CREDIT MANAGEMENT OF COMMERCIAL BANKS IN NEPAL

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 **"Credit Management of Commercial Banks in Nepal"**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes.

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

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REPORT OF RESEARCH COMMITTEE

Ms. Shambhawana Pokharel has defended research proposal entitled **"Credit Management of Commercial Banks in Nepal"** 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 Rabindra Bhattarai and submit the thesis for evaluation and viva voce examination.

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APPROVAL SHEET

We, the undersigned, have examined the dissertation entitled **"Credit Management of Commercial Banks in Nepal"** presented by Shambhawana Pokharel a candidate for the degree of master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the dissertation is worthy of acceptance.

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This study entitled **"Credit Management of Commercial Banks in Nepal"** has been prepared in partial fulfillment for the Degree of Master of Business Studies (MBS) under the Faculty of Management, Tribhuvan University is based on research models involving the use of quantitative aspect of credit management of commercial banks in Nepal.

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Shambhawana Pokharel

Date: ……

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ABBREVIATIONS

BS	:	Bikram Sambat
CB	:	Commercial Banks
CDR	:	Credit to Deposit Ratio
CRR	:	Cash Reserve Ratio
EBL	:	Everest Bank Limited
INF	:	Inflation Rate
IT	:	Information Technology
JVBs	:	Joint Venture Banks
L & A	:	Loan and Advance
LEV	:	Leverage Ratio
LSIZE	:	Log of Total Assets
LSL	:	Laxmi Sunrise Bank Limited
Ltd.	:	Limited
NABIL	:	Nabil Bank Limited
NIMB	:	Nepal Investment Mega Bank Limited
NPLR	:	Non – performing Loan Ratio
NRB	:	Nepal Rastra Bank
ROA	:	Return on Assets
ROE	:	Return on Equity
SBI	:	Nepal SBI Bank Limited
SD	:	Standard Deviation
SIZE	:	Total Assets of Banks
TA	:	Total Assets
TU	:	Tribhuvan University

ABSTRACT

This study investigates the credit management of commercial banks in Nepal. Nepalese commercial banks provided secondary data for ten-year periods (2013/14–2022/23). For data analysis, multiple regression analysis and correlation are used. This study demonstrates that EBL has the lowest credit risk position among them, as seen by the non-performing loan ratio, which suggests that EBL is doing the best or preserving its NPLs properly. NABIL's profitability position in terms of ROA allowed them to manage their whole activities because of their highest ratio. But out of all of them, NABIL has the finest or most efficient management for making money. Furthermore, because NABIL has the greatest ROE, it may be claimed that it is producing more money and doing better than the others. The correlation study shows that the leverage ratio and cash reserve ratio (CRR) have a strong positive relationship with ROE and an insignificant negative relationship with ROA. Similarly, the profitability ROA and ROE are significantly positively correlated with the credit to deposit ratio (CDR). Nonetheless, there is a negligible inverse link between the non-performing loan ratio and ROE and ROA. Additionally, bank size shows a strong negative correlation with the banks' ROE and an insignificant negative correlation with their ROA. The cash reserve ratio has a negligible negative influence on the banks' ROE and a negligible positive impact on their ROA, according to multiple regression analysis. Nonetheless, the ratio of credit to deposits significantly boosts profitability. However, the ratio of non-performing loans has a major detrimental effect on profitability. Additionally, the leverage ratio has a negligible negative effect on the sample banks' ROE and a considerable negative impact on their ROA. Furthermore, the profitability (ROA and ROE) of Nepal's commercial banks is negligibly impacted by bank size.

Keywords: Return on assets, cash reserve ratio, credit to deposit ratio, non-performing loan ratio and leverage ratio.

