IMPACT OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS

A Dissertation submitted to the Office of the Dean, Faculty of Management
in Partial Fulfillment of the Requirements for the Master's Degree

By

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **"IMPACT OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS"**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the references section of the dissertation.

…….

Rabindra Shrestha

REPORT OF RESEARCH COMMITTEE

Mr. Rabindra Shrestha has defended research proposal entitled IMPACT OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Dhurba Subedi and submit the thesis for evaluation and viva voce examination.

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We have examined the dissertation entitled **IMPACT OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS** presented by Rabindra Shrestha for the degree of Master of Business Studies. We hereby certify that the dissertation is acceptable for the award of Degree.

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Moreover, it is needless to say that to err is human and I am also no exception to this, so I apologize for any mistakes or errors committed in this study.

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CAR	Capital Adequacy Ratio
EBL	Everest Bank Limited
FY	Fiscal Year
HBL	Himalayan Bank Limited
LAR	Loan and Advance Ratio
LLPR	Loan Loss Provision Ratio
NABIL	Nabil Bank Limited
NBL	Nepal Bank Limited
NIMB	Nepal Investment Mega Bank
NPLR	Non-Performing Loan Ratio
ROA	Return on Assets
ROE	Return on Equity
SPSS	Statistical Package for Social Science
TU	Tribhuwan University

ABSTRACT

This study investigates the credit risk factors influencing the profitability of commercial banks in Nepal and explores the relationships between these factors and bank profitability. The research design adopted includes descriptive and inferential approaches, with data analyzed using the Statistical Package for Social Sciences (SPSS). A sample of six commercial banks was selected using judgmental sampling from a total of 20 commercial banks, based on their publicly available annual data. The study focuses on secondary data sourced from annual reports of the selected banks. It identifies the impact of credit risk factors on the performance indicators of these banks. The independent variables studied include Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPLR), Loan Loss Provision Ratio (LAR), and Loan and Advance Ratio (LLPR). The dependent variables analyzed to measure profitability are Return on Assets (ROA) and Return on Equity (ROE). Statistical tools such as mean, correlation, regression, F-test, Durbin-Watson test, multicollinearity analysis, and t-test were employed to analyze and test the data. The study found that the variables CAR, NPLR, LAR, and LLPR exhibit no significant multicollinearity, as all variance inflation factors are below 10. The findings indicate that Loan Loss Provision, Capital Adequacy Ratio, and Loan and Advance Ratio positively correlate with Return on Assets, while Non-Performing Loan Ratio negatively correlates with Return on Assets. Non-Performing Loan Ratio, Capital Adequacy Ratio, and Loan and Advance Ratio were found to be statistically significant in relation to Return on Assets. Similarly, all independent variables (Non-Performing Loans, Capital Adequacy, Loans and Advances, and Loan Loss Provision) negatively correlate with Return on Equity. Non-Performing Loans were not found to have a significant relationship with Return on Equity, whereas all other factors were statistically significant.

Keywords- *return on assets, return on equity, capital adequacy ratio, non-performing loan, loan loss provision, loan and advances to total loan*

CHAPTER I
INTRODUCTION

1.1 Background of the Study

Saving and capital creation are crucial components of a country's economic development. Banks play a pivotal role in the financial system by acting as intermediaries, gathering deposits from surplus units of the economy and providing credit to deficit units (Mushtaq et al., 2015). However, banks are exposed to various financial and non-financial risks in their daily operations, which directly impact their performance.

The banking sector also plays a significant role in capital creation and the formulation of monetary policies within any economy (Heydari and Abdoli, 2015). Banks and financial institutions are essential for fostering economic growth and development by providing capital and financial services that empower businesses and individuals (Kondapalli, Pradip Kumar, 2023). A robust banking system contributes positively to the overall financial stability and economic growth (Aburime, 2009).

The failure of a single bank can have severe repercussions on the economy and society at large (Kolapo et al., 2012). Healthy financial sectors support better performance across economic and industrial sectors (Baidoo & Akoto, 2019). Therefore, maintaining a resilient and sound banking system is crucial for sustainable economic progress and societal well-being.

Commercial banking operates under significant regulatory oversight. The credit facilities they provide enable both individuals and institutional investors to explore and expand productive investment opportunities. The organized and effective performance of the banking sector over time is crucial for ensuring the financial stability of a country (Oke et al., 2012). A sound banking system is fundamental to the overall health of the financial sector, as inadequate financial intermediation can impede economic development (Das and Ghosh, 2007).

The primary function of banks is to extend credit, which is their core business activity and a major source of profitability. The quality of credit extended by banks serves as a key indicator of their operational performance and financial health. According to Boahene et al. (2012), the quality of credit is a critical determinant of a bank's wellbeing. Poor credit quality significantly contributes to the risk of bank failures and inefficiencies. Effective credit management is therefore essential in financial management decisions, where firms must strike a balance between extending credit and ensuring profitability (Bhunia and Khan, 2011).

Risk refers to the uncertainty surrounding events, often synonymous with the chance or probability of experiencing financial losses. Within the daily operations of banks, various types of risks are managed, including market risk, operational risk, legal risk, compliance risk, credit risk, and liquidity risk. Among these, credit risk stands out as the primary financial risk influencing overall bank performance. It pertains to the potential for the net worth of assets to fluctuate due to counterparties failing to meet their debt obligations (Pyle, 1997).

Credit risk is commonly assessed using metrics such as the non-performing loan ratio (Ruziqa, 2013). Effectively managing credit risk remains challenging and complex, especially amid advancements in banking technology aimed at accelerating decision-making speed and reducing the costs associated with controlling credit risk (Lapteva, 2009). The Bank of Ghana (2018) highlighted that challenges within the banking sector often stem from credit risk, notably non-performing loans and weak corporate governance practices.

Financial performance encompasses a comprehensive evaluation of a company's overall financial health, including its assets, liabilities, equity, expenses, revenues, and profitability. This evaluation is typically conducted using financial statements such as the Income Statement, Balance Sheet, and Cash Flow Statement. Financial performance analysis involves calculating specific financial ratios and formulas. These metrics, such as gross profit margin, working capital, return on assets, current ratio, return on equity,

leverage, and inventory turnover ratio, provide insights when compared with historical data and industry benchmarks, offering a clear picture of the company's financial strength and operational efficiency.

Credit risk management is pivotal to the overall financial performance of financial institutions, particularly within the banking sector where it has become a significant area of concern. The contribution of net interest income to total income often diminishes due to the impact of credit risk. Many commercial banks in Nepal have been observed approving loans without rigorous examination criteria, leading to increased instances of loan defaults and non-performing loans. Consequently, the importance and relevance of effective credit risk management in the financial sector cannot be overstated.

A robust credit risk management practice is essential for ensuring the long-term sustainability of banking and financial institutions. It not only enhances the bank's reputation and popularity but also boosts depositor confidence in investing. Various techniques can be employed to mitigate credit risk. For instance, institutions considering extending credit can opt for credit insurance on invoices issued to borrowers. Alternatively, they may enforce shorter payment terms to minimize the period of credit risk exposure.

Thus, systematic and thorough management of loans and credit operations is crucial for maintaining the safety, security, and stability of the commercial banking sector.

1.2 Statement of the Problem

The banking system plays a critical role in fostering a country's economic development and ensuring financial stability. The primary objective of banks is to operate profitably while managing risks, particularly non-performing assets and credit risk, which directly impact their profitability. As a result, governments and central banks regulate banks extensively in most countries. Regulatory agencies are instrumental in maintaining oversight and control over banks because the performance of banks has far-reaching implications for the entire economy of a country.

Tabari et al. (2013) identified factors such as bank size, capital adequacy, gross domestic product (GDP), and inflation as contributors to bank profitability, whereas credit risk has a detrimental effect on profitability. Historically, regulators have focused on managing credit and operational risks, with less emphasis on liquidity risk. However, the subprime mortgage crisis revealed that liquidity risk can have severe consequences for banks.

Effective credit risk management remains crucial for the banking and financial sector and represents a significant area for future research. Owolabi and Obida (2012) found a significant relationship between capital adequacy ratios and bank performance indicators. Syafri (2012) observed that variables like loans to total assets, total equity to total assets, and loan loss provisions positively influence profitability, while economic growth and non-interest income do not significantly impact bank profitability.

Studies by Kosmidou (2008), Saona (2011), and Rahman and Farati (2012) underscore the positive correlation between bank profitability and capital adequacy. Oyetan (1997) argued that indicators such as capital adequacy, asset quality, managerial competence, profitability, and liquidity are crucial for assessing a bank's financial condition and performance.

Goddard et al. (2004) suggested that higher capital adequacy ratios indicate banks operate with caution, while Pasiouras and Kosmidou (2007) posited that banks with sufficient capital can reduce reliance on costly external funds and achieve higher profitability.

Despite numerous studies conducted globally on these topics, there remains insufficient evidence regarding the specific impact of credit risk on the performance of Nepalese commercial banks using current data.

Thus, this study has raised the following issues:

- What are the credit risk management factors that affect the profitability of commercial banks in Nepal?
- Whether credit risk factors are significantly related with profitability of commercial banks in Nepal?
- What extent the credit risk management variables affect the profitability of commercial banks?

1.3 Objectives of the Study

The objectives of the study are to solve the following queries.

- To identify the current status of credit risk and financial performance of Nepalese commercial banks
- To analyze the relationship between credit risk factors and financial performance of Nepalese commercial banks
- To analyze the impact of credit risk on financial performance of Nepalese commercial banks

1.4 Rationale of the Study

Investing in shares attracts people looking to maximize returns and grow their wealth, making dividend policy a crucial tool for attracting and retaining investors while maintaining company goodwill. Central to this policy is the decision on how much of earnings should be distributed to shareholders as dividends versus retained within the company. This decision, managed carefully by financial managers, directly impacts the firm's value. The primary goal of any dividend policy should be to enhance shareholder value.

Dividends play a critical role in the realm of common stock investments. If dividends fall short of market expectations, stock prices can decline. Moreover, dividend payouts reduce the amount of earnings retained within the firm, influencing total internal financing available. These insights are particularly pertinent for commercial banks and other financial institutions. The major significance of the study stated as:

- The study aims to provide valuable insights to investors and bank management alike.
- It is expected to benefit stock brokers, financial agencies, policymakers, and various stakeholders in making informed decisions.

- The research aims to assist policymakers in formulating effective dividend policies.
- Those directly or indirectly involved with financial institutions stand to gain from the findings.
- Moreover, the study also fulfills requirements for the Master of Business Studies program at Tribhuvan University.

1.5 Limitations of the Study

Like all studies, this research has its limitations, which stem from various factors such as differences in institutional characteristics, study duration, the reliability of statistical data, and the tools and techniques employed. In this case, the study relies solely on secondary data sources. Consequently, the findings are constrained by the accuracy and completeness of information available in the annual reports of selected banks and financial reports published by Nepal Rastra Bank. Therefore, caution must be exercised when generalizing the study's findings to other contexts.

Moreover, the study assumes a level of uniformity among banks, which may not hold true due to differences in size, objectives, and other characteristics among the sampled institutions. By focusing on a limited number of commercial banks from a larger population, the study may not fully capture the overall financial landscape of financial institutions in Nepal.

Additionally, the research only considers selected internal factors that influence profitability, based on available literature and research articles within the constraints of time and data availability. This limitation underscores the need for further comprehensive research to explore a broader range of factors impacting financial performance in this context.

1.6 Chapter Plan

This study is structured into five comprehensive chapters to effectively achieve its objectives. Each chapter serves a distinct purpose as outlined below:

Chapter-I: Introduction

The first chapter introduces the study with a general background, statement of the problem, objectives, significance, and organization. It sets the context by providing an overview of the research scope and its relevance.

Chapter-II: Review of Literature

The second chapter includes a conceptual review and a thorough examination of literature relevant to the study, encompassing global perspectives and specific studies conducted in Nepal. It concludes with a synthesis of findings and key insights from existing research.

