Credit Risk Control on the Profitability of Micro-Finance Bank.	To evaluate the commitment of the entrepreneur and the likelihood of the business is challenging to interpret or even absent.	In this research, we used both primary and secondary sources. There is adopting a multi-stage sampling method by selecting a through collect data from the respondents while descriptive and inferential statistics were used to analyze the data collected and in testing the hypotheses. There were used simple percentage and regression analysis.	Financial performance	Client appraisal, credit risk control, collection policy.	The results showed that microfinance banks need to strengthen their credit risk control measures to increase their profitability. This is because if properly adopted it helps to decrease the percentage of payments defaults. Credit management is important in improving the financial performance of microfinance banks and this is attributed to the fact that sound and grounded credit management (client appraisal) allowed the bank to be efficient and have the availability of liquidity.
10	Orichom and Omeke (2021)	Capital structure, credit risk management and financial performance of microfinance institutions in Uganda.	To examines the relationship between capital structure, credit risk management and financial performance of microfinance institutions (MFIs) in Uganda based on agency theory	The study adopted a cross-sectional research design to examine 64 MFIs in Uganda. Correlation and multiple regression analysis were performed to analyze the data.	Capital Structure	Credit Risk Management and Financial performance	The results reveal that credit risk management significantly contributes to sound financial performance. Second, capital structure is not significantly related to financial performance. Therefore, credit risk appraisal, credit risk monitoring and credit risk mitigation are essential in achieving sound financial performance of MFIs.
11	Olobo, Karyejja, Sande, and Khoch (2021)	Credit Risk Management Practices and Performance of	To examine the extent to which Credit Risk Management	The study applied a cross-sectional survey design with 124	Ratio of NPL and Provision for bad loans	Risk identification, Risk assessment and Risk	The study revealed a strong positive correlation between risk management practices and bank

		Commercial Banks in South Sudan.	Practices influence banks' performance in South Sudan	respondents linked to the Credit process across 7 sampled banks in Juba. Cluster, purposive and sample random techniques were employed in gathering data using structured questionnaires and interview guides.		Control	performance is less than 0.01. Credit Risk Assessment (CRA), Credit Risk Identification and Credit Risk Control all revealed significant results the study further revealed that a unit increase in CRI and CRA and CRC, increased bank performance.
12	Rafał and Marta (2021)	Drivers of Individual Credit Risk of Retail Customers (A Case Study on the Example of the Polish Cooperative Banking Sector)	To determine the key factors determining the level of credit risk of individual clients	There were assess the credit risk of retail clients it use log it regression models, and additionally, score cards were calculated	Financial performance	Credit Risk perception, credit risk identification, credit risk assessment, credit risk control.	The results of the research indicate that among the factors with high predictive power there were the features characterizing the client's history of cooperation with the cooperative bank, where they applied for a loan.
13	Tunji and Kameel (2021)	Credit risk management and financial sustainability of listed deposit money banks in Nigeria.	To examine the effect of credit risk management on the financial sustainability of listed deposit money banks in Nigeria.	The study adopted an Ex-post facto research design. The population consisted of all 14 listed Deposit Money Banks (DMBs) in Nigeria as 2019 out of which a sample of 12 banks were purposively selected based mainly on availability of complete data for ten years period. Secondary data extracted from the financial statements were analyzed using descriptive and inferential analyses.	CAR, ROCE	CRM, LDR, NPL, AGP	The study found that credit risk management (CRM) proxied by Loan Deposit Ratio (LDR), Non-performing Loan (NPL) and Assets Growth Percentage (AGP) had a positive significant effect on CAR of listed DMBs in Nigeria. Bank Size (BS) significantly moderated the relationship between the CRM and CAR of listed DMBs in Nigeria. However, CRM had no significant effect on ROCE of listed DMBs in Nigeria. BS significantly modified the relationship between the CRM and ROCE positively. Overall, CRM positively and significantly affected the financial sustainability of listed DMBs in Nigeria. The study concluded that credit risk management has a positive significant effect on financial sustainability of listed DMBs in Nigeria.
14	Kulchittivej, Pornpundejwittaya, and Silpcharu (2020)	Credit management guidelines to strengthen Thai	To investigates the credit management guidelines to	The research has been simulated from the findings of	NPA growth Rate and Credit risk performance	Credit Risk perception, credit risk identification, credit risk	The characteristics management directly influences the financial management and the operation

		industrial sector.	strengthen Thai industrial sector.	both qualitative and quantitative of 500 questionnaires distributed to industrial business executives in Thailand. The data were analyzed by descriptive analysis categorized into SME and large enterprises, and SEM to conduct the model in consistent with the empirical data.		assessment, credit risk control and credit risk capital requirements.	management. The financial management directly influences the assets management. The assets management has direct influence on the operations management.
14	Kule, Kamukama and Kijjambu (2020)	Credit Management Systems and Financial Performance of Savings and Credit Cooperatives (SACCOs) in mid-western Uganda.	To analyze the relationship between credit management systems and financial performance of SACCOs in Mid-Western Uganda.	A cross-sectional research design and positivist paradigm was used to collect data from 93 SACCOs in Mid-Western Uganda using a closed-ended questionnaire. Standard linear regression analysis was carried out.	Financial Performance	Constant, Beta coefficient, Credit Management Systems, Error term.	The study findings reveal a moderate, positive and significant relationship between credit management systems and financial performance of SACCOs in Mid-Western Uganda.
15	Mafumbo (2020)	Credit management, credit policy and financial performance of Commercial banks in Uganda.	To analyze the effects of credit management on the financial performance of Commercial banks in Uganda	A causal research design was undertaken and that was facilitated by the use of secondary data which was obtained from published audited financial statements of Commercial banks and the BOU annual supervision reports. The study used universal sampling techniques, where all banks licensed and operational in Uganda were selected, multiple regressions was used.	Lending Ratio	CAR, NPL, ROE.	The findings indicated a significant relationship between credit management and the financial performance of Commercial banks in Uganda.
16	Sharifi, Haldar and	The	To examine	The data are	NPA growth	Credit Risk	The results suggest