CHAPTER – I
INTRODUCTION

1.1 Background of the Study

Credit risk is the possibility of financial loss if a borrower or counterparty fails to fulfill their contractual obligations. This risk directly threatens the stability of financial institutions and is regarded as the most critical risk within these organizations, often outweighing other types of risks in terms of impact (Vidyashree & Rathod, 2015). Compared to other types of risks, credit risk has a wide-reaching impact and can result in significant loan losses or even the failure of a bank. The primary causes of significant banking problems continue to be inadequate credit standards for counterparties and borrowers, inefficient portfolio risk management, and a failure to pay enough attention to changes in the economy that could impair a bank's counterparties' creditworthiness, notwithstanding the numerous difficulties financial institutions have faced over the years (Basel, 1999).

For commercial banks, loans and advances are the main sources of credit risk. However, banks also face credit risk from other areas of their operations, including both on- and off-balance sheet exposures, as well as activities in their trading and banking books. Credit risk, also known as counterparty risk, is a risk associated with activities such as endorsements, acceptances, interbank transactions, trade financing, foreign exchange dealings, financial futures, swaps, bonds, stocks, options, commitments, guarantees, and transaction settlements. It extends beyond loans and advances. Effective credit risk management seeks to keep exposure within manageable limits, aiming to improve the bank's risk-adjusted return. Therefore, banks must manage the credit risk across their entire portfolio, not just individual transactions (Chhetri, 2021).

Credit risk management must be at the core of banks' operations to maintain their financial stability and soundness. Despite this, both developed and emerging countries have experienced significant banking issues over time (Brownbridge & Harvey, 1998). Poor credit risk management has consistently been identified as a major factor behind these banking problems (Richard et al., 2008).

The role of credit risk management in the banking sector has evolved significantly due to the growth of commercial economies and the increasing spread of credit risks both locally and globally within financial institutions. Banks allocate considerable resources to developing credit risk management models (Shrestha, 2022). This ongoing process involves enhancing supervisors' capabilities through regular, risk-focused supervision. The significance of formal, documented risk management frameworks in the banking sector, particularly for smaller banks, is emphasized by a risk-focused strategy. Strong governance and leadership standards are the cornerstones of effective risk management for commercial banks, which may be used as a preventative and proactive measure. Risk identification is an essential component of efficient bank management as recognized hazards are less dangerous than unknown ones.

Banks place significant emphasis on credit risk management as it plays a crucial role in the loan application process. By effectively managing credit risk exposure, banks aim to maximize their risk-adjusted rate of return while protecting themselves from the negative impacts of credit risk. As a result, banks are investing heavily in credit risk management. Another way to define credit risk is as "the possibility that a contractual party will fail to meet its obligations as agreed." Credit risk is also referred to as counterparty risk, default risk, or performance risk. Risk management strategies include various approaches such as transferring the risk to another party, avoiding the risk, mitigating its negative effects, or accepting some or all of the consequences associated with a particular risk (Vaidya, 2014).

"Profitability" refers to the positive return on an investment or business venture after all costs have been subtracted. It is determined by subtracting a company's total expenses from its total revenue. A company's ability to generate profit is central to its operations, and if it fails to do so, it can affect suppliers, employees, and the broader community. Profitability acts as a key measure of a company's overall success. This alignment is crucial for long-term sustainability. Investors often seek a single profitability metric that is relevant across different situations. The purpose of assessing profitability is to evaluate whether the income generated is sufficient by comparing it to one or more key activities reported in the financial statements (Garrinson & Norren, 2005).

The potential for a country to grow and thrive is closely linked to the strength of its financial institutions. However, there are various risks associated with starting a business that can prevent individuals from achieving their goals. One such risk is credit risk, which refers to the possibility that a borrower may fail to repay part or all of the money borrowed, including interest. Credit management plays a critical role in mitigating the negative effects of credit risk and is essential for helping businesses manage this challenge effectively (Bikker & Metzmakers 2005). The ability of any business, especially financial institutions, to manage credit risk is crucial for its success and profitability. Despite their efforts, commercial banks still face credit risk, as evidenced by the occasional losses from defaulting borrowers. While banks deal with a range of challenges, the primary one they confront—whether directly or indirectly—is managing credit risk. The goal of credit risk management is to enhance a company's risk-adjusted rate of return by keeping risk exposures within acceptable limits. Banks must manage both the overall credit risk of their portfolio and the specific credit risk associated with individual transactions or loans (Haneef et al., 2012). However, there have been concerns raised about issues such as a high rate of defaulters, inadequate monitoring, and failure to comply with responsibilities. To enhance business profitability through effective credit risk management, it is crucial to assess how various aspects of credit risk management impact the profitability reflected in financial statements.