Chapter-III: Research Methodology

Chapter three outlines the research methodology, detailing the research design, sources of data, selection criteria for enterprises, models used for data analysis, and acknowledges the study's limitations. This chapter provides a framework for conducting the study systematically.

Chapter-IV: Results and Discussions

Chapter four presents a structured analysis of the data collected. It is divided into two sections: analysis of secondary data and a discussion that interprets the key findings. This section critically examines the results in relation to the study's objectives.

Chapter-V: Summary and Conclusion

The final chapter offers a comprehensive summary of the entire research journey covered in chapters one to four. It encapsulates the major conclusions drawn from the study and

includes a dedicated section for recommendations and suggestions for future research based on the study's findings. This organizational structure ensures clarity and coherence in presenting the study's objectives, methodology, findings, and implications, thereby contributing valuable insights to the field of study.

CHAPTER II
REVIEW OF LITERATURE

This chapter offers a comprehensive review of empirical studies and conceptual frameworks, structured into five distinct sections. The first section delves into theoretical perspectives, while the second section focuses on conceptual reviews. The third part provides an overview of relevant studies conducted in both developed and emerging financial markets worldwide. Additionally, the fourth section examines literature specific to Nepal. Finally, the fifth section synthesizes the findings, identifying research gaps and offering concluding remarks on both the conceptual and empirical reviews.

A literature review serves as a critical examination of current knowledge, encompassing substantive findings and theoretical/methodological contributions to the topic under study. This section provides a concise summary of existing research findings and insights relevant to the subject matter.

2.1 Theoretical Review

Portfolio Theory

The Portfolio Theory, also known as Modern Portfolio Theory (MPT), holds significant importance in contemporary business practices. Developed by Harry Markowitz in 1952, this theory has been widely adopted by banking sectors and Microfinance Institutions (MFIs). Given the inherent high risk in banking and finance, MPT is utilized extensively to manage portfolios effectively.

In the realm of MFIs, the application of tools like Value at Risk (VaR) alongside portfolio risk management helps mitigate exposure to interest rate and market dynamics. MPT provides investors with a framework to evaluate the expected risk and returns associated with their investment portfolios. Emphasizing statistical measures, MPT

assists investors in projecting the risks they face and the expected returns from their asset portfolios.

Central to MPT is the idea that portfolio exposure can be minimized and the expected rate of return increased by combining securities with diverse price movements. This diversification strategy aims to optimize risk-adjusted returns for investors, aligning with the principles of modern financial management.

Value at Risk Theory

The Value at Risk (VaR) theory is employed to assess the probability of losses within portfolios, utilizing statistical analysis of historical price movements and market uncertainties. This approach allows institutions, including banking sectors and investment firms, to quantify and manage their risks effectively.

VaR is particularly valuable for estimating the maximum potential loss an investment may face over a specific time frame and with a given level of confidence. It involves three key variables: the amount of potential loss, the probability of that loss occurring, and the time horizon under consideration. This framework helps in determining the extent of risk exposure associated with investments.

In practice, VaR is instrumental in measuring credit risk stemming from non-performing loans and assessing the overall portfolio risk that Microfinance Institutions (MFIs) may encounter. By quantifying potential losses, VaR aids in safeguarding financial stability and guiding strategic risk management decisions in the financial sector.

Liquidity Risk Theory

Liquidity risk is a critical vulnerability that often precedes severe market crises, serving as a key precursor to heightened credit and market risks. According to Acerbi and Scandolo (2007), financial institutions must effectively identify and classify the liquidity risks they face. In the context of microfinance, the ability to meet liquidity requirements

and the sources available to fulfill these needs depend significantly on institutional operations, product portfolios, cash flow statements, and overall balance sheet composition.

It is imperative for financial institutions to continually assess their liquidity positions to mitigate potential adverse impacts on earnings and capital. This proactive approach is crucial for maintaining financial stability amid fluctuating market conditions and evolving regulatory requirements.

The application of liquidity risk theory is particularly relevant in quantifying the liquidity risks associated with non-performing loans and portfolios at risk within Microfinance Institutions (MFIs). By identifying potential changes in revenue and capital, this theory aids in assessing and enhancing the overall stability and performance of MFIs in the financial landscape.

2.2 Conceptual Review

A bank is a financial institution established to facilitate monetary transactions, handling money and financial values. Its primary functions include accepting deposits and mobilizing these funds through loans, profiting from the interest rate differential. Banks operate with various objectives such as improving performance, enhancing profitability, and increasing returns for investors, often at the expense of assuming higher risks. Managing these risks effectively is essential as it directly influences achieving these objectives. Soyemi, Ogunleye, and Ashogbon (2014) noted that higher risks are typically associated with greater potential returns, necessitating a balance between risk and reward.

Risk refers to the possibility of an adverse outcome occurring in the near future. It involves the potential that an action or activity chosen may lead to losses or undesirable consequences. In essence, risk represents the difference between expected outcomes and actual results, indicating the likelihood of deviation from anticipated returns.

Credit Risk

Credit risk refers to the likelihood of a financial institution experiencing a loss due to a borrower's failure to repay a loan. Simply put, it is the risk that a lender may not receive the principal and interest owed, leading to disruptions in cash flows and increased collection costs. This risk arises when a borrower is either unable or unwilling to fulfill their financial obligations.

Within a bank's portfolio, losses can arise from various scenarios, including outright default where a customer fails to meet their commitments in trading, lending, settlement, or other financial transactions. Additionally, losses may occur due to a decline in the value of assets held in the portfolio, caused by a deterioration in credit quality, whether real or perceived.

Loans are typically the primary source of credit risk for most banks, making effective management of credit risk crucial to maintaining financial stability and profitability. It involves assessing the creditworthiness of borrowers, monitoring their repayment capabilities, and implementing strategies to mitigate potential losses. By actively managing credit risk, banks aim to safeguard their assets and ensure sustainable performance in the face of economic fluctuations and borrower uncertainties.

Operational Risk

Operational risk is fundamental to all business operations, encompassing the potential for financial loss arising from inadequate or failed internal processes, people, systems, or external events. This risk category includes incidents such as internal and external fraud, natural disasters, cyber security breaches, and other unexpected disruptions to business continuity. At its core, operational risk is associated with human error, system malfunctions, and deficiencies in operational procedures and controls.

Operational risk permeates across all products and daily business activities within an organization. In the banking sector, operational risk is particularly intricate compared to

other industries due to its interconnectedness with critical banking risks like market risk and credit risk. Each bank possesses its own unique operational risk profile, influenced by its operational structure, processes, and risk management framework.

Effectively managing operational risk involves identifying potential vulnerabilities, implementing robust controls and procedures, and continuously monitoring for emerging threats. By addressing operational risk proactively, banks strive to mitigate financial losses, protect their reputation, and uphold operational resilience in an evolving business environment.

Market Risk

Market risk encompasses the potential for individuals or entities to face financial losses as a result of factors that influence the performance of investments within financial markets. It involves the risk of experiencing losses in both on-balance sheet and off-balance sheet positions due to adverse movements in market prices. Often referred to as systematic risk, market risk introduces uncertainty into investment decisions. There are several types of market risk, this risk arises from fluctuations in interest rates, impacting the value of investments such as bonds, loans, and other interest-sensitive instruments. Currency risk relates to potential losses stemming from changes in exchange rates, affecting investments denominated in foreign currencies. Businesses with international operations or investments are particularly susceptible to currency risk. Commodity risk refers to the potential for losses due to fluctuations in commodity prices. Investments tied to commodities like oil, gold, and agricultural products are vulnerable to commodity risk. Country risk involves the possibility of losses due to political, economic, or social instability in a specific country. Investments tied to the economy or assets of a particular country face exposure to country risk. Each type of market risk presents distinct challenges and considerations for investors and financial institutions. Managing market risk effectively requires the implementation of strategies such as hedging through derivatives, diversification across asset classes and geographical regions, and thorough analysis of market trends and economic indicators. These practices help mitigate potential

losses and optimize investment returns in the dynamic and often unpredictable environment of financial markets.

Liquidity Risk

Liquidity risk refers to the potential threat to an institution’s financial stability arising from its inability, whether actual or perceived, to meet its financial obligations. Liquidity itself denotes how easily an asset or security can be converted into cash in the market.

The term "liquidity" is multifaceted, often used to describe how quickly and cost-effectively an asset can be converted into cash. It can also characterize a company based on its cash or near-cash assets; higher liquidity indicates a greater ability to meet financial obligations promptly.

Risk management involves assessing and evaluating risks, followed by developing strategies to mitigate them. Strategies can include transferring risks to other parties or avoiding them altogether. With the extensive expansion of the banking system in recent years, the associated risks have also significantly increased. Effective risk management in the banking sector plays a pivotal role in fostering economic growth. Poor risk management practices can hinder banks from achieving their strategic goals, potentially leading to financial instability or even bankruptcy.

Banking activities inherently involve various risks, which are considered manageable when they are well-understood, controlled, and measured within the bank's capacity to withstand adverse effects. Sound risk management tools and techniques enable banks to take calculated risks, mitigate predictable risks, and prepare for unforeseen challenges.

Efficient risk management enhances a bank's efficiency, profitability, and ability to attract customers while ensuring compliance with regulatory guidelines. It involves benchmarking loan performance, conducting thorough credit assessments, and evaluating borrowers' repayment capabilities before approving loan applications.

Theoretical and empirical analyses underscore the critical role of credit risk management in commercial banks. Studies examining the impact of credit risk on profitability emphasize various methods and techniques used across institutions. Higher credit risk increases the likelihood of unrecoverable debts, potentially lowering profitability. This study aims to address gaps in existing literature, particularly in the Nepalese context, by providing insights into the relationship between credit risk, capital adequacy, and bank profitability. By employing consistent and robust measures, this research seeks to contribute valuable findings to the field of banking and finance.

Credit Risk Management

Credit risk management is a crucial element within a comprehensive risk management framework and is essential for the sustained success of financial institutions. It involves employing various strategies to assess, mitigate, and manage uncertainties associated with potential defaults on loans and other credit exposures.

Afriyie and Akotey (2012) emphasize that credit risk management encompasses a structured approach that includes risk assessment, allocation of managerial resources to mitigate risks, and strategic decision-making such as risk transfer, risk reduction, risk avoidance, or accepting specific risk consequences. Bielecki and Rutkowski (2013) further suggest that managing credit risk involves techniques like hedging against default able claims and integrating risk management into portfolio management strategies.

According to Santomero and Babbel (1997), fundamental principles of effective credit risk management include establishing clear standards and financial reporting practices, defining underwriting authority and loan limits, developing investment guidelines and strategies, and implementing incentive schemes. The effectiveness of these measures is bolstered by evaluating asset quality, assessing borrower creditworthiness, and other operational factors that impact the efficient deployment of funds.

Poorly managed loans can significantly impact a commercial bank's performance and overall productivity (Said, 2018). Unproductive loans not only strain financial resources

but also undermine profitability and operational efficiency. A robust credit risk management framework helps mitigate risks associated with credit concentrations, maintains credit discipline, avoids aggressive underwriting practices, and ensures sustainable product pricing strategies.

In summary, sound credit risk management practices are essential for financial institutions to navigate uncertainties effectively, maintain financial stability, and achieve long-term profitability amidst dynamic market conditions.

2.3 Empirical Review

Bhatt et al. (2023) conducted a study focusing on the determinants of credit risk management and its impact on the performance of commercial banks in Nepal. Their research explored how credit risk management serves as a crucial link between market risk analysis, environmental risk, credit appraisal metrics, and the overall performance of commercial banks. Their findings highlighted a positive relationship between environmental risk factors and effective credit risk management. Additionally, the study underscored the significant influence of credit appraisal standards and market risk analysis on enhancing credit risk management practices within these banks.