	Rao (2019)	relationship between credit risk management and non-performing assets of Commercial banks in India.	the impact of credit risk components on the performance of credit risk management and the growth in non-performing assets (NPAs) of Commercial banks in India.	obtained from primary and secondary sources. The primary data are collected by administering questionnaire among risk managers of Indian banks. The secondary data on NPAs of Indian banks are from annual reports and Prowess database compiled by the Centre for Monitoring Indian Economy. Multiple linear regressions are used to estimate the models for the study.	Rate and Credit risk performance	perception, credit risk identification, credit risk assessment, credit risk control and credit risk capital requirements.	that the identification of credit risk significantly affects the credit risk performance. The results are robust as credit risk identification is negatively related to annual growth in NPAs or loans. There is evidence in support of a priori expectation of better credit risk performance of private banks compared to that of government banks. The study has implications for Indian banks suffering from a high level of losses due to bad loans.
17	Banu, Sayaduzzaman and Sil (2018)	The impact of credit risk management indicators on profitability attributes: evidence from the state-owned Commercial banks in Bangladesh.	To identify the consequence of credit risk management indicators on profitableness attributes of state-owned Commercial banks functioning in Bangladesh	The study has employed ANOVA technique, multiple regression models and correlation matrix to reach the concluding remark as per study objectives.	NPA growth Rate and Credit risk performance	Credit Risk perception, credit risk identification, credit risk assessment, credit risk control and credit risk capital requirements.	The findings revealed that there is significant and insignificant variation as well as relationship in the different indicators of credit risk management but there is insignificant variation in the different attributes of profitability in the midst of the sample banks within the study period. Furthermore, there is insignificant impact of the different indicators of credit risk management namely loan and advance, classified loan, unclassified loan, leverage ratio, bad debt, default ratio, cost per loan asset and cost to income ratio on profitability attributes such as return on assets, return on equity along with net profit percentage of the sample banks over the study period.
18	Edwin and Omagwa (2018)	Credit management practices and financial performance of microfinance institutions in Nairobi central business district,	To determine the effect of credit management practices on financial performance of MFIs	A descriptive survey design was adopted for the study; the target population comprised of 165 members of staff of the MFIs studied. Primary data was collected	Financial performance	Constant, coefficient, client appraisal, credit risk control, collection policy, terms of credit	The study found that credit risk control, client appraisal, collection policy and terms of credit were all statistically significant in explaining financial performance of the MFIs studied.

		Kenya		using questionnaires. Purposive sampling was used to pick 165 respondents. Of the 165 questionnaires dispatched, 158 were filled and returned. Descriptive analysis and multiple regression analysis were used to analyze data.			
19	Olabamiji and Michael (2018)	Credit Management Practices and Bank Performance: Evidence from First Bank.	To examined the influence of credit management practices on financial performance	Data was collected using purposive sampling technique from thirty (30) respondents as a sample size used to collect data from the respondents. Both descriptive and inferential statistics were used to analyze data, such as frequency, percentage, weighted mean score, and multiple regressions.	Financial Performance	Client Appraisal, Credit Control, collection policy.	The result revealed that credit management practices have a significant positive influence on the financial performance of first bank. The result concluded that client appraisal, credit risk control, and collection policy are major predictors of financial performance of First bank.

2.5 Research Gap

Yeasin (2023) conducted a thorough investigation into the influence of credit risk management on the financial performance of Commercial banks in Bangladesh. This study adopted a deductive research design and focused on six prominent Commercial banks, analyzing data spanning from 2010 to 2019 using a panel regression analysis model. The research aimed to assess the impact of several key credit risk indicators on bank performance, namely Return on Assets (ROA), Non-Performing Loan (NPL) ratio, Capital Adequacy Ratio (CAR), and Loan-to-Deposit Ratio (LDR). Yeasin's study contributes significantly to the field of credit risk management within Commercial banks, providing valuable insights into how specific risk management practices impact financial performance. The findings underscore the critical importance of implementing effective credit risk management strategies to mitigate risks and enhance overall financial stability and performance in the banking sector.

The findings from the panel regression analysis revealed noteworthy outcomes. Specifically, Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) demonstrated a statistically significant negative impact on the financial performance of the Commercial banks studied. In contrast, the Loan-to-Deposit Ratio (LDR) exhibited a positive influence on financial performance.

Unlike prior studies primarily focused on Return on Equity (ROE) alongside other financial metrics, this research expanded its scope to include additional indicators such as Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision Ratio (LLP). By incorporating these variables, the study aimed to provide a comprehensive analysis of how various aspects of credit risk management contribute to overall bank performance.

Furthermore, the study addressed gaps in existing literature by exploring critical factors integral to effective credit risk management, including perception, identification, assessment, control strategies, and capital requirements. This approach aimed to elucidate the nuanced relationships between these factors and the growth in non-performing assets within Commercial banks.

Utilizing secondary data covering the period from 2013/014 to 2022/023, the study employed robust statistical techniques such as coefficient of correlation and regression analysis to analyze the data comprehensively. The research focused on four key Commercial banks: Kumari Bank Limited, Standard Chartered Bank Nepal, Nabil Bank Limited, Everest Bank Limited (EBL), and Nepal Investment Mega Bank Limited.

CHAPTER III

RESEARCH METHODOLOGY

This chapter outlines the methodology used for analyzing the study's data. It covers the population and sample selection, sources of data, data collection techniques, data analysis tools, hypotheses tested, and study limitations. The methodology ensured rigor in gathering and analyzing data relevant to credit risk management and financial performance, using surveys, interviews, and statistical analysis. Limitations acknowledged include data availability, sample size, and scope constraints, critical for interpreting findings accurately.

3.1 Research Design

The study employs a combination of descriptive and causal-comparative research designs. Historical data are utilized to assess and analyze the past performance of banks, informing future recommendations. Both descriptive and causal-comparative research methodologies are employed to assess the credit risk management techniques of commercial banks. The methodology of the study is primarily quantitative in nature, focusing on numerical data analysis to evaluate various aspects of credit risk management.

3.2 Population, Sample and Sampling Design

Commercial banks are financial institutions operating nationally or regionally, primarily aimed at providing medium- and long-term capital for productive investments, often coupled with technical assistance, especially in economically challenged countries. As of January 2023, there are 20 Commercial banks in Nepal, all of which are classified as Class "A" banks by the Nepal Rastra Bank. For this study, a sample of five Commercial banks has been selected from this population. Specifically, the financial statements of Kumari Bank Limited, Standard Chartered Bank Nepal, Nabil Bank Limited, Everest Bank Limited (EBL), and Nepal Investment Mega Bank Limited spanning a research period of 10 years have been included in the sample. These banks represent diverse backgrounds and operational capacities within the Nepalese banking sector. The study employed a purposive sampling method to select these banks for analysis.