Commercial banks in Nepal have been facing several challenges, particularly in relation to lending and credit. Lending has become more problematic due to the country's economic conditions, changing legal regulations, and an increasing number of defaulting borrowers. One of the greatest risks banks encounter is credit risk, which occurs when a borrower defaults. This can stem from either an unwillingness or an inability to fulfill the agreed-upon terms. Credit risk also affects a bank's book value. As the amount of credit at risk increases, so does the likelihood of the bank facing financial instability. This, in turn, could negatively affect depositors, leading to a decline in their bank standing and the potential devaluation of their deposits. Therefore, the aim of this study is to explore how credit management influences bank profitability in Nepal.

1.2 Problem Statement

The credit risk management process involves several crucial stages: identifying target markets, extending credit, monitoring credit, and calculating proceeds. The credit management policy outlines the procedures, guidelines, and standards that govern how bank staff approve loans and manage the loan portfolio in accordance with banking regulations. This policy aims to optimize the benefits of credit while minimizing its associated risks. Noman et al. (2015) discovered that the Capital Adequacy Ratio (CAR) has a significant negative impact on Return on Average Equity (ROAE). Furthermore, they found that while Basel II had a notable negative effect on ROAE, it positively influenced the Net Interest Margin (NIM).

Alshatti (2015) found that the Non-Performing Loan Ratio (NPLR) significantly increases Return on Assets (ROA) and Return on Equity (ROE), while the Capital Adequacy Ratio (CAR) had a minimal negative impact on both. Gijaw et al. (2015) showed that capital sufficiency and non-performing loans had a significant effect on the profitability of Ethiopian banks. Annor and Obeng (2017) noted a positive correlation between a bank's capital adequacy ratio and profitability, though there was a statistically significant negative correlation between non-performing loans and profitability. Ifeanyi and Francis (2017) concluded that non-performing loans had a negative but insignificant impact on profitability, while loans and advances, as well as loan loss provisions, had a positive but insignificant effect.

Singh and Sharma (2018) found a negative correlation between Return on Assets (ROA) and the Non-Performing Loan Ratio (NPLR), while there was a strong positive correlation between ROA and both the Capital Adequacy Ratio (CAR) and Loan to Non-Performing Loan (LPNPL) ratio. According to Al-Eitan and Bani-Khalid (2019), bank size significantly and favorably impacted Jordanian commercial banks' financial performance, but credit risk (CR) significantly and negatively correlated with profitability. Olaoye and Fajuyagbe (2020) revealed that non-performing loans have a detrimental effect on profitability. Munangi and Sibindi (2020) found that NPLR did not have a significant positive impact on Return on Equity (ROE) but had a notable negative impact on ROA. On the other hand, CAR significantly improved ROA while having a minimal negative effect on ROE.

Nelson (2020) argued that both the Non-Performing Loan Ratio (NPLR) and the Loan Loss Provision Ratio negatively affect Return on Equity (ROE). According to Biswas et al. (2021), there was a substantial negative link between ROA and bank size and non-performing loans (NPL), and a statistically significant positive correlation between ROA and the Capital Adequacy Ratio (CAR). Dunyoh et al. (2022) revealed that NPLR significantly reduces profitability, affecting both ROA and ROE. Yeasin (2022) highlighted the considerable negative impact of non-performing loans on financial performance, although the Capital Adequacy Ratio (CAR) had only a minimal negative effect on ROA. Butola et al. (2023) noted that NPLR was negatively correlated with ROA, while the Credit-to-Deposit Ratio and CAR showed a strong positive correlation with ROA.