Bagale (2023) investigated the relationship between credit risk management and profitability among commercial banks in Nepal over a ten-year period from 2011 to 2020. Using statistical tools such as mean, standard deviation, correlation, and panel data regression analysis, the study revealed a substantial impact of credit risk on the profitability of these banks. The findings underscored that proficient credit risk management is a pivotal predictor for ensuring sustained profitability in the banking sector.

Abel Sam and Mukarati Josheph (2023) explored the dynamics of credit risk and bank profitability in Zimbabwe amidst its economic challenges. Employing an ARDL methodology, their study differentiated itself from others by contextualizing the Zimbabwean economic crisis. Their research highlighted that factors like capital

adequacy, bank size, and economic growth positively influenced bank profitability, whereas inflation negatively impacted profitability. They found a clear negative correlation between credit risk and both short-term and long-term profitability, suggesting that policies aimed at mitigating credit risk could significantly enhance bank performance.

Azam (2022) analyzed the impact of risk management practices on the sustainability of microfinance institutions in Sri Lanka. The study aimed to establish a link between effective risk management and the long-term viability of the microfinance sector. Using simple regression analysis and data from surveys, annual reports, and the Microfinance Information Exchange (MIX), the research concluded that robust risk management practices positively correlated with the sustainability of microfinance institutions in Sri Lanka. This highlighted the critical role of risk management in ensuring the stability and growth of the microfinance sector, which has become integral to the socio-economic development of the country.

Yeasin (2022) conducted a study to evaluate the impact of credit risk on the banking sector in Bangladesh, focusing on how credit risk management practices influence the financial performance of commercial banks. Employing a deductive research design, the study utilized ten years of secondary data from six commercial banks in Bangladesh, employing panel regression analysis. The study identified non-performing loans (NPL), capital adequacy ratio (CAR), and loan-to-deposit ratio (LDR) as key indicators of credit risk, while assessing return on assets (ROA) as a measure of bank performance. The findings underscored that NPL and CAR had a significant negative impact on the financial performance of commercial banks, whereas LDR positively influenced bank profitability.

Pandey and Samanta (2021) investigated the relationship between credit risk and profitability among selected commercial banks listed on the National Stock Exchange. Their research spanned nine years (2010-2019), analyzing secondary data from three public and three private sector banks. Using pre-provision profit to total loans and

advances over loan funds as a measure of credit risk, the study found no significant relationship between credit risk and profitability measured by return on assets (ROA). However, they observed a significant correlation between advances over loan funds and profitability measured by return on equity (ROE).

Chhetri, Guna Raj (2021) explored the impact of credit risk on the financial performance of commercial banks in Nepal using panel data from 17 banks over a five-year period (2015-2020). Their regression analysis revealed that the non-performing loan ratio (NPLR) had a statistically significant negative impact on ROA, while the capital adequacy ratio (CAR) and bank size did not significantly affect ROA. Credit-to-deposit ratio (CDR) showed a positive relationship with ROA, albeit statistically insignificant. The study recommended that Nepalese banks enhance their credit risk management practices to minimize non-performing loans and improve financial performance.

Alshatti (2020) investigated the relationship between credit risk management and financial performance among Jordanian commercial banks over the period 2011-2019. Using ROA and ROE as measures of financial performance, the study concluded that indicators such as non-performing loans to gross loans, provision for facility loss to net facilities, and leverage ratio significantly influenced credit risk management. The research underscored the importance of robust credit risk management strategies to enhance profitability and mitigate risks in Jordanian banks.

Kidane (2020) analyzed the impact of credit risk management on the profitability of Ethiopian commercial banks using data from the National Bank of Ethiopia spanning ten years (2010-2019). Employing correlation analysis and a fixed effect model, the study found that non-performing loans did not significantly affect bank profitability. However, bank-specific factors like capital adequacy ratio (CAR), loan-to-asset ratio (LAR), non-performing loan ratio (NPLR), bank size, liquidity, and macroeconomic factors such as inflation and gross domestic product (GDP) significantly impacted bank profitability. The study recommended that Ethiopian banks focus on both internal and external factors in their credit risk management strategies to enhance profitability.

Ogboi and Unuafe (2019) investigated the influence of credit risk management and capital adequacy on the financial performance of Nigerian banks from 2014 to 2018. Using panel data models, the study analyzed loan loss provisions (LLP), non-performing loans (NPL), loans and advances (LA), capital adequacy (CA), and return on assets (ROA). The findings indicated that effective credit risk management and capital adequacy positively affected bank financial performance, while loans and advances had a negative impact on profitability during the study period.

Ahmad and Ariff (2018) conducted an analysis on the determinants of credit risk in commercial banks within emerging economies, comparing them with developed economies. Their study reviewed existing credit risk theories and empirical literature, identifying eight key determinants. They found that two to four factors were significantly correlated with credit risk within the banking systems of emerging economies. Specifically, regulatory capital and effective management quality were crucial factors, especially in loan-dominant banks. Surprisingly, leverage was found to have no significant correlation with credit risk during the test period. The researchers employed data transformations and statistical corrections to ensure the reliability and validity of their findings, and they used the Akaike Information Criterion (AIC) to test the robustness of their model. They suggested that their model could be applied to analyze credit risk in other emerging economy banking systems to generalize their findings.

Akter and Roy (2017) investigated the impact of non-performing loans (NPL) on the performance of commercial banks listed on the Dhaka Stock Exchange (DSE). Their study focused on a sample of 30 listed commercial banks in Bangladesh, using secondary data obtained from annual reports and the DSE spanning from 2008 to 2013. The findings revealed a significant negative relationship between non-performing loans and bank performance.

Tan et al. (2017) studied the effects of risk-taking behavior, competition, and cost efficiency on bank profitability in China. They identified capital risk, security risk, credit risk, liquidity risk, and insolvency risk as significant factors influencing the profitability

of Chinese commercial banks. Their research highlighted that credit risk, capital risk, and security risk were negatively related to bank profitability, while insolvency risk and liquidity risk showed positive correlations with return on assets (ROA) and net interest margin.

Githaiga (2017) analyzed the impact of credit risk management practices on the performance of financial institutions in Kenya. Conducting a comprehensive study involving all 43 licensed commercial banks in Kenya from 2011 to 2015, Githaiga employed the CAMEL indicators to assess credit risk management determinants and their relationship with financial performance. The study used multiple regression analysis and found a strong relationship between components like capital adequacy management efficiency and liquidity with financial performance (ROA). However, credit risk management showed a weak and negative relationship with financial performance, suggesting that improvements in credit risk management could enhance overall bank performance.

Bizuayehu (2016) investigated the influence of credit risk management on the profitability of banks in Ethiopia. Using secondary data from eight banks over eleven years, Bizuayehu employed correlation and multiple regression analysis with a random effect model. The study identified non-performing loan ratio and capital adequacy ratio as having a significant inverse impact on bank profitability. Moreover, factors such as bank size and loan-to-deposit ratio positively affected financial performance. The study emphasized that while bank-specific factors significantly influenced profitability, external factors like inflation, GDP, and interest rate spreads did not show significant impacts on bank profitability.

Bhattarai (2016) investigated the impact of credit risk on the performance of commercial banks in Nepal, employing descriptive and causal-comparative research designs. Analyzing pooled data from 14 commercial banks over the period 2010-2015 using regression models, the study found that cost per loan assets positively influenced bank performance, while non-performing loan ratios had a negative effect. Additionally, bank

size was positively associated with performance, whereas variables like cash reserve and capital adequacy ratio did not significantly affect bank performance. This study underscored the significant relationship between credit risk indicators and bank performance.

Muriithi et al. (2016) explored the effect of credit risk on the financial performance of Kenyan commercial banks from 2005 to 2014. They assessed credit risk using metrics such as loan loss provisions, capital to risk-weighted assets ratio, and asset quality, while financial performance was measured by return on equity (ROE). Employing panel data techniques like fixed effects estimation and generalized method of moments (GMM), the study found a significant negative relationship between credit risk and bank profitability. High levels of non-performing loans adversely impacted both short-term and long-term bank performance. Recommendations included enhancing credit analysis capabilities and establishing clear credit policies and guidelines for lending.

Jiaqian (2016) investigated the relationship between regulatory capital buffers in China's commercial banks and the business cycle from 2005 to 2014. Using an unbalanced panel of 18 listed banks, the study found a robustly significant negative relationship between bank capital buffers and China's business cycle. The study also highlighted that higher asset sizes prompted banks to maintain larger capital buffers, which contradicted the "too big to fail" theory. However, the relationship between capital buffers and loan loss provisions was not statistically significant, indicating that Chinese banks' decisions on capital buffers balanced profit and cost considerations.

Manandhar et al. (2015) examined the determinants of credit risk in Nepalese commercial banks using data from 17 banks over the period 2008-2013. The study incorporated macroeconomic factors such as GDP growth rate, inflation rate, and interbank rates, alongside bank-specific factors like non-performing loan ratios and capital adequacy ratios. Employing correlation and descriptive analyses, the study revealed that previous year's capital adequacy ratio and non-performing loans significantly influenced current

credit risk levels in Nepalese banks. The findings underscored the broader impact of macroeconomic conditions on credit risk.

Marahatta et al. (2015) studied the determinants of overall financial performance in Nepalese commercial banks using secondary data from 15 banks over 2008-2014. They employed pooled cross-sectional data analysis and regression models to assess the impact of variables such as net interest margin, return on assets, capital adequacy ratio, and macroeconomic factors like real GDP and inflation. The study found a negative relationship between capital adequacy ratio and bank performance, highlighting its complex role in influencing bank profitability.

Bhattarai et al. (2015) explored the relationship between various financial performance measures (ROE, ROA, NIM) and factors like earning ability, asset quality, liquidity position, and management efficiency in Nepalese commercial banks. Their findings indicated positive associations between earning ability, asset quality, and liquidity position with all performance measures. However, capital adequacy ratio showed a negative relationship with ROE and NIM, but a positive one with ROA. The study underscored the critical role of credit risk, noting its significant impact due to challenges in collateral assessment and prediction.

Table 1

Summary of Review

S.N.	Writer	Objective	Method	Major Findings
1.	Bhatt, et. al (2023)	To recognize the determinants of credit risk management and their relationship with bank	Sample selection, correlation and regression method	Positive relationship between environmental risk and credit risk management

		performance		
2.	Bagale (2023)	To analyze the effect of credit risk on the profitability of commercial banks in Nepal	Descriptive and casual comparative research design, correlation and regression analysis	Bank size and liquidity ratio have a positive impact on ROE, CAR has significant negative impact on equity
3.	Yeasin, et. al. (2022)	To examine the impact of liquidity risk on the financial performance of commercial banks in Bangladesh	Quantitative approach using secondary data	Insufficiency of liquidity, banks profitability negatively affectd by NPLR and CAR
4.	Azam (2022)	To identify the impact of risk management on the sustatainability of microfinance industry in Sri Lanka	Primary and secondary data collection and simple regression anlaysis	Effective credit risk management had a significant positive relationship with the microfinance industry
5.	Chhetri (2021)	To investigate the effect of credit risk on the financial performance of Nepalese commercial banks	Secondary data collection, regression model	Non-performing loan ratio had negative and statistically significant impact whereas credit to deposit had insignificant positive relationship with ROA.
6.	Alshatti (2020)	To examine the impact of credit risk on the performance of Jordanian	Quantitative approach using secondary data, panel regression	Excess amount of non-performing loans, emphasize more on credit risk management

		commercial bank	model	
7.	Kidane (2020)	To analyze the impact of credit risk management on the profitability of Ethiopian commercial banks	Correlation analysis and fixed effect model	Profitability of commercial banks not affected by non-performing loan
8.	Ogboi (2019)	To examine the impact of capital adequacy and credit risk on financial performance in Nigerian banks	Descriptive and casual comparative research design, panel data model	Sound credit risk management and capital adequacy impacted positively and loans and advances impact negatively on bank performance
9.	Ahmad &Ariff (2018)	To analyze the determining factors of credit risk of commercial banks in emerging economies	Quantitattive approach, corelation and regression analysis	Impact of credit and bank capital similar to developed Asian countries and USA, impact of liquidity positive in Asian countries but negative in USA
10.	Githaiga (2017)	To examine the effect of practice oncredit risk management on the performance of banking institutions of Kenya	Descriptive and casual comparative research design, CAMEL model	Capital adequacy management and liquidity had a strong relationship with ROA and credit risk had a weak negative relationship with ROA.
11.	Akter& Roy (2017)	To investigate the effect of NPL on	Secondary data, correlation and	Significant relationship between net profit margin

		the performance of listed commercial banks of Dhaka Stock Exchange	regression analysis	and all the independent variables
12.	Bhattarai (2016)	To examine the impact of credit risk on the financial performance of Nepalese commercial banks	Descriptive and casual comparative research design, correlation and regression analysis	Significant relationship between bank performance and credit risk indicator, poor credit risk management of Nepalese commercial banks
13.	Jiaqian (2016)	To observe the relationship between Chinese business cycle and the capital buffers of Chinese commercial banks	Secondary data, correlation and regression analysis	Significant negative relationship between the economic cycle and bank capital buffers
14.	Marahatta (2015)	To examine the determinants of bank performance in Nepalese commercial banks	Pooled cross-sectional data analysis, multiple regression model	Capital adequacy ratio was negatively related to the firms' performances
15.	Manandhar (2015)	To investigate the determinants of credit risk in Nepalese commercial banks	Descriptive, correlation and casual comparative research design	Present credit risk of commercial banks were influenced by the previous year's non-performing loans and capital adequacy