- Kumari Bank Limited

- Standard Chartered Bank Nepal
- Nabil Bank Limited
- Everest Bank limited (EBL)
- Nepal Investment Mega Bank Limited

3.3 Types and Sources of Data

There was secondary data used. Secondary data has already been collected by others and has undergone statistical processing. This research relies on secondary data sources. It utilizes annual reports from the respective banks, various reports from the Nepal Rastra Bank (NRB), and other relevant reports. Additionally, essential data and information were gathered from published and unpublished documents. The research also utilized library resources to access necessary data and information during the study. The sources of secondary data include:

- Journals, newspapers, and magazines.
- Unpublished master's degree thesis related to this research.
- NEPSE, Merolagani, Sharesansar and NRB reports.
- Books related to financial management.

3.4 Data Presentation Tools and Techniques

The data collected from the annual reports of selected banks and reports published by the Nepal Rastra Bank (NRB) were organized into tables and analyzed using Excel. Conducting research with appropriate data collection instruments enhances the credibility and value of research findings. The audited annual reports published by the NRB are considered valid and reliable sources of information due to their authoritative nature.

3.5 Data analysis Tools

Financial and statistical tools including mean, standard deviation, correlation, regression, risk index, and the T-test model were applied to analyze the data collected from the annual reports of the Commercial banks. These tools were utilized to test the research hypotheses based on outputs from risk index, T-test, and regression analyses. The study employed data from Schedule No. 11 of banks' annual reports, which details the classification of loans and advances, and Schedule 24 on bills purchased,

along with other principal indicators. The analysis was conducted in accordance with the structure and availability of the data.

3.5.1 Financial Tools

a) **Capital Adequacy Ratio (CAR)**

The Capital Adequacy Ratio (CAR) serves as a crucial indicator of a bank's ability to fulfill its financial obligations. Also referred to as the Capital-to-Risk Weighted Assets Ratio (CRAR), this metric assesses the proportion of capital a bank holds in relation to its risk-weighted assets. Regulators closely monitor the CAR to assess a bank's susceptibility to potential failure. This ratio plays a pivotal role in safeguarding depositors' interests and fostering stability and efficiency within global financial systems.

$$\text{Capital Adequacy Ratio (CAR)} = \frac{\text{Total Capital}}{\text{Risk Weighted Assets}}$$

b) **Non Performing Loan Ratio (NPL)**

A non-performing loan (NPL) is a loan that does not generate income for the lender because the borrower has ceased making repayments. This situation poses significant concerns for both the lender and the borrower and can lead to serious consequences. There are several reasons why borrowers may stop making payments on their loans. For instance, it could be due to unemployment, making it difficult for them to meet repayment obligations. Alternatively, borrowers might have invested the loan in a business venture that has not yet become profitable, affecting their ability to repay. These scenarios underscore the challenges and risks associated with non-performing loans in financial transactions.

$$\text{Non Performing Loan Ratio (NPL)} = \frac{\text{Non Performing Loans}}{\text{Total Loan}}$$

c) **Cash reserve Ratio (CRR)**

The Cash Reserve Ratio (CRR) is a regulatory tool employed by central banks worldwide. It mandates that commercial banks maintain a minimum portion of customer deposits and physical currency as reserves with the central bank. This requirement ensures that banks have sufficient liquidity to meet withdrawal demands and other obligations, thereby contributing to financial stability and effective monetary policy implementation. The CRR is a crucial mechanism used by central

banks to regulate liquidity in the banking system and to influence economic activity by controlling the amount of money circulating in the economy.

$$\text{Cash reserve Ratio (CRR)} = \frac{\text{Reserves requirement with the NRB}}{\text{Total deposit of customers}}$$

d) Loan Loss Provision (LLP)

A loan loss provision is an expense recorded on the income statement to anticipate potential losses from uncollected loans and loan payments. Banks allocate funds for this purpose to reflect a realistic evaluation of their financial condition, accounting for the possibility of borrowers defaulting on loans. This provision is crucial for banks to maintain accurate financial reporting and to prepare for potential financial setbacks caused by loan defaults. It serves as a prudent measure to safeguard against the uncertainties associated with loan repayment and to ensure transparency in financial disclosures.

$$\text{Loan Loss Provision (LLP)} = \frac{\text{Loan Loss Provision}}{\text{Total Loan}}$$

e) Return on Equity (ROE)

Return on equity (ROE) is a financial performance metric calculated by dividing a company's net income by its shareholders' equity. Shareholders' equity represents the difference between a company's total assets and its total liabilities, often referred to as net assets. ROE quantifies how effectively a company generates profits from the shareholders' investment in the business. It is a key indicator used by investors and analysts to assess the profitability and efficiency of a company in utilizing its equity capital.

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Total Equity}}$$

3.5.2 Statistical Tools

a. Arithmetic Mean

The arithmetic mean has been extensively utilized in this study to compute the average across five years of data. This statistical tool is employed to derive a single representative value that summarizes the entire dataset for the specified period. It is calculated using the following formula:

$$\text{Mean } (\bar{X}) = \frac{\sum x}{n}$$

Where,

\bar{X} = Mean

$\sum x$ = Sum of all the variable x

n = Variables involved

b. Standard Deviation

Standard deviation quantifies the absolute dispersion or variability within a distribution of data points. It serves as a metric to gauge how spread out the values in a dataset are. A larger standard deviation indicates greater dispersion, signifying that the data points are more spread out from the mean. Conversely, a smaller standard deviation suggests a higher degree of consistency and proximity of the observations to the mean value of the dataset. In essence, standard deviation provides a measure of the extent to which data points deviate from the average value, offering insights into the variability or uniformity within a series of observations.

$$SD = \sqrt{\frac{\sum x^2}{N} - \frac{(\sum x)^2}{N}}$$

c. Coefficient of Variation (C.V.)