Bhattarai (2016) discovered that, in the Nepalese context, bank performance and the Non-Performing Loan Ratio (NPLR) were negatively correlated, but bank size and performance were positively correlated. Shrestha (2017) discovered that both debt and NPLR significantly reduced Return on Equity (ROE) and Return on Assets (ROA). However, the Cash Reserve Ratio (CRR) had a minimal negative impact on both ROE and ROA. Poudel (2018) found that inflation and credit risk significantly harmed the profitability of Nepalese commercial banks. In contrast, the Capital Adequacy Ratio (CAR) and total assets had a strong positive effect, significantly boosting the profitability of these banks.

Shrestha and Nirouala (2021) concluded that the Non-Performing Loan Ratio (NPLR) and Credit to Deposit Ratio (CDR) significantly reduced Return on Assets (ROA), while factors like Interest Rate Spread (IRS) and Capital Adequacy Ratio (CAR) contributed positively to ROA. Chhetri (2021) found that non-performing loans significantly reduced profitability (ROA), while bank size and CAR had insignificant negative effects on ROA. The study also showed a slight positive impact of the capital adequacy ratio on ROA. Shrestha (2022) observed that the Total Loans to Total Deposits ratio (TL/TD) had a major positive influence on the profitability of Nepalese commercial banks, while the ratios of Non-Performing Loans to Total Loans (NPL/TL) and Loan Loss Provisions to Total Loans (LLP/TL) had a negative impact. Empirical evidence has shown a conflicting relationship between credit risk and profitability in Nepalese commercial banks. Therefore, the aim of this study is to

explore how credit risk influences the profitability of these banks, with a focus on addressing key questions regarding the chosen commercial banks.

- What is the credit risk and profitability position of commercial banks in Nepal?
- Is there any relationship between credit risk management and profitability of commercial banks in Nepal?
- Do credit risk factors (cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size) effect on profitability of commercial banks in Nepal?

1.3 Objectives of the Study

The main purpose of the study is to evaluate the credit management and profitability of commercial banks in Nepal. The other specific objectives are as follows;

- To assess the position of credit risk and profitability position of commercial banks in Nepal.
- To examine the relationship between credit risk management and profitability of commercial banks in Nepal.
- To analyze the impact of credit risk factors (cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size) on profitability of commercial banks in Nepal.

1.4 Research Hypothesis

Credit risk has a significant impact on banks' profitability, as a large portion of their revenue is derived from loans that generate interest margins. Based on our previous analysis, it is evident that exploring how credit risk management influences the profitability of commercial banks is highly relevant and essential for understanding their financial performance.

H_1: Cash reserve ratio has significant impact on profitability of commercial banks in Nepal.

H_2: Credit to deposit ratio has significant impact on profitability of commercial banks in Nepal.

H_3: Non performing loan has significant impact on profitability of commercial banks in Nepal.

H_4: Leverage ratio has significant impact on profitability of commercial banks in Nepal.

H_5: Bank size has significant impact on profitability of commercial banks in Nepal.

1.5 Rational of the Study

The findings of this study provide valuable insights for the management of Nepalese banks, enabling them to better manage credit risk and understand the relationship between credit risk and bank profitability. This knowledge can help banks reduce losses and enhance profitability. Additionally, the study can serve as a resource for academics who wish to explore further how risk management impacts profitability, particularly in financial institutions. It is expected that the key findings will suggest potential strategies for improving strategic interventions within the banking sector. Moreover, the study offers an academic experience for the researcher and serves as a valuable resource for other scholars and researchers working in related fields. Given the policy implications of this research, its findings could also inform the development of regulations and guidelines governing credit risk management practices in Nepalese banks.

1.6 Limitations of the Study

The limitations of the study are as follows;

- The study focuses on five commercial banks in Nepal: NIMB, LSL, NABIL, SBI, and EBL, out of the total 20 commercial banks in the country.
- The study is based on secondary data, which includes sources such as annual reports, financial statements, books, journals, and articles.
- The analysis covers the most recent ten fiscal years, from 2013/14 to 2022/23.
- Descriptive statistics, correlation analysis, and multiple regression analysis were used to analyze the data and draw conclusions.