2.4 Review of Literature in Nepalese Context

Parajuli (2023) explored the impact of credit risk management on the profitability of Nepalese commercial banks using data from five banks spanning 2011 to 2021. Utilizing correlation and multiple regression analyses, the study revealed significant associations between non-performing loans (NPL) and capital adequacy ratio (CAR) with bank profitability. However, no significant relationship was found between loan-to-deposit ratio (CDR) and profitability. The findings underscored that high NPL ratios and inadequate CAR negatively affected return on assets (ROA) and earnings per share (EPS), emphasizing the importance for banks to reduce NPL ratios and maintain adequate capital reserves.

Poudel (2022) investigated credit risk management in Nepalese cooperative societies, highlighting the unique challenges faced by these institutions compared to banks due to less stringent regulatory requirements. The study employed both quantitative and qualitative methods, including primary surveys conducted among 126 cooperatives in Kathmandu and analysis of audit reports. It identified prevalent issues such as poor governance, unethical practices, and transparency issues affecting credit risk management. The study recommended enhancing risk prevention strategies and implementing robust control mechanisms to improve financial performance in the cooperative sector.

Khadka (2021) focused on loan management practices at Siddhartha Bank Limited (SBL), evaluating trends in deposit collection, lending practices, and overall financial performance. The study, based on analysis of SBL's performance indicators, highlighted a strong correlation between deposit growth and loan disbursement. It found that fixed deposits made the highest contribution to overall deposits, indicating robust liquidity management. The bank's capital adequacy ratio exceeding regulatory standards indicated strong lending capacity and readiness to handle future liquidity challenges.

Gnawali (2020) examined the relationship between non-performing loans (NPLs) and financial performance in Nepalese commercial banks using data from 13 banks. Employing regression analysis, the study investigated the impact of NPL ratios, loan-to-deposit ratios, firm size, capital adequacy ratios, and loan loss provisions on return on assets (ROA) and return on equity (ROE). The findings highlighted that NPLs significantly influenced bank profitability, underscoring the critical role of effective credit risk management in maintaining financial stability. The study emphasized the detrimental effects of high NPLs on bank revenue and overall economic stability.

Shrestha (2019) investigated the impact of non-performing loans (NPLs) on the profitability of commercial banks and factors contributing to their accumulation. The study recommended that banks adopt a cautious approach and realistic criteria when granting loans and advances. Furthermore, it suggested enhancing employee training and development programs to improve proficiency in credit appraisal, monitoring, and overall risk management. The study highlighted the need for stricter regulatory measures regarding loan classification and provisioning, recommending that regulatory bodies enforce directives to create a supportive environment for commercial banks.

Khanal (2018) analyzed the lending policies of commercial banks in Nepal, focusing on liquidity and asset management practices at GIBL and SBI. The study evaluated investment policies and the growth ratio of loans and advances in these banks. Findings indicated that both banks maintained satisfactory current assets exceeding current liabilities, although cash reserve ratios fluctuated significantly. GIBL demonstrated better management of current and cash reserve ratios compared to SBI, while asset management ratios suggested less effective deposit utilization by GIBL compared to SBI.

Shrestha (2018) examined the comparative credit management practices among Nepalese commercial banks, analyzing sector-wise and security-wise loans and advances, prioritization of loans to deprived sectors, non-performing loans, profitability, and liquidity issues. Descriptive statistical methods were employed for data analysis, revealing varying liquidity levels among banks. HBL was identified as relatively safe

from liquidity risks, whereas SBL and NBL could face liquidity challenges with heavy depositor withdrawals. NBL allocated higher deposits to investments compared to SBI and HBL, with SBI leading in deposit mobilization for credit, followed by HBL and NBL.

Tuladhar (2017) investigated the impact of credit risk management on the profitability of Nepalese commercial banks using five years of secondary data from annual reports. Regression analysis showed that credit risk management significantly influenced bank profitability. Factors such as bank size, capital adequacy ratio, and coverage ratio positively impacted financial performance. Conversely, leverage ratio, non-performing loans, and the presence of female board members were associated with negative effects on bank performance. The study recommended effective credit risk management practices, including maintaining optimal capital adequacy ratios, rigorous monitoring of non-performing loans, enhancing coverage ratios, balancing leverage ratios, and promoting gender diversity on boards to improve overall financial performance.

2.5 Research Gap

After reviewing various articles, books, and journals, it becomes evident that the credit facilities provided by banks significantly influence their success or failure. Most existing research focuses on how credit risk impacts the profitability of Nepalese commercial banks. In contrast, studies on credit risk management and its effects in developed countries, where markets are efficient, are abundant.

There is also substantial literature on credit policy and the financial performance of commercial banks. However, research specifically addressing credit risk management in Nepalese government banks, operating within an imperfect market and import-driven economy, remains scarce. Moreover, some banks in Nepal lack sufficient capital to absorb economic shocks, highlighting the need for effective credit risk mitigation strategies.

Therefore, this study aims to fill these gaps by providing new insights that could potentially minimize the existing literature gaps. It seeks to contribute novel findings that shed light on the specific challenges and strategies related to credit risk management in Nepalese government banks, thereby enriching the overall understanding of banking practices in Nepal.

CHAPTER III
RESEARCH METHODOLOGY

The research methodology serves as a systematic approach to resolving research problems, employing various methods tailored to the study's objectives. This chapter is crucial as it establishes the foundation upon which the entire research is built. It outlines the procedures for data collection, details the instruments used for data analysis, and provides a comprehensive framework for addressing the research questions and testing the hypotheses proposed in the first chapter.

Specifically, this empirical study aims to investigate the impact of credit risk management on bank profitability. It delineates the precise steps undertaken to gather relevant data, the methodologies employed for analysis, and how these methods are applied to achieve the study's objectives effectively. This chapter thus forms the methodological backbone that ensures rigor and coherence in addressing the research problem at hand.

3.1 Research Design

The study utilized both descriptive and causal-comparative research designs to explore the factors influencing the performance of commercial banks in Nepal. The descriptive research design was employed to gather accurate and reliable data on the fundamental issues related to variables affecting the banks' performance. It aimed to present a clear, relevant, and authentic depiction of the current conditions and factual information.

Additionally, a causal-comparative research design was adopted to establish causal relationships between credit risk, capital adequacy, and the profitability of Nepalese commercial banks. This aspect of the study focused on examining how variables such as Capital Adequacy Ratio, Loan Loss Provision Ratio, Non-Performing Loan Ratio, Loans and Advances Ratio, Return on Equity, and Return on Assets interrelated over a decade-

long period spanning from fiscal year 2070/71 (2013/14 A.D.) to 2079/80 (2022/23 A.D.) across six commercial banks in Nepal.

3.2 Population and Sample

Currently, Nepal hosts a total of 20 commercial banks, all of which were considered within the scope of this research. However, due to constraints such as limited time and resources, it was impractical to analyze data from all banks for the study topic. Therefore, a judgmental sampling technique was employed to select a representative sample. From the pool of 20 commercial banks in Nepal, six were chosen for inclusion in this research: Agricultural Development Bank (ADB), Nepal Bank Limited (NBL), Nepal Investment Mega Bank (NIMB), Nepal Arab Bank Limited (NABIL), Himalayan Bank Limited (HBL), and Everest Bank Limited (EBL). This sample included two government banks, two domestic private banks, and two joint venture banks.

The selection criteria focused on various factors including profitability, capital base, organizational size, volume of lending and advances, investment activities, and overall profitability. The rationale behind this selection was primarily driven by considerations of survey costs, logistical efforts, and time limitations. To maintain consistency and reliability in data presentation, certain banks were excluded from the sample. These exclusion criteria encompassed banks that underwent mergers during the study period and those with less than 11 years of operational history in the economy.

3.3 Nature and Sources of Data

This study relied on secondary data sourced from the annual financial reports of six Nepalese commercial banks spanning a decade, from fiscal year 2070/71 (2013/14 A.D.) to 2079/80 (2022/23 A.D.). The variables examined in this research include loan loss provisions, non-performing loans, loans and advances, capital adequacy ratios, return on equity, and return on assets. These data were gathered from authoritative sources such as

the Banking and Financial Statistics and the Bank Supervision Reports published by Nepal Rastra Bank, along with the annual reports of the commercial banks involved.

3.4 Method of Data Analysis

This section outlines the statistical and econometric models utilized to analyze the secondary data in this study. The methods employed include descriptive statistics, correlation analysis, and regression analysis.

Descriptive statistics are employed to summarize the characteristics of the sample firms, providing measures such as mean, maximum and minimum values, and standard deviation for the variables under investigation.

Correlation analysis is used to assess the direction and strength of relationships between the dependent and independent variables.

Regression analysis is employed to explore the impact of independent variables on the dependent variables both individually and collectively. This method enables the examination of how changes in the independent variables relate to changes in the dependent variables.

Statistical tests of significance, such as the t-test and f-test, are utilized to validate the models. These tests help in determining the statistical significance of the relationships found through regression analysis. The analysis includes running f-tests using statistical software like the Statistical Package for the Social Sciences (SPSS) to evaluate the individual effects of variables.

Detailed discussions on the models and the results of the statistical tests are presented in subsequent sections of this study.

Model Specification

In this study, econometric models are employed to analyze the impact of credit risk on the profitability of Nepalese commercial banks using panel data analysis. The linear regression model used in this research to examine this relationship is formulated as follows:

Bank performance = *f* (NPLR, LLPR, LAR, and CAR)

More specifically, the given model has been segmented into the following models:

Model I:

Regression Model:

$ROA_{it} = \beta_0 + \beta_1 NPLR_{it} + \beta_2 LLPR_{it} + \beta_3 LAR_{it} + \beta_4 CAR_{it} + e_{it}$

Model II:

Regression Model:

$ROE_{it} = \beta_0 + \beta_1 NPLR_{it} + \beta_2 LLPR_{it} + \beta_3 LAR_{it} + \beta_4 CAR_{it} + e_{it}$

Where,

ROA= Return on Assets defined as net income divided by total assets, in percentage.