The coefficient of variation (CV) is a measure used to assess the relative variability or dispersion of data points in relation to their mean. It is calculated as the ratio of the standard deviation to the mean of the observations. When comparing two distributions with the same arithmetic mean, the coefficient of variation helps in evaluating their respective levels of variability. A higher coefficient of variation indicates greater relative variability, suggesting higher risk per unit of measurement. Conversely, a lower coefficient of variation signifies lower relative variability and thus lower risk per unit. In essence, the coefficient of variation provides a standardized measure to compare the dispersion of data sets with different means, enabling a clearer assessment of their variability relative to their average values.

$$C.V = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$$

d. Correlation

The correlation coefficient (r) is a statistical measure that indicates both the direction and strength of the relationship between two sets of scores or variables. It is calculated by dividing the covariance of the two variables by the product of their standard deviations. The correlation coefficient can take on values ranging between +1 and -1. A correlation coefficient of +1 indicates a perfect positive relationship, where the variables move in the same direction. A value of -1 signifies a perfect negative relationship, where the variables move in opposite directions. A correlation coefficient close to zero suggests no linear relationship between the variables. The correlation coefficient provides a numerical index that quantifies the degree and direction of the association between two variables, aiding in understanding their interrelationship in statistical analysis.

$$r_{xy} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 \sum(y_i - \bar{y})^2}}$$

Correlation Matrix: A correlation matrix is the standard format used to present correlation results. It enables the comparison of correlation coefficients among all variables included in the study.

e. Coefficient of determination

The coefficient of determination (R^2) assesses how effectively a statistical model predicts an outcome, represented by the model's dependent variable. It quantifies the proportion of variation in the dependent variable that is predictable from the independent variable(s). R^2 ranges from 0 to 1, where 0 indicates no linear relationship between the variables, and 1 indicates a perfect linear relationship, implying that all data points lie precisely on the regression line.

f. Regression analysis

Regression is a statistical technique used to predict the value of one variable based on the known value of another variable when there is a relationship between them. In this context, one variable is considered the independent variable, which provides known values, while the other variable is the dependent variable, for which values are to be predicted. Regression analysis estimates the average change in the dependent variable associated with a specific change in the independent variable. It establishes an

approximate functional relationship between the variables and helps assess whether the dependent variable is influenced by changes in the independent variable.

Multiple regression analysis

In this study, both simple and multiple regression analyses were employed to analyze and test the relationships between dependent and independent variables. Simple regression examines the relationship between a single dependent variable and one independent variable. Multiple regression, on the other hand, assesses the relationship between a dependent variable and multiple independent variables simultaneously. These regression models are used to model and understand how changes in the independent variables are associated with changes in the dependent variable, providing insights into the factors influencing the outcomes under study.

$$\text{ROE} = a + b_1 \times \text{CAR} + b_2 \times \text{NPL} + b_3 \times \text{CRR} + b_4 \times \text{LLP}$$

ROE = Return on Equity

CAR = Capital Adequacy Ratio

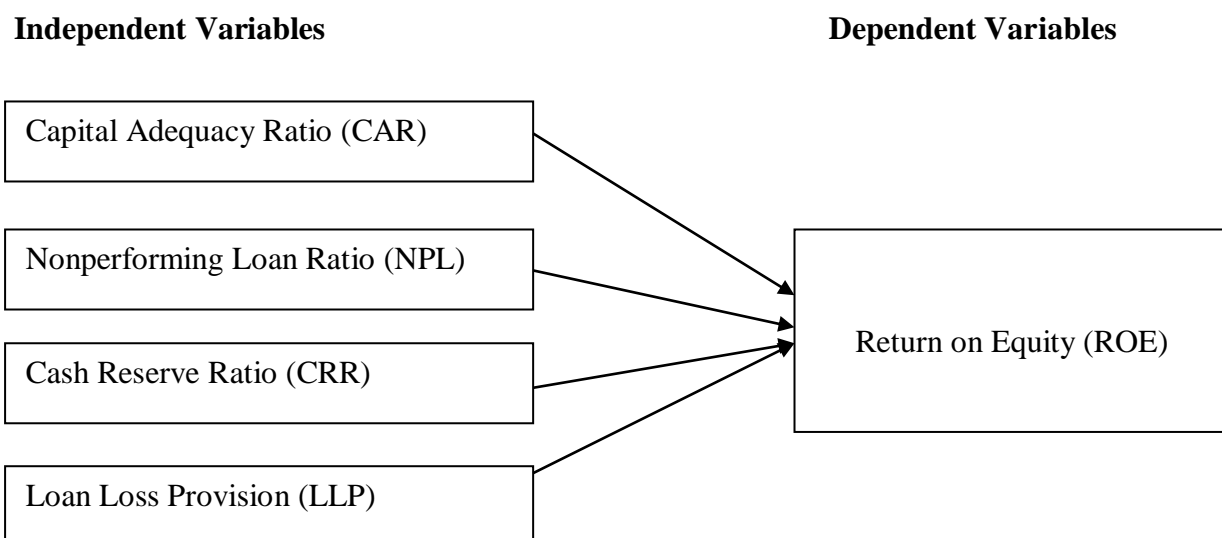
NPL = Non performing Loan Ratio

CRR = Cash reserve ratio

LLP = Loan Loss Provision

3.6 Research Framework and Definition of Variables

The models were estimated using the multiple linear regression method. In the first model, the growth rate of non-performing assets (NPA) is regressed on five explanatory variables: credit risk perception, credit risk identification, credit risk assessment, credit risk control, and capital requirement. Figure 3.1 illustrates the schematic diagram depicting the relationship between these credit risk factors.



(Source: Bagale, 2023)

Figure 1: Research Framework

Definition of Research Variables

i. Dependent Variable

Return on Equity (ROE):

Return on equity (ROE) is a financial performance measure calculated by dividing net income by shareholders' equity. Shareholders' equity represents a company's assets minus its debt, making ROE a gauge of the return on net assets.

ii. Independent Variables

Capital Adequacy Ratio (CAR):

The capital adequacy ratio (CAR), also known as the capital-to-risk weighted assets ratio (CRAR), indicates a bank's ability to meet its obligations. Regulators monitor CAR to assess a bank's risk of failure, ensuring depositor protection and financial system stability and efficiency.

Non-Performing Loan Ratio (NPL):

A non-performing loan (NPL) is a type of loan where the borrower has stopped making payments, thus generating no income for the lender. NPLs pose significant risks for both lenders and borrowers and can result from various factors such as job loss or unsuccessful business ventures.

Cash Reserve Ratio (CRR):

The Cash Reserve Ratio (CRR) is a regulatory tool used by central banks to mandate commercial banks to hold a minimum fraction of customer deposits and currency as reserves. CRR aims to ensure liquidity and control inflation within the economy.