CHAPTER - II
LITERATURE REVIEW

This chapter presented a review of the existing literature relevant to the study's objectives. It was structured to align with the specific goals of the research, ensuring its relevance to credit management practices in both Nepalese and international commercial banks. The literature review drew on credible primary sources, including books, journals, theses, and dissertations. The focus was on examining both theoretical and practical perspectives on credit management strategies, providing a comprehensive foundation for the study.

2.1 Theoretical Review

2.1.1 Theories of Credit Risk

In this section, the literature is examined through the lens of six theories: credit market theory, loan pricing theory, adverse selection theory, information asymmetry theory, financial distress theory, and portfolio theory.

2.1.1.1 Loan Pricing Theory

Stiglitz and Weiss (1981) argued that banks are not always able to set high interest rates without facing potential negative consequences. They highlighted that it is extremely difficult for banks to accurately predict the type of borrower at the beginning of the lending relationship. As a result, moral hazard and adverse selection become significant factors banks need to manage. If banks set interest rates too high, they risk attracting high-risk borrowers who are willing to pay these elevated rates. These borrowers may then engage in moral hazard—often referred to as borrower moral hazard—by taking on highly risky projects or investments after receiving the loan (Chodecai, 2004). Stiglitz and Weiss (1981) concluded that, in some cases, high interest rates might not be the most appropriate reflection of the risk borrowers carry, as they could lead to these undesirable behaviors, further complicating the bank’s ability to manage risk effectively.

2.1.1.2 Adverse Selection Theory

Jappelli and Pagano (1993) proposed the antagonistic choice model speculation, which expresses that data sharing brings down loan costs, widens the pool of possible borrowers, and brings down default rates. Moreover, it can bring about the conceding of additional credits. Notwithstanding, at times, when banks have an imposing business model in a specific field, loaning declines. This is because of the way that loaning to the previous doesn't counterbalance the last option's decrease in loaning, and data sharing improves the probability that banks might separate their loaning rates for less secure and more secure clients. Loaning movement will in general lift rivalry when credit markets are contestable, which limits the banks' ability to charge their clients lease. Data sharing likewise will in general increment banking competition (Jappelli & Pagano, 2002).

In light of this hypothesis, data sharing should increment loaning while at the same time diminishing financing costs and default rates as credit agencies either punish defaulters or empower rivalry by lessening educational rents. In outrageous circumstances, loaning where credit wouldn't commonly be available may be made conceivable by means of data sharing. These models propose that banks that decide to convey support their client government assistance along with their own benefit, creating a Pareto improvement (Jappelli & Pagano, 2002).

2.1.1.3 Credit Market Theory

Ewert (2000) contended a neoclassical credit market model is predicated on the possibility that credit terms clear the market. The loan cost is the sole evaluating component if security and different agreements stay something similar. The loan fee ascends in light of a specific client supply and an expansion in credit interest, as well as the other way around. It follows that the interest premium will ascend in direct extent to the probability of the borrower fizzling. Ugbede et al. (2012) contended for a changed hypothetical system that thinks about monetary receptiveness while breaking down what inside and outside factors mean for loan fee exercises in a semi-open nation like Nigeria. Expect that we live in a shut economy, where the interest for cash is equivalent to the stockpile of real cash and there is no net capital inflow or outpouring. In an economy like this, the main reasons for the cash held by the monetary units are to subsidize exchanges and collect the cash interest with respect to

genuine result. It is vital to recollect that claiming cash has an open door cost, not entirely set in stone by the ostensible pace of revenue. Higher loan fees make it less attractive to store abundance as money.