ROE= Return on Equity defined as net income divided by shareholders' equity

NPLR= Non-Performing Loan Ratio

LLPR= Loan Loss Provision Ratio

LAR= Loan and Advance Ratio

CAR= Capital Adequacy Ratio

e = Error Term

β_0 is the constant term and β_1, β_2, β_3, and β_4 are the beta coefficients of variables.

3.5 Research Framework and Definition of Variables

3.5.1 Conceptual Framework

A conceptual framework serves as a foundational structure that organizes and guides a research study, encompassing elements such as research questions, data collection

methods, analysis techniques, and interpretation of findings. It provides a systematic way of understanding and conceptualizing the relationships between dependent and independent variables, thereby elucidating the impact of credit risk on the profitability of Nepalese commercial banks.

Embaye et al. (2017) conducted a study on the impact of credit risk management on the financial performance of commercial banks in Eritrea, providing a justified basis for developing the following conceptual framework:

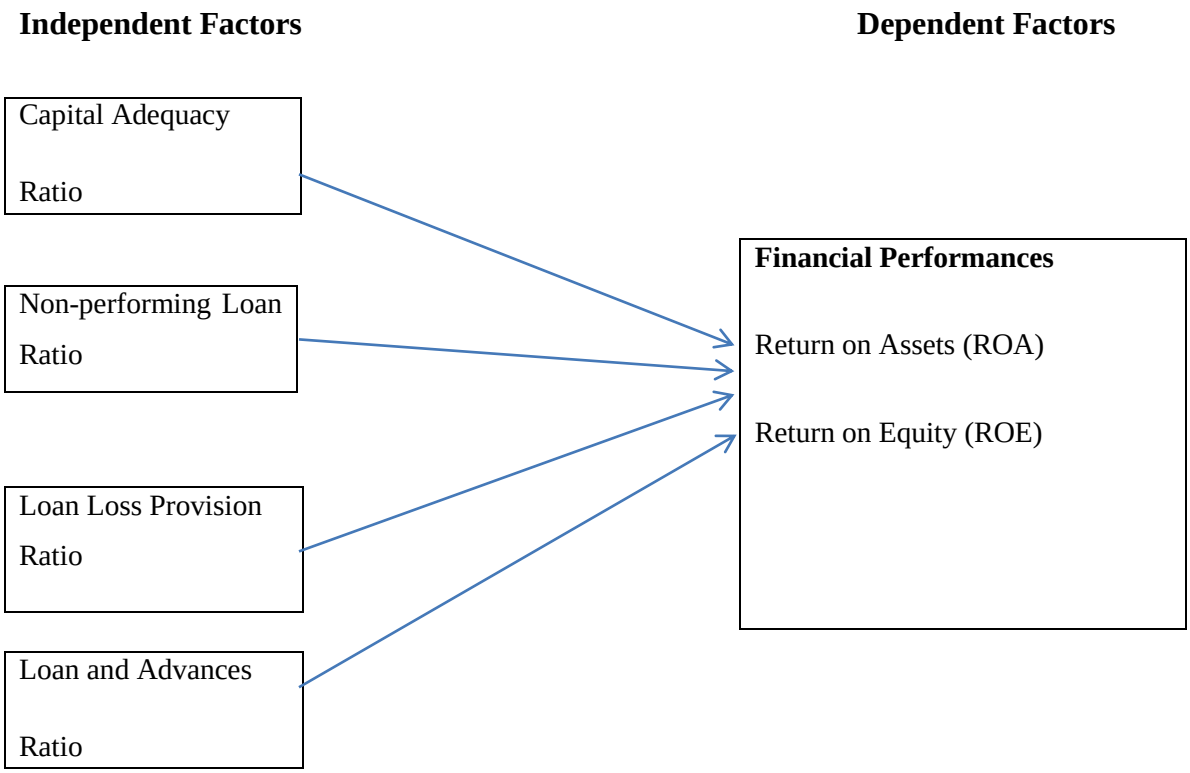

Figure 3.1 Conceptual Framework

Source: Ebayeet. al. (2017)

The conceptual framework of this study revolves around using Return on Assets (ROA) and Return on Equity (ROE) as dependent variables, and Non-performing Loan (NPL), Loans and Advances Ratio (LAR), Loan Loss Provision Ratio (LLP), and Capital

Adequacy Ratio (CAR) as independent variables. This framework aims to explore how these factors interact to influence the profitability of Nepalese commercial banks.

Empirical and theoretical analyses underscore the critical role of credit risk management in the operational effectiveness of commercial banks. Previous studies reviewed in the literature indicate a strong consensus that effective credit risk management practices are pivotal in enhancing bank profitability. Specifically, higher credit risk levels tend to correlate with lower profitability due to increased instances of loan defaults and subsequent losses.

This study seeks to address existing gaps in the literature, particularly in the context of Nepalese commercial banks. It aims to contribute by providing a comprehensive analysis that integrates various methods and techniques of credit risk management employed by different institutions. The research will specifically focus on clarifying contradictory findings from prior studies regarding the impact of credit risk and capital adequacy on bank profitability. Moreover, it aims to provide consistent and robust measures of variables that have been inconsistently applied in previous research conducted in Nepal.

Ultimately, the relevance of this study lies in its potential to significantly contribute to the existing body of literature. By filling gaps and resolving inconsistencies in prior research, the findings of this study are expected to provide valuable insights into how Nepalese commercial banks can optimize their credit risk management strategies to improve profitability effectively.

3.5.2 Operational Definitions

This section focuses on clearly defining the variables utilized in the study, both dependent and independent. The study aims to explore the relationship between these variables and their impact on bank profitability.

Dependent Variables (Bank Profitability Indicators)

Bank profitability is central to this research, and thus, the selection of appropriate measures to assess profitability is crucial. Various metrics exist for evaluating bank profitability, each chosen based on the study's objectives and industry standards. In this research, Return on Assets (ROA) and Return on Equity (ROE) are selected as the primary indicators of bank profitability. These metrics are widely recognized in the literature and are pivotal in evaluating a bank's financial performance.

a) Return on Assets (ROA)

Return on Assets (ROA) is defined as the ratio of net income to total assets, measuring the efficiency with which a bank's assets are utilized to generate profit (Vong & Chan, 2009). It indicates how effectively management utilizes the bank's assets to produce earnings. Mathematically, ROA is calculated as:

$$ROA = \frac{Net\ Profit}{Total\ Assets}$$

ROA provides insights into the profitability of a bank relative to its asset base. A higher ROA suggests better utilization of assets to generate earnings, whereas a lower ROA may indicate inefficiencies in asset management.

Return on Asset (ROA) is a metric frequently used to compare bank profitability across institutions with similar risk profiles, as it avoids distortions arising from differences in financial leverage (Bhattarai, 2014). From an accounting standpoint, ROA offers a comprehensive assessment of overall bank performance (Sinkey Jr & Sinkey Jr, 1992). ROA has been widely adopted as a key indicator of bank profitability in previous studies examining the relationship between credit risk management and bank performance, as evidenced by Alshatti (2015), Berríos (2013), Bhattarai (2014), Kaaya and Pastory (2013), Kurawa and Garba (2014), Nawaz et al. (2012), Ndoka and Islami (2016), Ogboi and Unuafe (2013), Adeusi et al. (2014), Poudel (2012), Zou and Li (2014), Zubairi and

Ahson (2014), among others. Therefore, ROA is justified as a suitable measure of bank profitability.

b) Return on Equity (ROE)

Return on Equity (ROE) is defined as the ratio of net income to total equity capital, representing the return earned by shareholders on their equity investment. It assesses how effectively management utilizes shareholders' invested capital to generate profits (Athanasoglou, Brissimis, & Delis, 2008). ROE is a critical metric for evaluating the efficiency and profitability of bank management based on the equity capital shareholders have committed to the institution. The formula for ROE is expressed as:

$$ROE = \frac{Net\ Profit}{Total\ Equity}$$

ROE provides insight into the profitability of shareholder funds invested in the bank. A higher ROE indicates more efficient use of equity capital to generate profits, whereas a lower ROE may suggest less effective management of shareholder investments. In financial institutions, a higher Return on Equity (ROE) indicates the ability to generate greater returns for shareholders. Investors typically favor higher ROE as it signifies better performance compared to industry peers (Saunders & Cornett, 2011). However, an increasing ROE can pose risks to the bank, as it suggests that net income is growing faster relative to total equity. This situation may lead to a reduction in equity capital, potentially breaching minimum regulatory capital requirements mandated by regulatory bodies, thereby increasing the risk of insolvency for the banks (Saunders & Cornett, 2011).

Previous empirical studies such as those by Aduda and Gitonga (2011), Afriyie and Akotey (2012), Alshatti (2015), Berríos (2013), Ndoka and Islami (2016), Adeusi et al. (2014), Zou and Li (2014), Zubairi and Ahson (2014) have utilized ROE as a key measure of profitability when examining the relationship between credit risk management

and bank performance. Therefore, ROE is justified as a suitable metric for assessing how effectively management utilizes shareholder equity in commercial banks.

In this study, Return on Asset (ROA) and ROE are employed as dependent variables to measure management effectiveness in utilizing assets and shareholder equity, respectively, in Nepalese commercial banks. This approach aligns with existing literature and aims to contribute to a deeper understanding of how credit risk management practices influence the financial performance of banks in Nepal.

Independent Variables (Credit Risk Management Indicators)

a) Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a crucial measure in banking, calculated as the ratio of a bank's capital to its risk-weighted assets. It indicates the proportion of a bank's capital in relation to its credit risk exposure (Poudel, 2012). This ratio is pivotal for regulatory compliance, as it ensures that banks maintain a specified level of capital to absorb potential losses and uphold financial stability (Reddy & Prasad, 2011). Banks with higher CAR are generally perceived as less risky, capable of meeting financial obligations, and safeguarding depositor funds, thereby enhancing overall system stability.

During economic downturns or financial crises, maintaining a robust CAR becomes even more critical as it enables banks to withstand adverse conditions without facing insolvency (Hyun & Rhee, 2011). However, stringent capital requirements can constrain banks' lending capacity, as they may need to curtail new lending or recover outstanding loans to comply with CAR thresholds (Hyun & Rhee, 2011). The significance of CAR in banking regulation became evident following the 2007 financial crisis, underscoring its role in preventing systemic risks.

Empirical studies examining the relationship between CAR and bank performance have yielded varied results. Some studies, such as those by Abdelrahim (2013), Afriyie and Akotey (2012), Bhattarai (2014), Kurawa and Garba (2014), and Ogboi and Unuafe

(2013), have found a positive association between CAR and bank profitability. Conversely, studies by Alshatti (2015), Zou and Li (2014), Ndoka and Islami (2016), and Poudel (2012) reported a negative correlation between CAR and bank performance. Despite these mixed findings, maintaining adequate CAR remains essential for mitigating risks and ensuring financial resilience in banks.

In this study, CAR is considered an independent variable crucial for assessing how effectively banks manage their capital to support profitability. By examining CAR alongside other credit risk management indicators, this research aims to contribute to a deeper understanding of its impact on the profitability of Nepalese commercial banks.

$$CAR = \frac{Tier\ One\ Capital + Tier\ Two\ Capital}{Risk\ Weighted\ Assets}$$

b) Non- Performing Loan Ratio (NPLR)

A non-performing loan (NPL) refers to a loan on which the borrower has not made scheduled payments for at least 90 days, indicating a significant risk of default. When a loan becomes non-performing, the likelihood of full repayment diminishes substantially. The Non-Performing Loan Ratio (NPLR) is a critical indicator of a bank's credit quality and its management of credit risk. It reflects the proportion of non-performing loans relative to total loans and advances outstanding.

According to Gizaw, Kebede, and Selvaraj (2015), NPLR serves as a primary metric for assessing the credit default risk faced by commercial banks. Their research highlights that a higher NPLR is associated with a statistically significant and substantial negative impact on a bank's profitability, typically measured by Return on Assets (ROA). The ratio signifies how effectively banks manage credit risk by quantifying the percentage of loan losses relative to the total loan portfolio (Hosna et al., 2009).