Loan Loss Provision (LLP):

Loan loss provision (LLP) is an expense on the income statement set aside by banks to cover potential losses from uncollected loans and loan payments. LLP helps banks accurately assess their financial health by accounting for potential loan defaults and associated expenses.

CHAPTER IV

RESULT AND DISCUSSION

This chapter is dedicated to presenting the findings of the study on the impact of assets and liabilities management on the profitability of Nepalese Commercial banks. It begins by providing brief profiles of the selected banks and detailing their financial ratios, which were collected and compiled for analysis. These profiles are followed by a systematic tabulation, analysis, and interpretation of the data, allowing for comparisons among the banks under study.

The analytical process unfolds through several structured sections. Firstly, the chapter addresses the identification of key issues and assesses the availability of suitable data. It then outlines the methodology chosen to answer the research questions effectively, utilizing a range of statistical tools as described in Chapter Three of the study.

The subsequent sections delve into specific analyses: the structure and pattern analysis of the data, descriptive statistics, correlation analysis, and regression analysis. Each of these sections contributes to a deeper understanding of how assets and liabilities management practices influence the profitability metrics of the commercial banks in Nepal.

4.1 Descriptive Analysis

Descriptive analysis is a form of data examination that involves describing, presenting, or succinctly summarizing data points to identify patterns and relationships inherent in the data. It helps in uncovering insights from both current and past data sets.

Table 2
Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
ROE	11.98	36.20	20.00	6.35
CAR	10.23	24.03	13.64	3.13
NPL	0.75	174.00	1.79	24.37
CRR	5.25	37.52	12.09	7.96
LLP	5.75	37.52	12.45	7.83

Valid N (listwise) 50

Source: Annual report of selected banks by using SPSS version 26

Table 2 displays descriptive statistics for five essential financial indicators: Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision (LLP). These statistics offer a concise overview of the dataset's central tendencies and variability.

For ROE, the data ranges from a minimum of 11.98% to a maximum of 36.20%, with a mean (average) value of 20.00% and a standard deviation of 6.35 percentage points. ROE is a measure of a company's profitability relative to its shareholders' equity. CAR varies from a minimum of 10.23% to a maximum of 24.03%, with a mean value of 13.64% and a standard deviation of 3.13 percentage points. CAR assesses a financial institution's ability to cover its risk through its capital.

NPL shows a wider range, from 0.75% to 174.00%, with a mean of 1.79% and a substantial standard deviation of 24.37 percentage points. NPL indicates the proportion of loans in a portfolio that are not generating income due to defaults or late payments. CRR ranges from 5.25% to 37.52%, with a mean of 12.09% and a standard deviation of 7.96 percentage points. CRR is a monetary policy tool used by central banks to control the money supply.

Finally, LLP ranged from 5.75% to 37.52%, with a mean value of 12.45% and a standard deviation of 7.83 percentage points. LLP represents provisions made by a financial institution to cover potential losses on loans.

4.2 Correlation Analysis

Correlation analysis is a statistical technique employed in research to quantify the strength of the linear relationship between two variables and ascertain their association. Simply put, it measures how changes in one variable are associated with changes in another. A high correlation indicates a strong relationship between the variables, whereas a low correlation suggests a weak relationship. In market research, correlation analysis is used to analyze quantitative data collected through methods such as surveys and polls. Researchers aim to uncover patterns, significant connections, and trends between variables or datasets.

Pearson's correlation analysis, a common method used in research, specifically assesses the linear correlation between various independent and dependent variables under study. It quantifies the degree and direction of association between two variables, providing insights into their relationship dynamics. This statistical concept, the correlation coefficient, serves as a crucial measure in determining the strength and nature of relationships observed in the data.

Correlation interpretation is based on following five classical rules:

($r = 0$ to $.20$) indicates negligible or no correlation

($r = .20$ to $.40$) indicates positive but low degree of correlation

($r = .40$ to $.60$) indicates positive moderate degree of correlation

($r = .60$ to $.80$) indicates positive and marked degree of correlation

($r = .80$ to $.1.00$) indicates positive and high degree of correlation

Table 3

Correlation Analysis

	ROE	CAR	NPL	CRR	LLP
ROE	1				
CAR	.782**	1			
NPL	.712*	.781**	1		
CRR	.413*	.440**	.395**	1	
LLP	.545*	.503**	.574**	.211**	1

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

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

Source: Annual report of selected banks by using SPSS version 26

Table 3 presents a correlation analysis among the financial variables, with Return on Equity (ROE) as the dependent variable and Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision (LLP) as the independent variables. The correlation coefficients indicate the strength and direction of the linear relationships between these variables.

The correlation coefficient between ROE and CAR is 0.782, which is highly positive and statistically significant at the 0.01 level. This suggests a strong positive relationship between ROE and CAR, meaning that as the Capital Adequacy Ratio increases, Return on Equity tends to increase as well. The correlation coefficient between ROE and NPL is 0.712, also highly positive and statistically significant at the 0.01 level. This implies that there is a strong positive association between ROE and NPL, suggesting that as Non-Performing Loan Ratio increases, Return on Equity tends to increase too.

ROE and CRR have a positive correlation coefficient of 0.413, which is statistically significant at the 0.05 level. This indicates a moderate positive relationship between ROE and Cash Reserve Ratio. Finally, the correlation coefficient between ROE and LLP is 0.545, again highly positive and statistically significant at the 0.01 level. This signifies a strong positive association between ROE and Loan Loss Provision, suggesting that as Loan Loss Provision increases, Return on Equity tends to increase as well.

The correlation analysis reveals significant relationships between ROE and all the independent variables, indicating that these financial indicators are interrelated. This information is valuable for understanding how changes in one financial metric may influence or be influenced by changes in others, which can be critical for making informed financial decisions and assessing risk.

4.3 Regression Analysis

Correlation analysis assesses the strength of the relationship between two variables, but it does not establish a causal connection. While a strong correlation coefficient indicates a robust relationship, it does not reveal the exact nature of this relationship. In contrast, regression analysis provides deeper insights into the relationship between variables, including the slope and direction of the relationship. It helps in

understanding how changes in one or more independent variables impact the dependent variable.

Simple linear regression examines how an independent variable affects a single dependent variable, whereas multiple linear regressions assess the influence of multiple independent variables on a single dependent variable. Unlike correlation analysis, which only quantifies the degree of relationship, regression analysis assumes a causal relationship between variables.