2.1.1.4 Information Asymmetry Theory

The worldwide financial area is right now defied with various issues and obstructions that, while possibly not effectively settled, may dial back Basel II's reception and execution. Bergh et al. (2019) contended these involve precise and dependable information and data. Banks should be furnished with an adequate number of information to permit them to completely assess the borrower's or alternately counterparty's real gamble profile. Stiglitz and Weiss (1981) have distinguished the accompanying as the reasons for data unevenness: laborers find out about their abilities than the business; protection clients find out about their wellbeing, including whether they smoke and drink unnecessarily; vehicle proprietors find out about their vehicles than expected purchasers; entrepreneurs find out about their organizations than potential financial backers; and borrowers find out about their gamble resistance than the moneylender. How much administration have more noteworthy information about the organization than do financial backers in general could act as an intermediary for data deviation. An optional property to consider is how much financial backers' information on the organization varies starting with one financial backer gathering then onto the next (Watts and Zimmerman, 1990). Data unevenness among banks and borrowers is normal in the monetary business sectors because of the accessibility of both oblivious loan specialists and educated borrowers, whose individual data the bank uses to decide if to loan cash.

2.1.1.5 Finance Distress Theory

Baldwin and Mason (1983) suggested that a company is considered to be in financial distress when its operations become so unsustainable that it can no longer meet its debt obligations. The first signs of financial trouble include failing to meet loan repayment terms and reducing or halting dividend payments. Whitaker (1999) defined financial hardship as starting in the first year when cash flows fall short of the company's long-term debt obligations. As long as cash flows exceed current debt commitments, the company can still pay its creditors. The primary issue for

businesses in a financial crisis is their inability to fulfill debt-related contractual obligations. However, the effects of a financial crisis can become apparent long before a default occurs. Wruck (1990) argued that factors such as declining performance, poor risk management, and economic downturns can contribute to a company's financial distress. According to Boritz (1991), a financial crisis begins with an incubation phase, which is characterized by poor economic conditions and ineffective management that leads to costly mistakes. The theory of financial distress remains relevant today due to the credit and liquidity risks that companies face. For commercial banks, a liquidity crisis can occur when they are unable to lend to borrowers or provide cash to depositors when needed. It is crucial for businesses to consider the interests of other creditors when developing risk management strategies. Since credit risks in banks can lead to financial distress, they must be carefully managed. The management of a bank's loan portfolio plays a key role in maintaining its liquidity. To avoid financial trouble, banks must effectively manage their exposure to both credit and liquidity risks. The impact of credit risks on financial performance was a key issue raised in the discussion.

2.1.1.6 Portfolio Theory

Banks have effectively utilized present day portfolio hypothesis (MPT) to oversee market risk since the 1980s. Esteem in danger (VAR) and profit in danger (EAR) models are presently broadly utilized by banks to control their openness to loan fee and market risk. Remorsefully, however, the use of MPT to credit risk has fallen behind, notwithstanding the way that credit risk keeps on being the greatest gamble that most banks face (Margrabe, 2007). As per the portfolio hypothesis, banks have frequently overseen credit risk resource by-resource. Albeit each bank has an alternate interaction, by and large, methodology involves applying a credit risk rating, dissecting the credit nature of advances and other credit openings consistently, and adding the discoveries to decide the extended misfortunes for a portfolio (Gakure et al., 2012). Gakure et al. (2012) expressed an inner credit risk rating framework and an exhaustive advance assessment structure the premise of the resource by-resource technique. Utilizing this technique, chiefs may rapidly recognize changes in individual credits or portfolio patterns thanks to a credit survey and credit risk rating framework (Gakure et al., 2012). The executives may rapidly change portfolio

procedures or move forward credit observing in light of the discoveries of its concern advance location, advance survey, and credit risk rating framework.