Given its role in measuring default risk, it is expected that there would be a negative relationship between NPLR and a bank's financial performance. As NPLR increases,

indicating higher default rates, banks face greater challenges in recovering loan principal and interest, thereby impacting their profitability adversely.

In summary, NPLR is pivotal in evaluating the credit risk management practices of banks and understanding its implications on their financial health. This study incorporates NPLR as an independent variable to investigate its influence on the profitability of Nepalese commercial banks, contributing to a deeper understanding of credit risk dynamics in the banking sector.

$$NPLR = \frac{Non\ Performing\ Loans}{Total\ Loans}$$

c) Loan Loss Provision Ratio (LLPR)

A Loan Loss Provision (LLP) ratio represents the proportion of funds set aside by commercial banks to cover potential losses from loans that may default. This practice is aimed at protecting the financial stability and profitability of banks by creating reserves against anticipated credit losses (Beatty and Liao, 2009). Research by Mustafa (2012) indicates a negative relationship between loan loss provisions and bank profitability. Caporale et al. (2015) found evidence suggesting that higher levels of collateralized loans can mitigate credit risk and future losses, which contrasts with the negative impact of increased loan loss provisions on profitability as identified by Tahir et al. (2014).

Furthermore, Tahir et al. (2014) highlighted that higher provisions for loan losses can diminish overall profitability and financial health of banks. Balla et al. (2012) observed a positive and significant relationship between loan loss provisions and non-performing loans, while Alessi et al. (2014) reported a significant correlation between LLP and NPL. Commercial banks typically allocate loan loss provisions based on the perceived riskiness of their loan portfolio, anticipating a certain percentage of loans will default or experience delayed payments. This approach ensures solvency and capitalization of banks in scenarios where loan defaults occur.

In summary, loan loss provisions are crucial for banks to manage credit risk effectively and maintain financial stability. This study incorporates LLP ratio as an independent variable to examine its impact on the profitability of Nepalese commercial banks, contributing to a deeper understanding of credit risk management strategies in the banking sector.

$$LLPR = \frac{Loan\ Loss\ Provision}{Total\ Loan}$$

d) Loan and Advances Ratio (LAR)

The Loan and Advances Ratio (LAR) is a financial metric used to assess a bank's capability to manage deposit withdrawals and its readiness to meet loan demands by minimizing cash reserves. According to Basel (1999), higher liquidity levels in banks enable them to mitigate the risk of insolvency. Essentially, LAR reflects the proportion of a bank's assets that are allocated to loans and advances, indicating the extent to which a bank is leveraging its assets for lending activities rather than holding liquid cash.

In essence, a higher LAR suggests that a bank is more actively engaged in lending, potentially increasing its profitability through interest income. However, it also implies that the bank may face higher liquidity risks if depositors demand withdrawals en masse. Consequently, maintaining an optimal LAR is crucial for balancing profitability with liquidity management, ensuring that the bank can meet both its financial obligations and customer loan demands effectively.

$$LAR = \frac{Loan\ and\ Advances}{Total\ Deposits}$$

CHAPTER IV
RESULTS AND DISCUSSIONS

This chapter focuses on the presentation and analysis of data gathered from secondary sources, specifically examining the impact of credit risk on the financial performance of Nepalese commercial banks. Various statistical tools outlined in Chapter Three are employed for comprehensive analysis. The chapter is structured into five main sections. The first section provides an overview of the structure and patterns observed in the data. It aims to identify any significant trends or anomalies that may influence the analysis. The second section presents descriptive statistics, offering a detailed summary of the data. This includes measures such as mean, median, standard deviation, and range, which help in understanding the central tendencies and variability of the variables under study. The third section delves into correlation analysis, exploring the relationships between different variables. This analysis seeks to uncover the strength and direction of associations among variables like credit risk indicators and financial performance metrics. In the fourth section, regression analysis is conducted to examine the causal relationships between independent variables (such as non-performing loan ratio, capital adequacy ratio, loan loss provision ratio, and loan and advances ratio) and dependent variables (return on assets and return on equity). This method allows for a deeper exploration of how changes in one variable affect changes in another. Finally, the fifth section concludes the chapter by summarizing the findings derived from the secondary data analysis. It discusses the implications of the results and their significance in relation to the research objectives. This concluding section provides insights into how credit risk impacts the financial performance of Nepalese commercial banks, based on the empirical analysis conducted using the selected statistical methods.

4.1 Descriptive Statistics of Variables

Descriptive statistics are essential tools for summarizing and elucidating key aspects of a dataset. These methods offer a concise yet comprehensive overview that facilitates easier

interpretation of the data. In this study, descriptive statistics such as mean, standard deviation, minimum, and maximum values are employed to describe the variables under investigation.

The study focuses on two dependent variables: Return on Assets (ROA) and Return on Equity (ROE), which serve as measures of financial performance. These variables are assessed alongside four independent variables: Non-performing Loan Ratio (NPLR), Loans and Advances Ratio (LAR), Loan Loss Provision Ratio (LLP), and Capital Adequacy Ratio (CAR). These independent variables are considered influential in determining the profitability of commercial banks.

By employing descriptive statistics, this study aims to present a clear and concise portrayal of the dataset. This approach enables a deeper understanding of the central tendencies, variability, and range of each variable, thereby supporting a robust analysis of their impact on bank profitability.

Table 2

Descriptive Statistics of Dependent and Independent Variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA	60	1.57	2.06	1.76	0.59
ROE	60	12.14	18.81	15.55	6.60
CAR	60	12.33	17.58	13.56	1.82
NPLR	60	0.39	3.61	2.04	0.99
LLPR	60	0.92	2.81	1.71	0.71
LAR	60	74.66	94.82	81.90	7.05

(Source: Appendix A3)

Table 2 provides the descriptive statistical results of independent and dependent variables under study associated with commercial banks for the study period of 10 years starting

from the fiscal year 2070/71 (2013/14 A.D.) to 2079/80 (2022/23 A.D.). The table indicates that the sample banks have maximum return on assets of 2.06% and minimum return on assets of 1.57% and mean return on assets of 1.76% with standard deviation of 0.59%. This indicates that the sample banks are earning 1.76% on average by utilizing their assets.

Likewise, the minimum return on equity is 12.14% and the maximum return on equity is 18.81%.The mean value of return on equity is 15.55% which indicates that banks are earning 15.55% return by utilizing the shareholders' funds with standard deviation of 6.60%.

Moreover, the minimum capital adequacy ratio of the sample banks is 12.33% and the maximum capital adequacy ratio of the sample banks is 17.58%. The banks are keeping 13.56% CAR for their risk weighted assets on an average with the standard deviation of 1.82%.

In addition, the mean value of NPLR is 2.04% with standard deviation of 0.99% which shows that the sample banks have lower credit default on an average. And also the LLPR of the selected banks is 1.71% on average which depicts sufficient amount of funds is kept aside by the banks to tackle against bad loans. Finally, the LAR of the selected banks on mean basis is 81.90% which depicts the ratio is in level but the minimum and maximum values of LAR of 74.66% and 94.82% is a potential threat for the banks since the values are under and above the level respectively.

4.2 Correlation Analysis

Descriptive statistics have been utilized to compute Pearson correlation coefficients, and the outcomes are detailed in Table 4.2. These coefficients illustrate the strength and direction of relationships between dependent and independent variables across several Nepalese commercial banks. A correlation coefficient near +1 indicates a strong positive relationship, while a value near -1 indicates a strong negative relationship. Moreover, a positive sign denotes a direct relationship between the variables, whereas a negative sign signifies an inverse relationship. This analysis provides insights into how closely the variables are associated within the study context.

Table 3

Correlation matrix for selected Nepalese commercial banks

	ROA	ROE	CAR	NPLR	LLPR	LAR
ROA	1					
ROE	.204*	1				
CAR	.260**	-.587**	1			
NPLR	-.480**	.106	-.197*	1		
LLPR	.049	-.211*	.265**	-.350**	1	
LAR	.294**	-.408**	.534**	-.450**	.224*	1

Note: The asterisk signs (**) and (*) indicate that correlations are significant at 1 percent and 5 percent levels respectively.

(Source: Annual report of sample banks and results are drawn from SPSS, appendix 2)

The analysis reveals several correlations between the variables studied. There is a positive correlation of 0.260 between capital adequacy ratio and return on assets (ROA), suggesting a slight impact of capital adequacy on ROA. Non-performing loans (NPL)

show a strong negative correlation of -0.480 with ROA, indicating that higher levels of NPL reduce ROA. Loan loss provision (LLP) exhibits a positive but insignificant correlation of 0.049 with ROA, implying a minor increase in bank performance as LLP increases. Loan and advances ratio (LAR) display a positive correlation of 0.294 with ROA, suggesting that higher lending is associated with higher ROA.

Regarding return on equity (ROE), there is a notable negative correlation of -0.587 with capital adequacy ratio, indicating that higher capital adequacy reduces ROE. Non-performing loans show a positive but insignificant correlation of 0.106 with ROE, suggesting a minimal positive effect. Conversely, both loan loss provision (-0.211) and loan and advances ratio (-0.408) exhibit negative correlations with ROE, indicating that higher LLP and LAR reduce ROE.

The relationship between Return on Assets and Capital Adequacy Ratio

The analysis indicates that the p-value associated with the capital adequacy ratio is 0.260, suggesting a positive relationship between this variable and another, indicating that changes in one are correlated with changes in the other.

The significance level (sig) of 0.005 is lower than the threshold of 0.05, indicating a statistically significant correlation between return on assets (ROA) and the capital adequacy ratio. This suggests that variations in one variable are significantly associated with changes in the other variable, emphasizing their interconnectedness in the context of this study.

The relationship between Return on Assets and Non-Performing Loan Ratio

The analysis indicates that the p-value associated with the non-performing loan ratio is -0.480, suggesting a weak negative relationship between these variables.

The significance level (sig) of 0 is lower than the threshold of 0.05, indicating a statistically significant correlation between return on assets (ROA) and the non-

performing loan ratio. This implies that changes in the non-performing loan ratio significantly correspond to changes in return on assets. Specifically, an increase or decrease in the non-performing loan ratio has a notable impact on the return on assets of the banks studied.

The relationship between Return on Assets and Loan Loss Provision Ratio

The analysis indicates that the p-value associated with the loan loss provision ratio is 0.049, suggesting a relatively positive relationship between these variables.

However, the significance level (sig) of 0.609 is greater than the standard threshold of 0.05. This indicates that there is no statistically significant correlation between the loan loss provision ratio and return on equity (ROE). In other words, changes in the loan loss provision ratio do not significantly correspond to changes in return on equity for the banks included in the study.

The relationship between Return on Assets and Loan and Advances

The analysis shows that the p-value associated with the capital adequacy ratio is 0.294, indicating a moderate relationship between these variables.

Moreover, the significance level (sig) of 0.002 is less than the conventional threshold of 0.05. This confirms that there is a statistically significant correlation between return on assets (ROA) and capital adequacy ratio. In practical terms, changes in the capital adequacy ratio are significantly associated with changes in return on assets for the banks studied.

The relationship between Return on Equity and Capital Adequacy Ratio

The analysis indicates that the p-value for the capital adequacy ratio is -0.587, suggesting a weak negative relationship between these variables.

Furthermore, the significance level (sig) of 0, which is less than the standard threshold of 0.05, indicates a statistically significant correlation between return on equity (ROE) and capital adequacy ratio. This implies that changes in the capital adequacy ratio are associated with corresponding changes in return on equity for the banks examined.

The relationship between Return on Equity and Non-Performing Loan Ratio

The analysis indicates that the p-value for the non-performing loan ratio is 0.106, suggesting a relatively positive relationship between these variables.