The primary advantage of linear regression is its capability to analyze multiple independent variables simultaneously to predict their combined impact on the dependent variable. This approach allows for a comprehensive assessment of how various factors contribute to the variability in the outcome. The equation used in multiple regressions expresses these relationships mathematically, providing a clearer understanding of how changes in independent variables affect the dependent variable. Thus, multiple regression analysis is particularly useful in determining the collective influence of several factors on a single outcome variable.

$$\text{ROE} = a + b_1 \times \text{CAR} + b_2 \times \text{NPL} + b_3 \times \text{CRR} + b_4 \times \text{LLP} + e_i$$

ROE = Return on Equity

CAR = Capital Adequacy Ratio

NPL = Non performing Loan Ratio

CRR = Cash reserve ratio

LLP = Loan Loss Provision

Table 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.860 ^a	.739	.734	.49364

a. Predictors: (Constant), CAR, NPL, CRR, LLP

Table 4 provides a summary of the regression analysis model, aimed at predicting a dependent variable (not specified in this table) based on several independent variables listed as predictors.

The R-squared value, which measures how well the independent variables account for the variation in the dependent variable, is reported as .739. This indicates that approximately 73.9% of the variation in the dependent variable can be explained by the independent variables included in the model. Thus, the model demonstrates a moderate level of effectiveness in explaining the variability of the dependent variable.

Additionally, the adjusted R-squared value is .734 in this analysis. Adjusted R-squared considers the number of predictors in the model and provides a more conservative estimate of the model's explanatory power. The proximity of the adjusted R-squared to the R-squared value suggests that the model's ability to explain the dependent variable's variation remains stable even after accounting for the number of predictors included in the model.

Standard error of the estimate is a measure of the model's accuracy in predicting the dependent variable. A lower value indicates better predictive accuracy. In this model, the standard error of the estimate is .49364, which suggests that, on average, the predictions made by the model are within approximately 0.49364 units of the actual values.

Table 5

Anova

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	270.619	4	38.660	158.652	.000 ^b
	Residual	95.521	45	.244		
	Total	366.140	49			

a. Dependent Variable: ROE

b. Predictors: (Constant), CAR, NPL, CRR, LLP

Table 5 presents the results of an Analysis of Variance (ANOVA) conducted to assess the regression model's predictive ability for the dependent variable, Return on Equity (ROE), based on the independent variables CAR, NPL, CRR, and LLP. The F-statistic, which measures the overall significance of the model, is notably high at 158.652. This suggests that the model is highly significant in explaining the variation in ROE.

The associated significance level (p-value) of the F-statistic is reported as .000, indicating that it is less than the conventional significance threshold of 0.05. This low

p-value signifies that the regression model as a whole is statistically significant in predicting ROE, reinforcing the reliability and robustness of the model's findings.

Table 6

Coefficient Analysis

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.310	.134		2.316	.021
	CAR	.321	.043	.343	7.381	.000
	NPL	.077	.047	.079	1.635	.103
	CRR	.060	.036	.056	1.675	.095
	LLP	-.123	.034	-.116	-3.582	.000

a. Dependent Variable: ROE

Table 6 provides the results of a coefficient analysis, which is a regression model used to predict the dependent variable ROE (Return on Equity) based on the independent variables CAR, NPL, CRR, and LLP.

The study reported coefficients indicating the relationship between various factors and Return on Equity (ROE) in Commercial banks. The coefficient for Capital Adequacy Ratio (CAR) was found to be 0.321, meaning that, holding other variables constant, a one-unit increase in CAR is associated with a 0.321-unit increase in ROE. However, the coefficient for Non-Performing Loan Ratio (NPL) was 0.077, which was not statistically significant at the 0.05 level ($p = 0.103$), suggesting that NPL may not significantly impact ROE in this model.

Similarly, the coefficient for Cash Reserve Ratio (CRR) was 0.060, indicating that a one-unit increase in CRR results in a 0.060-unit increase in ROE. Like NPL, this coefficient was not statistically significant at the 0.05 level ($p = 0.095$). Conversely, the coefficient for Loan Loss Provision (LLP) was -0.123, which was statistically significant at the 0.01 level ($p < 0.001$). This negative coefficient suggests that a one-unit increase in LLP leads to a 0.123-unit decrease in ROE, highlighting the significant adverse impact of LLP on ROE in this model. These findings underscore

the complex interplay between financial metrics and their influence on the profitability of Commercial banks.

The coefficient analysis provides insights into how each independent variable (CAR, NPL, CRR, and LLP) is associated with the dependent variable ROE. Capital Adequacy Ratio (CAR) and Loan Loss Provision (LLP) has statistically significant impacts on ROE, while Non-Performing Loan Ratio (NPL) and Cash Reserve Ratio (CRR) has not statistically significant predictors of ROE.

4.4 Discussion

This study shows that the independent variable capital adequacy ratio has statistically significant impacts on return on equity. This finding has supported by Mafumbo (2020), who has found capital adequacy ratio has statistically significant impacts on return on equity. But in the contrary, Edwin and Omagwa (2018) found that capital adequacy ratio has statistically insignificant impacts on return on equity.

Similarly, this study also that the independent variable non-performing loan has statistically insignificant impacts on return on equity. This finding has supported by Tunji and Kameel (2021) concluded that non-performing loans do not significantly impact return on equity (ROE). But in the contrary, Olobo et al. (2021) found that non-performing loan has statistically significant impacts on return on equity.

Likewise, this study also that the independent variable cash reserve ratio has statistically insignificant impacts on return on equity. This finding has supported by Yeasin (2022), who has found cash reserve ratio has statistically insignificant impacts on return on equity. But in the contrary, Piao and Xiao (2022) found that cash reserve ratio has statistically significant impacts on return on equity.

Lastly, in this study the independent variable loan loss provision has statistically significant impacts on return on equity. This finding has supported by Bagale (2023), who has found loan loss provision has statistically significant impacts on return on equity. But in the contrary, Edwin and Omagwa (2018) found that loan loss provision has statistically insignificant impacts on return on equity.

Yeasin (2022) conducted a study on the impact of credit risk management on the financial performance of Commercial banks in Bangladesh. The research employed a deductive research design, focusing on six Commercial banks over a ten-year period from 2010 to 2019, utilizing secondary data and employing a panel regression

analysis model. The study aimed to examine four key factors influencing the financial performance of these banks, using Return on Assets (ROA) as the primary metric for performance assessment, and Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Loan-to-Deposit Ratio (LDR) as indicators of credit risk.