The resource by-resource technique is an indispensable instrument for controlling credit risk, yet it just offers a fractional image of portfolio credit risk, which is characterized as the opportunity that genuine misfortunes would outperform projected misfortunes. Thus, banks are looking increasingly more to enhance the resource by-resource approach with a quantitative portfolio evaluation using a credit model to get a more profound comprehension of credit risk. Banks are investigating a portfolio system with an end goal to tackle the resource by-resource strategy's powerlessness to assess surprising misfortunes satisfactorily. The portfolio offers a system for characterizing and measuring venture risk as well with respect to making linkages among risk and projected returns. It depends on the principal premise that financial backers much of the time try to streamline gets back from their resources for a given measure of chance. The resource by-resource approach's failure to precisely distinguish and measure fixation is one of its shortcomings. Fixation risk is the term for additional portfolio risk welcomed on by a more noteworthy level of openness to a borrower or to an assortment of related borrowers (Margrabe, 2007).

2.1.2 Meaning of Credit Risk

Credit risk refers to the possibility that a borrower will fail to meet their obligations as outlined in the agreed terms and conditions. This risk arises from various activities, including loan transactions, interbank dealings, and off-balance sheet activities. Credit Risk Management (CRM) seeks to optimize the bank's risk-adjusted return by ensuring that Credit Risk Exposure (CRE) remains within acceptable limits. For most banks, loans represent the most significant, yet often least understood, source of credit risk. However, credit risk can extend across all areas of a bank's operations, including both its trading and banking books, as well as its on- and off-balance sheet activities (Michel et al., 2001).

Banks are particularly vulnerable to credit risk and counterparty risk in financial instruments beyond traditional loans, such as acceptances, interbank transactions, trade financing, foreign currency transactions, guarantees, and transaction settlements. Credit is typically viewed as the most lucrative asset, especially for commercial

banks, due to the large volume of transactions it involves. It is considered the lifeblood of commercial banks, representing a significant portion of their capital. Credit plays a central role in determining profitability and generating income, and it has a broader impact on the overall economy (Horcher, 2005).

In the current context, extending credit to a business can positively influence the national economy by enhancing the client's financial standing. Similarly, it provides industries and businesses with the necessary capital, which, in turn, generates tax revenue for the government, contributing to overall economic growth. Additionally, credit acts as a safeguard for depositors. From the beginning, it is assumed that credit plays a key role in wealth maximization. While other factors can affect profitability and wealth accumulation, credit risk is considered the most significant. As the cornerstone of commercial banking, managing this risk is one of the most challenging tasks (Vaidya, 2014).

2.1.3 Classification of Credit

Credit categorization is the process by which banks evaluate their loan portfolios and group loans based on central bank criteria, relevant loan characteristics, and perceived risk. This ongoing review and classification system allows banks to monitor the quality of their loans and take corrective actions to mitigate risk. To help manage lending risk, Nepal Rastra Bank (NRB) has established guidelines for classifying loans and making provisions for potential losses. These guidelines are issued under the authority granted by subsection 1 of section 23 of the NRB Act 2012 (revised) and section 19(ka) of the Commercial Bank Act (revised). According to these guidelines, NRB categorizes loans into five distinct groups:

- Pass loan
- Watch List
- Substandard loan
- Doubtful loan
- Bad Loan

Pass Loan

Pass loans are loans or advances where the repayments are either not yet due or are due within the next month. These are considered performing loans.

Watch List

Loans and advances that meet the following criteria under the pass loan category should be added to a watch list:

- Payments of principal and interest are overdue by more than three months.
- The maturity period for working capital loans or short-term loans was temporarily extended, but the renewal was not done on time.
- A loan from another bank or financial institution for the same debtor has been classified as non-performing.
- Regular loans (such as working capital or short-term loans) provided to businesses or corporate entities that have experienced a consistent decline in net worth over the past two years.
- Projects benefiting from multiple banks' financing, but not converted to consortium financing as per Directive No. 2, Section 33.
- Loans and advances with insufficient cash flow upon bank review, warranting inclusion on a watch list.

Sub-Standard Loan

Sub-standard loans are defined as loans and advances with repayment terms that exceed three months but are less than six months.

Doubtful Loan

Doubtful loans are loans and advances where the repayment installments are overdue for more than six months but less than a year.

Bad Loan (Loss)

If the repayment installment on a loan or advance is overdue for more than a year, the loan or advance must be classified as a loss (poor loan).