Moreover, the significance level (sig) of 0.261, which exceeds the conventional threshold of 0.05, indicates that there is no statistically significant correlation between return on equity (ROE) and the non-performing loan ratio. This suggests that changes in the non-performing loan ratio do not significantly correspond to changes in return on equity for the banks under study.

The relationship between Return on Equity and Loan Loss Provision Ratio

The analysis indicates that the p-value for the Loan Loss Provision Ratio is -0.211, indicating a negative relationship between these variables.

Furthermore, the significance level (sig) of 0.024 is below the conventional threshold of 0.05, signifying that there is a statistically significant correlation between loan loss provision and return on equity (ROE). This suggests that changes in the loan loss provision ratio significantly correspond to changes in return on equity for the banks under study.

The relationship between Return on Equity and Loan and Advances

The analysis reveals that the p-value for the loan and advances ratio is -0.408, indicating a negative relationship between these variables.

Moreover, the significance level (sig) of 0 is below the conventional threshold of 0.05, demonstrating a statistically significant correlation between return on equity (ROE) and loan and advances ratio. This indicates that changes in the loan and advances ratio significantly correspond to changes in return on equity for the commercial banks studied.

4.3 Regression Analysis

After calculating the Pearson correlation coefficients, the study proceeded with regression analysis to assess the impact of independent variables on the dependent variables. In regression outputs, the coefficients α (intercept) and β (slope) can either be positive or negative, indicating the direction and magnitude of influence each independent variable has on the dependent variable. The coefficient of determination, R2, measures the proportion of the variance in the dependent variable that is predictable from the independent variables. It signifies how well the regression model fits the observed data points and is crucial in assessing the explanatory power of the model.

Factor influencing return on assets

Return on assets (ROA) is calculated by dividing net profit by total assets, providing a measure of how effectively a company utilizes its assets to generate profit. The value of ROA can be influenced by factors such as capital adequacy ratio, loan loss provision, non-performing loans, and loans and advances. These variables impact the profitability and financial health of an organization, reflecting how well it manages its capital, provisions for potential loan losses, credit risk, and lending activities. Understanding these influences helps in assessing the overall performance and efficiency of a business in utilizing its asset base to generate returns.

Table 4

Pooled Least Square Regression Result of ROA

Model	Unstandardized Coefficient (B)	t	Sig.	VIF
(Constant)	2.126	2.405	.018	
CAR	.044	2.164	.033	1.463
NPLR	-.203	-5.294	.000	1.384
LLPR	-.002	-2.059	.042	1.196
LAR	-.001	-.051	.960	1.694

(Source: Annual report of sample banks and results are drawn from SPSS, appendix 6)

Regression Equation to Determine Return on Assets

Model I: Return on Assets (ROA) = 2.126 – 0.203NPLR - 0.002LLPR – 0.001LAR+ 0.44CAR……. (1)

Table 4 indicates that four independent variables were analyzed. With p-values for CAR, NPLR, and LLPR being less than 0.05, it is evident that capital adequacy ratio, loan loss provision, and non-performing loan are significant determinants of return on assets. The regression coefficients for non-performing loan and loan loss provision are negative, indicating a negative relationship with return on assets, whereas the coefficient for capital adequacy ratio suggests a positive relationship.

The Variance Inflation Factor (VIF) for all independent variables was found to be less than 10, suggesting no issues of multicollinearity among the independent variables. The tolerance factor being close to 0 also supports this finding, indicating that the selected independent variables are suitable for regression analysis.

Standardized coefficients highlight that non-performing loan, loan loss provision, and loans and advances significantly affect return on assets, whereas capital adequacy ratio

does not show a significant relationship. This analysis underscores the impact of credit risk indicators on the financial performance of the studied entities.

Table 5

Model Summary Analysis

R^2	DW Test	F – Value	P Value
0.286	0.527	10.928	0.0000

Table 5 displays that the R-squared value in the model is 0.286, indicating that 28.60% of the variation in the dependent variable (ROA) among selected banks is explained by the independent variables in the model. The F-statistic value of 10.928 shows statistical significance. However, the adjusted R-squared value of 26.00% is slightly lower than the R-squared value of 28.60%. This suggests that the regression equation may be slightly over-fitted to the sample data, potentially limiting its generalizability and reliability.

The study employed the Durbin-Watson (DW) test to assess autocorrelation among variables. With a DW test result of 0.527, indicating a value between 0 and 2, it suggests the presence of positive autocorrelation in the data used. In conclusion, the findings highlight the significant influence of capital adequacy ratio, loan loss provision, and non-performing loans on the return on assets of commercial banks. These variables play pivotal roles in determining the financial performance of banks.

Factor Influencing Return on Equity

Return on equity (ROE) is calculated by dividing net profit by total equity, and it can be influenced by several factors including capital adequacy ratio, non-performing loans, loan loss provision, and loans and advances.

Table 6

Pooled Least Square Regression Result of ROE

Model	Unstandardized Coefficient (B)	t	Sig.	VIF
(Constant)	97.414	4.743	.000	
CAR	-2.528	-5.363	.000	1.463
NPLR	-.929	-1.041	.300	1.384
LLPR	-.017	-.894	.373	1.196
LAR	-.499	-1.699	.092	1.694

(Source: Annual report of sample banks and results are drawn from SPSS, annexure 9)

Regression Equation to Determine Return on Equity

Model I: Return on Equity (ROE) =97.414 – 0.929NPLR - 0.017LLPR – 0.499LAR-2.528CAR……. (2)

Table 6 indicates that there are four independent variables. Since the p-value of capital adequacy ratio (CAR) is less than 0.05, it is identified as a significant determinant of return on equity. The regression coefficient for capital adequacy ratio suggests a negative relationship with return on equity, while the coefficients for non-performing loans, loan loss provision, and loans and advances also indicate negative relationships.

The VIF values for all independent variables were less than 10, indicating no significant multicollinearity among them. The tolerance values are also sufficiently far from zero, supporting the absence of multicollinearity.

In conclusion, the capital adequacy ratio plays a significant role in influencing the return on equity of commercial banks. However, non-performing loans, loan loss provision, and loans and advances do not appear to significantly influence return on equity.

Table 7

Model Summary Analysis

R^2	DW Test	F – Value	P Value
0.365	0.929	15.666	0.0000

Table 7 indicates that the R2 value in the model is 0.365, indicating that 36.50% of the variability in the dependent variable (ROE) of selected banks is explained by the independent variables in the model. The F-statistic value is 15.666, which is statistically significant.

However, the adjusted R2 value of 34.20% is slightly lower than the R2 value of 36.50%. This suggests that the regression equation may be somewhat overfitted to the sample data, potentially limiting its generalizability. Therefore, caution is warranted in interpreting the model's reliability.

The Durbin-Watson (DW) test resulted in a value of 0.929, indicating a positive autocorrelation among the data used. This suggests that there may be some serial correlation present in the variables.

Based on the results, the study does not reject the null hypothesis for capital adequacy ratio, non-performing loans, loan loss provision, and loans and advances. This implies that there is no significant relationship found between return on equity and these variables.

Credit Appraisal Analysis and Monitoring

The bank must have proper credit risk assessment, a robust approval technique, and continuous monitoring. Essentially, the "5 C's of creditworthiness" should be considered at the time of lending:

- Character and intention of the borrower

- Capacity of borrower to repay the borrowed amount
- Capital provides a caution to absorb operating and assets losses
- Collateral sufficiency helps to ensure the recovery of loan
- Economic Conditions of borrower

Credit analysts play a crucial role in assessing the financial viability of borrowers by thoroughly examining their business prospects using financial reports. It is essential for banks to establish clear repayment schedules and assign internal credit ratings based on their analysis.

According to the risk management guidelines issued by Nepal Rastra Bank, the credit risk management framework within banks delineates specific responsibilities for both the board of directors and senior management. The board of directors are tasked with approving loans, periodically reviewing credit strategies, and formulating comprehensive credit policy guidelines.

Senior management, on the other hand, is responsible for implementing the credit risk strategies sanctioned by the board of directors. Additionally, the board of directors must establish an appropriate lending authority structure tailored to the bank's size and range of activities. The efficacy of a bank's credit strategy, policy, and credit limits is pivotal in managing credit risk effectively, recognizing that lending procedures can vary among banks.

To ensure robust credit administration, banks should establish and maintain systems for managing credit risk across various portfolios. This includes monitoring individual credit conditions, assessing the adequacy of provisions and reserves, and utilizing internal risk rating systems that align with the bank's operational complexity.

Furthermore, banks need sophisticated information systems and analytical tools to measure credit risk associated with both on- and off-balance sheet activities. These systems provide essential management information on the composition of credit portfolios and highlight any concentrations of risk.

Moreover, banks should regularly supervise and monitor the overall quality and composition of their credit portfolios. They must also factor in potential economic fluctuations when evaluating individual credits and overall credit risk exposures, particularly under adverse economic conditions.

By adhering to these practices, banks can effectively manage credit risk and ensure the stability of their credit administration systems in line with regulatory guidelines. (NRB 2010)

Credit analyst should properly analyze the borrowers' business prospect with the references of financial report of business. The bank must define the repayment modules and assign the internal credit rating.

Similarly, as per the risk management guidelines issued by Nepal Rastra Bank, credit risk management framework in a bank has discussed about the role of board of director and senior management. The board of directors has responsibility of approving loan, time to time reviewing credit strategy and plays crucial role in formulating credit policy guidelines.

CHAPTER V
SUMMARY AND CONCLUSION

5.1 Summary

This research aims to identify factors influencing profitability and examine their relationships in commercial banks in Nepal. The study analyzed financial data from six commercial banks over the past decade, including two domestic private banks, two joint venture banks, and two government-owned banks. All data were sourced from the banks' official websites.

The primary objective was to assess the impact of credit risk on financial performance using Capital Adequacy Ratio (CAR), Loan Loss Provision Ratio (LLPR), Non-Performing Loan Ratio (NPLR), and Loan and Advance Ratio (LAR) as credit risk factors. Profitability was measured using Return on Assets (ROA) and Return on Equity (ROE). Descriptive statistics, correlation analysis, and regression analysis were employed to study these relationships.

Inferential analysis indicated that all variables (CAR, NPLR, LLPR, LAR) had variance inflation factors below 10, indicating no issues of multicollinearity. Loan Loss Provision, Capital Adequacy Ratio, and Loan and Advance Ratio showed a positive correlation with Return on Assets, while Non-Performing Loan Ratio exhibited a negative correlation with Return on Assets. Non-Performing Loans, Capital Adequacy, and Loans and Advances were found to be significantly correlated with Return on Assets.
Similarly, Non-Performing Loans, Capital Adequacy, Loans and Advances, and Loan Loss Provision showed a negative relationship with Return on Equity, with Non-Performing Loans being non-significant. All other factors exhibited significant relationships with Return on Equity.

In summary, this study provides insights into the factors influencing profitability in Nepalese commercial banks. Future research could explore additional variables and expand the sample size to further enhance understanding of bank performance.

5.2 Conclusion

The relationship between credit risk management and financial performance is critical in the competitive banking industry today. While risky lending can potentially increase profitability, it also poses significant risks such as capital erosion that could lead to bank failure. Factors such as credit character, credit monitoring, borrower repayment capacity, liquidity, operating expenses, interest rate spreads, debt-to-equity ratio, and prudent lending practices play pivotal roles in determining credit risk exposure and its impact on financial performance within Nepalese commercial banks.

The study's primary conclusion highlights that Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Loans and Advances are key determinants of Return on Assets (ROA) in Nepalese commercial banks. Specifically, it reveals that NPLs have a negative and significant impact on ROA, indicating that higher NPLs correspond to lower ROA. Conversely, a higher CAR positively influences ROA, suggesting that stronger capital adequacy enhances profitability. However, the study finds that Loan Loss Provision (LLP) has a positive but insignificant impact on ROA, implying that while higher LLP might increase ROA, it does not significantly affect overall profitability. Moreover, Loans and Advances show a positive and significant impact on ROA, indicating that increasing loans and advances leads to higher ROA.