The findings from the panel data regression analysis revealed that Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) had a negative and statistically significant impact on the financial performance of Commercial banks. Conversely, Loan-to-Deposit Ratio (LDR) had a positive and statistically significant impact on financial performance. This indicates that credit risk management significantly influences the financial performance of Commercial banks in Bangladesh, with NPL and CAR adversely affecting performance, while LDR contributes positively to financial outcomes. These results underscore the critical role of effective credit risk management strategies in enhancing the overall financial health and stability of commercial banks.

CHAPTER-V

SUMMARY AND CONCLUSIONS

5.1 Summary

The researcher has identified the research problem and established objectives aimed at addressing issues related to credit management in selected Commercial banks, as outlined in the introduction chapter. The primary objective of this study is to conduct a comparative analysis of credit management practices among Kumari Bank Limited, Standard Chartered Bank Nepal, Nabil Bank Limited, Everest Bank Limited, and Nepal Investment Mega Bank Limited. This research relies on secondary data sources, supported by a comprehensive review of related literature to ensure precision in the study's execution.

Secondary data gathered from annual reports, official reports, economic journals, financial statements, authorized websites of the banks, and the Nepal Stock Exchange spanning a ten-year period form the basis of this study. Chapter four presents the data through comparative analysis and interprets the findings using a variety of methodologies outlined in chapter three. Financial tools such as ratio analysis (liquidity, asset management, profitability, and risk ratios) and statistical tools like arithmetic mean, standard deviation, coefficient of correlation, and trend analysis are employed to achieve the study objectives.

The study highlights essential financial metrics including Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), and Loan Loss Provision (LLP). The findings from these analyses are summarized in the final section of the presentation and analysis chapter, providing insights into the comparative credit management practices of the selected banks. It offers insights into the central tendencies of these metrics, aiding in understanding the financial performance and risk profiles of the entities under consideration. Similarly, the correlation coefficients reveal the strength and direction of relationships between financial metrics. Robust positive correlations are observed between ROE and CAR, ROE and NPL, and ROE and LLP, indicating that changes in these indicators tend to align with ROE. A moderate positive correlation exists between ROE and CRR. These insights illuminate how these variables interrelate and influence overall financial performance.

The results of a regression analysis where ROE is the dependent variable, and CAR, NPL, CRR, and LLP are independent variables. The model's R-squared value indicates its capacity to explain variations in ROE, while the F-statistic underscores its overall effectiveness in predicting ROE. This model serves as a valuable tool for predicting and understanding the drivers of ROE. Also, the significance of the model, demonstrating its ability to explain variations in ROE. The highly significant F-statistic underscores the model's substantial explanatory power.

In summary, the individual contributions of predictors (CAR, NPL, CRR, and LLP) to the model. CAR emerges as a significant driver with a positive coefficient, indicating its positive influence on ROE. Conversely, LLP has a negative coefficient, suggesting that higher Loan Loss Provisions are associated with lower ROE. Although NPL and CRR exhibit positive coefficients, they do not reach statistical significance. This analysis identifies specific financial factors influencing ROE, enhancing decision-making and risk assessment.

5.2 Conclusion

The conclusion of the study highlighted significant correlations between ROE and several independent variables. Notably, ROE showed strong positive associations with CAR and LLP, indicating that higher capital adequacy and effective loan loss management can positively impact ROE. Additionally, a moderate positive correlation was found between ROE and CRR. These relationships underscore the interconnectedness of these metrics. The high R-squared and significant F-statistic signify the model's strong predictive power, making it a valuable tool for understanding and forecasting ROE based on the selected independent variables. The model's significance in explaining ROE variations. The highly significant F-statistic emphasized the model's substantial explanatory capabilities.

The strong positive correlation between Capital Adequacy Ratio (CAR) and Return on Equity (ROE) suggests that maintaining a robust capital base is crucial for enhancing profitability. Companies and financial institutions with higher capital adequacy are better positioned to absorb losses and generate higher ROE, which is a key indicator of financial health. The analysis reveals that Non-Performing Loan Ratio (NPL) has a significant but slightly weaker positive correlation with ROE. This indicates that while maintaining a low NPL is important for profitability, it might not

have as strong an influence as capital adequacy. However, it still emphasizes the importance of effective credit risk management to sustain a healthy ROE.

While CRR shows a moderate positive correlation with ROE, it does not reach statistical significance in the coefficient analysis. Nevertheless, the correlation suggests that prudent cash reserve management can have a positive impact on profitability. Further research or a larger dataset may provide more conclusive insights. The significant negative correlation between Loan Loss Provision (LLP) and ROE implies that higher provisions for potential loan losses are associated with lower profitability. This underscores the balance that financial institutions must strike between provisioning for potential losses and maintaining strong ROE. Effective risk management and predictive modeling in this area are critical.

Similarly, coefficient analysis provided insights into the individual contributions of the independent variables. CAR emerged as a significant positive driver of ROE, while LLP played a significant negative role, indicating the importance of maintaining strong capital adequacy and prudent loan loss provisions. NPL and CRR, while not statistically significant, still played roles in the model.

In conclusion, these findings suggest that financial entities should carefully consider their capital adequacy, loan quality, cash reserves, and provisioning practices. By doing so, they can optimize their Return on Equity while effectively managing risk. Furthermore, ongoing monitoring and analysis of these financial metrics are essential to adapt to changing economic conditions and regulatory requirements. Ultimately, the insights from this analysis can guide financial decision-makers in enhancing their organizations' financial performance and stability.

5.3 Implications

Commercial banks are required to maintain adequate liquid assets to meet their short-term obligations. The current high current ratio indicates a favorable liquidity position, ensuring the banks' capability to manage lending policies, strategic planning, and fund flows effectively. It is recommended that banks continue to uphold this sound liquidity position, especially in light of recent political instability affecting sectors like hospitality, manufacturing, and trade, leading to reduced loans and advances in these areas. Banks should prioritize these sectors and explore new investment opportunities to mobilize deposits.

Given the equal performance among the sampled commercial banks, there is a need for them to enhance income generation from managing deposits. Looking ahead, these banks should address their weaknesses through innovative marketing approaches. In a competitive banking environment, focusing on customer orientation and strengthening marketing functions will be crucial for attracting and retaining customers.