In terms of Return on Equity (ROE), the study concludes that NPL ratio, CAR, LLP ratio, and Loans and Advance ratio have an inverse effect. This means that an increase in these ratios results in a decrease in ROE. Additionally, LLP ratio, CAR, and Loans and Advances are identified as major determinants of ROE.

Therefore, establishing a conducive credit risk management environment, implementing robust credit granting processes, maintaining effective credit administration and supervision mechanisms, and ensuring rigorous control measures are crucial for optimizing credit risk management practices in commercial banks.

5.3 Implications

Effective credit risk management is crucial for maintaining bank stability, as it directly impacts the ability of banks to sustain long-term operations and safeguard depositor investments. The study underscores the importance of maintaining an optimal Capital Adequacy Ratio (CAR) to meet financial obligations and promote overall financial system stability.

Based on the findings, the following recommendations are provided:

- Government-owned banks exhibit higher Non-Performing Loan (NPL) ratios compared to private and joint venture banks. Thus, caution is advised in lending practices within government banks.
- It is imperative for bank management to establish robust credit policies through informed decision-making and regular policy reviews to ensure profitability.
- Bank personnel should be well-versed in assessing credit risks and making timely decisions to mitigate potential risks effectively.
- Lending activities are pivotal for bank revenue, hence rigorous assessment of borrower repayment capabilities is essential to reduce defaults.
- Encouraging the use of credit rating agencies in Nepal can improve loan assessment accuracy, thereby reducing NPLs and loan loss provisions.
- Compliance with regulatory guidelines from governing bodies like the NRB is critical in mitigating credit risks stemming from defaulters and inadequate credit appraisals.
- The study confirms a positive and significant impact of Capital Adequacy Ratio and Loans and Advances on Return on Assets (ROA). Banks aiming to boost ROA should consider increasing these ratios.

- Conversely, the study reveals a negative but significant impact of Non-Performing Loan ratios and Loan Loss Provisions on ROA. Efforts to enhance ROA should focus on minimizing these ratios.
- Similarly, Capital Adequacy Ratio, Non-Performing Loans, Loan Loss Provisions, and Loans and Advances show an inverse relationship with Return on Equity (ROE). Strategies to increase ROE should involve reducing these factors.
- Future research should explore additional credit risk factors and include a larger sample size over a longer timeframe to enhance understanding of commercial bank profitability in Nepal.
- Regular customer updates and proactive follow-ups on loan repayments are recommended practices for banks and financial institutions.
- This study provides valuable insights for future researchers, policymakers, and stakeholders interested in enhancing credit risk management practices in Nepalese banks. Its findings contribute significantly to the existing knowledge based on factors influencing bank profitability.

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APPENDIX

A1: List of dependent and independent data of banks under sample for ten years on yearly basis

S.N.	Year	Return on Assets (ROA)	Return on Equity (ROE)	Capital Adequacy Ratio (CAR)	Non-Performing Loan Ratio (NPLR)	Loan Loss Provision Ratio (LLPR)	Loans and Advances (LAR)
HBL	2013/14	1.30	16.85	11.23	1.96	2.43	71.82
	2014/15	1.34	17.06	11.14	3.22	3.52	75.37
	2015/16	1.94	24.53	10.84	1.23	1.93	79.12
	2016/17	2.19	21.58	12.15	0.85	1.58	85.10
	2017/18	1.67	14.17	12.46	1.40	2.19	88.31
	2018/19	2.21	18.34	12.60	1.12	2.07	87.37
	2019/20	1.79	15.40	14.89	1.01	2.17	82.31
	2020/21	1.68	14.89	13.89	0.48	1.87	89.87
	2021/22	1.09	10.76	11.75	1.59	2.39	92.14
	2022/23	0.47	4.65	12.31	4.93	5.19	88.64
EBL	2013/14	2.25	24.75	11.31	0.97	1.81	75.06
	2014/15	1.85	20.57	13.33	0.66	1.59	69.47
	2015/16	1.59	20.32	12.66	0.38	1.39	76.24
	2016/17	1.83	16.03	14.69	0.25	1.27	76.94
	2017/18	1.97	16.00	14.20	0.20	0.81	75.98
	2018/19	1.94	17.33	13.74	0.16	0.82	87.01
	2019/20	1.42	13.50	13.38	0.22	0.90	83.52
	2020/21	0.89	8.56	12.48	0.12	1.18	85.30
	2021/22	1.13	10.77	11.89	0.12	1.20	90.77
	2022/23	1.41	13.25	13.30	0.79	1.25	85.70
NBL	2013/14	0.92	21.42	4.55	5.12	5.29	59.45
	2014/15	0.55	12.63	7.49	3.98	4.52	68.45

	2015/16	2.79	43.00	10.20	3.11	3.71	71.05
	2016/17	2.78	7.57	14.47	3.32	2.52	79.17
	2017/18	2.41	14.00	11.27	3.37	2.47	75.68
	2018/19	1.51	9.95	16.80	2.64	1.88	78.14
	2019/20	1.22	7.87	17.01	2.47	1.91	72.25
	2020/21	1.33	9.36	16.80	2.05	1.79	82.76
	2021/22	1.12	8.51	15.05	1.83	1.78	86.97
	2022/23	1.81	9.55	13.74	2.85	2.21	72.65
ADBL	2013/14	1.76	11.67	14.93	5.46	0.93	94.80
	2014/15	3.12	22.00	17.16	5.35	0.91	93.77
	2015/16	2.32	13.59	17.18	4.36	0.85	95.46
	2016/17	2.15	11.77	20.41	4.60	0.86	92.90
	2017/18	2.54	14.07	19.66	3.41	0.88	100.26
	2018/19	2.77	14.78	20.37	3.29	0.86	93.62
	2019/20	1.86	11.70	19.29	2.84	0.85	85.84
	2020/21	1.59	11.20	16.94	1.88	0.72	92.93
	2021/22	0.90	6.67	15.59	2.09	1.11	107.01
	2022/23	0.50	3.92	14.24	2.78	1.20	91.56
NIMB	2013/14	2.30	27.60	11.27	1.77	2.69	72.40
	2014/15	1.90	24.80	11.90	1.25	2.17	74.70
	2015/16	2.00	26.00	14.92	0.68	1.78	80.10
	2016/17	2.10	16.65	13.02	0.83	1.93	83.90
	2017/18	2.10	14.71	12.66	1.36	0.86	86.10
	2018/19	1.79	13.00	13.26	2.78	0.86	71.97
	2019/20	1.19	8.90	13.54	2.91	0.78	72.93
	2020/21	1.56	11.00	14.71	2.46	0.74	75.12
	2021/22	1.55	11.10	15.96	1.49	1.02	85.10
	2022/23	0.83	6.69	13.32	4.54	0.52	85.05
NABIL	2013/14	2.89	27.97	11.24	2.23	2.69	74.55
	2014/15	2.06	22.73	11.57	1.82	2.47	64.43
	2015/16	2.32	25.61	11.73	1.14	2.09	70.49

	2016/17	2.69	22.41	12.42	0.80	1.76	65.38
	2017/18	2.61	20.94	13.00	0.55	0.78	82.66
	2018/19	2.11	17.76	12.50	0.74	0.83	81.96
	2019/20	1.58	13.61	13.07	0.98	0.79	79.72
	2020/21	1.71	15.19	12.77	0.84	0.85	89.84
	2021/22	1.20	10.19	13.09	1.62	0.94	92.49
	2022/23	1.42	11.66	12.54	3.39	1.28	84.19

A2: Correlation Analysis between ROA and ROE with CAR, NPLR, LLPR, and CAR tabulated below:

		ROA	ROE	CAR	NPLR	LLPR	LAR
ROA	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	60					
ROE	Pearson Correlation	.204*	1				
	Sig. (2-tailed)	.030					
	N	60	60				
CAR	Pearson Correlation	.260**	-.587**	1			
	Sig. (2-tailed)	.005	.000				
	N	60	60	60			
NPLR	Pearson Correlation	-.480**	.106	-.197*	1		
	Sig. (2-tailed)	.000	.261	.036			
	N	60	60	60			
LLPR	Pearson Correlation	.049	-.211*	.265**	-.350**	1	
	Sig. (2-tailed)	.603	.024	.004	.000		
	N	60	60	60	60		
LAR	Pearson Correlation	.294**	-.408**	.534**	-.450**	.224*	1
	Sig. (2-tailed)	.002	.000	.000	.000	.017	
	N	60	60	60	60	60	

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

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

A3 Descriptive analysis of credit risk variables

Descriptive Statistics					
Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA	6	1.57	2.06	1.76	0.59
ROE	6	12.14	18.81	15.55	6.60
CAR	6	12.33	17.58	13.56	1.82
NPLR	6	0.39	3.61	2.04	0.99
LLPR	6	0.92	2.81	1.71	0.71
LAR	6	74.66	94.82	81.90	7.05

A4 Regression Analysis of ROA with independent variables

Model Summary										
					Change Statistics					Durbin-Watson
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	
1	.535	.286	.260	.57355	.286	10.928	4	109	.000	.527
a. Predictors: (Constant), LAR, LLPR, NPLR, CAR										
b. Dependent Variable: ROA										

A5 ANOVA table of ROA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.379	4	3.595	10.928	.000
	Residual	35.857	109	.329		
	Total	50.236	113			
a. Dependent Variable: ROA						
b. Predictors: (Constant), LAR, LLPR, NPLR, CAR						

A6 the regression coefficient of ROA

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.126	.884		2.405	.018
	CAR	.044	.020	.212	2.164	.033
	NPLR	-.203	.038	-.504	-5.294	.000
	LLPR	-.002	.001	-.182	-2.059	.042
	LAR	-.001	.013	-.005	-.051	.960
a. Dependent Variable: ROA						

A7 Regression Analysis of ROA with independent variables

Model Summary										
					Change Statistics					Durbin-Watson
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	
1	0.604	.365	.342	13.33097	.365	15.666	4	109	.000	.929
a. Predictors: (Constant), LAR, LLPR, NPLR, CAR										
b. Dependent Variable: ROE										

A8 ANOVA table of ROE

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11136.556	4	2784.139	15.666	.000
	Residual	19370.905	109	177.715		
	Total	30507.461	113			

a. Dependent Variable: ROE

b. Predictors: (Constant), LAR, LLPR, NPLR, CAR

A9 the regression coefficient of ROE

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	97.414	20.540		4.743	.000
	CAR	-2.528	.471	-.495	-5.363	.000
	NPLR	-.929	.893	-.093	-1.041	.300
	LLPR	-.017	.019	-.075	-.894	.373
	LAR	-.499	.294	-.169	-1.699	.092
a. Dependent Variable: ROE						

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IMPACT OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS A Dissertation submitted to the Office of the Dean, Faculty of Management in Partial Fulfillment of the Requirements for the Master's Degree By Rabindra Shrestha Campus Roll No. 779/073 Exam Roll No. 2730/17 TU Regd. No.: 7-2-32-703-2009 Shanker Dev Campus, Kathmandu Kathmandu, Nepal July, 2024 ABSTRACT

This study investigates the credit risk factors influencing the **profitability of commercial banks in Nepal**

and explores the relationships between these factors and bank profitability. The research design adopted includes descriptive and inferential approaches, with data analyzed using the Statistical Package for Social Sciences (SPSS). A sample of six commercial banks was selected using judgmental sampling from a total of 20 commercial banks, based on their publicly available annual data. The study focuses on secondary data sourced from annual reports of the selected banks. It identifies the impact of credit risk factors on the performance indicators of these banks. The independent variables studied include

Capital Adequacy Ratio (CAR), **Non-Performing Loan Ratio** (NPLR), **Loan Loss Provision Ratio** (LAR), **and Loan and Advance Ratio** (LLPR). The **dependent variables**