Amidst global competition, banks should develop innovative approaches in marketing, possibly through the development of a new CAR app and new customer service strategies leveraging modern technology. They should also expand into new market areas, suggesting the establishment of a robust marketing department at the central level to handle banking products, pricing, promotion, and place strategies effectively.

The credit process begins with customer on boarding. To qualify for a line of credit, potential buyers must complete an application detailing their financial status, including a bank reference. The credit management team then gathers information about the buyer's business, including credit reports from major bureaus and feedback from trade references. This process helps evaluate creditworthiness and manage risk effectively.

To optimize profitability and fulfill social responsibilities, commercial banks should reduce excess liquidity by investing in more profitable sectors. By implementing sound credit management practices, banks can increase proper investments and loans while minimizing bad debts. This approach ensures sustainable profitability and fulfills their role in the economy.

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APPENDIX-I

Return on Equity

Year	SCBNL	NABIL	NIBL	KBL	EBL
2012/013	18.25	16.03	35.20	24.20	36.20
2013/2014	13.30	17.45	35.210	22	32.25
2014/015	12.20	16.19	30.43	22	31.03
2015/016	16.30	15.02	28.36	21	22.85
2016/017	17.25	20.31	26.38	18	30.47
2017/018	21.20	22.85	26.27	16.85	28.4
2018/019	15.23	17.08	21.69	17.06	22.85
2019/020	14.25	17.46	17.18	24.53	20.32
2020/021	16.20	14.87	11.98	21.58	16.04
2021/022	16.20	15.81	18.66	14.17	16.00

Capital Adequacy Ratio

Year	SCBNL	NABIL	NIBL	KBL	EBL
2012/013	10.23	14.30	18.25	10.27	11.29
2013/2014	12.30	15.20	16.20	11.26	10.23
2014/015	15.20	11.51	14.22	11.5	10.43
2015/016	13.24	11.21	13.93	11.02	11.02
2016/017	14.20	12.39	16.43	10.68	11.59
2017/018	16.20	13.28	21.18	11.23	11.31
2018/019	17.40	14.03	24.03	11.14	13.33
2019/020	15.20	13.49	17.98	10.48	12.66
2020/021	19.20	15.71	19.71	12.15	14.69
2021/022	14.25	15.15	18.91	12.46	14.2

Nonperforming loan Ratio (NPL)

Year	SCBNL	NABIL	NIBL	KBL	EBL
2012/2013	2.36	1.03	1.27	1.27	1.27
2013/2014	1.27	1.02	2.30	1.29	1.63
2014/015	1.02	1.01	2.5	1.91	2.10
2015/016	0.75	0.83	2.8	1.76	2.11
2016/017	1.26	1.19	2.67	1.54	2.39
2017/018	1.62	1.5	2.51	1.3	2.25
2018/019	1.47	1.64	1.99	1.34	1.85
2019/020	1.75	1.59	1.98	1.94	1.59
2020/021	1.29	1.57	1.84	2.19	1.83
2021/022	1.74	1.97	2.61	1.67	1.97

Cash Reserve Ratio

Year	SCBNL	NABIL	NIBL	KBL	EBL
2012/013	7.25	8.27	10.25	32.25	13.30
2013/2014	13.20	16.35	9.23	8.32	15.24
2014/015	7.42	6.18	6.10	5.75	9.55
2015/016	8.26	6.10	22.40	8.72	17.22
2016/017	6.39	7.14	16.43	6.08	15.19
2017/018	9.20	8.72	21.18	37.52	16.91
2018/019	5.25	9.41	24.03	30.32	24.27
2019/020	9.30	6.82	7.89	28.74	16.61
2020/021	10.20	9.98	19.71	26.64	16.52
2021/022	8.21	8.71	18.91	23.05	17.75

Loan Loss Provision

Year	SCBN L	NABIL	NIBL	KBL	EBL
2012/013	14.20	7.23	10.25	25.20	17.25
2013/2014	6.39	8.25	9.25	15.20	16.30
2014/015	7.25	9.03	6.74	6.76	15.53
2015/016	6.25	7.00	6.10	5.75	9.55
2016/017	8.36	8.33	22.40	8.72	17.22
2017/018	7.25	9.58	16.43	32.49	15.19
2018/019	8.20	9.32	21.18	37.52	16.91
2019/020	14.20	10.92	24.03	30.32	24.27
2020/021	13.20	8.33	7.98	28.74	16.61
2021/022	11.20	10.04	19.71	26.64	16.52

APPENDIX -II

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ROE	50	11.98	36.20	20.00	6.35
CAR	50	10.23	24.03	13.64	3.13
NPL	50	0.75	174.00	1.79	24.37
CRR	50	5.25	37.52	12.09	7.96
LLP	50	5.75	37.52	12.45	7.83
Valid N (listwise)	50				

Correlations						
		ROE	CAR	NPL	CRR	LLP
ROE	Pearson Correlation	1	.782**	.712**	.413**	.545**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	50	50	50	50	50
CAR	Pearson Correlation	.782**	1	.781**	.440**	.503**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	50	50	50	50	50
NPL	Pearson Correlation	.712*	.781**	1	.395**	.574**
	Sig. (2-tailed)	.032	.000		.000	.000
	N	50	50	50	50	50
CRR	Pearson Correlation	.413*	.440**	.395**	1	.211**
	Sig. (2-tailed)	.040	.000	.000		.000
	N	50	50	50	50	50
LLP	Pearson Correlation	.545**	.503**	.574**	.211**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	50	50	50	50	50

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.860 ^a	.739	.734	.49364		
a. Predictors: (Constant), CAR, NPL, CRR, LLP						
ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	270.619	4	38.660	158.652	.000 ^b
	Residual	95.521	45	.244		
	Total	366.140	49			
a. Dependent Variable: ROE						
b. Predictors: (Constant), CAR, NPL, CRR, LLP						

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.310	.134		2.316	.021
	CAR	.321	.043	.343	7.381	.000
	NPL	.077	.047	.079	1.635	.103
	CRR	.060	.036	.056	1.675	.095
	LLP	-.123	.034	-.116	-3.582	.000
a. Dependent Variable: ROE						

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ABSTRACT This study explores the credit risk management practices of commercial banks in Nepal, specifically focusing on loan loss provisions and non-performing loans (NPLs). Commercial banks in Nepal, buoyed by substantial deposits, extend loans and advances to a wide customer base, strategically attracting deposits to generate profits. However, the effectiveness of loan loss