2.1.4 Credit Risk Management Framework

Fluctuations in interest rates, currency exchange rates, commodity prices, and real estate values are common. However, such fluctuations have led to instability in both the corporate strategies and performance of banks and their clients. As a result, it is crucial for banks to develop a framework for marketing their services to clients effectively. One way banks manage risk is by adjusting their portfolios on the balance sheet or using off-balance sheet tools derived from financial engineering. These off-balance sheet instruments are known as derivative contracts or simply "derivatives" (John, 1998).

The risk management framework is built on three key pillars, which can be summarized as follows:

- For traditional banks, this implies making great locus and ventures.
- Additionally, for traditional banks, it involves making wise investment choices in non-traditional areas such as investment banking, mutual funds, and insurance derivatives. Prudent investment decisions in these areas contribute to the creation of corporate value.
- The key to making smart investments is ensuring the generation of sufficient cash flows from domestic operations.
- Banks that fail to generate internal cash flow often need to make larger cuts to their investments compared to their competitors. In the banking sector, maintaining capital adequacy is crucially dependent on generating sufficient internal cash flow. Having enough capital is essential for both growth and making sound investment decisions. Banks with inadequate capital are more vulnerable to higher deposit insurance premiums, increased regulatory scrutiny, and the risk of being acquired by other parties.
- A bank should thoroughly and cautiously assess key market indicators.
- Unfavorable changes in external factors, such as interest rates and commodity prices, can weaken a company's ability to invest and lead to cash flow difficulties.

2.1.5 Systems and Procedures of Credit Policy

A robust credit policy effectively integrates all lending functions, contributing to the

smooth operation of the business. In terms of credit policy, a bank must primarily follow these key processes and practices:

a) Credit Origination

Banks must follow clear and fair guidelines for both new loan applications and loan extensions. Loan approvals should align with the institution's target markets and lending strategy. Before granting a loan, banks must evaluate the risk profile of the client's transaction. This assessment may include:

i. The credit evaluation of the borrower's industry, considering macroeconomic factors.
ii. The purpose of the loan and the identified source of repayment.
iii. The borrower's credit history and past repayment record.
iv. An assessment of the borrower's ability to repay the loan.
v. A review of the proposed loan terms, conditions, and covenants.
vi. The adequacy and enforceability of any collateral or security.
vii. Approval by the appropriate authorities.

When establishing a new relationship, the bank must carefully consider the borrower's or counterparty's reputation, legal capacity to assume liability, and integrity. The bank should thoroughly assess the borrower or counterparty before initiating any new credit arrangement to ensure it is dealing with a reputable and creditworthy individual or entity. However, credit should not be approved solely based on the applicant's perceived trustworthiness; "name lending" must be avoided at all costs (Koch & Macdonald, 2004).

Institutions should evaluate the borrower's financial position, the intended use of the funds, and the expected cash flows in terms of both amount and timing when structuring lending facilities. When granting a credit facility, it is essential to carefully assess the risk-reward balance and set the credit price to reflect all associated costs. Additionally, it is important to establish appropriate terms and conditions that protect the institution's interests (Joseph, 1998).

Institutions must ensure that loans are used for their intended purposes. If a borrower uses funds for reasons not outlined in the original proposal, the institution should

assess the potential impact on the borrower's creditworthiness. This scrutiny is particularly important for corporate loans where the borrower controls a group of companies. Institutions should categorize these affiliated businesses and evaluate their credit risk collectively. In loan syndications, the lead institution typically conducts the majority of the credit analysis and evaluation. While this information is useful, institutions should not rely solely on it. Each syndicate member is advised to perform their own independent analysis.

An institution should not place excessive reliance on covenants or collateral. While collateral is undeniably important, the borrower's ability to service the debt and their standing in the market should be prioritized over collateral as a safeguard in case of default. The focus should be on the borrower's financial strength and repayment capacity rather than solely on the collateral provided (Reed et al., 1980).

b) Limit Setting

Establishing exposure limits for individual borrowers and groups of related borrowers is a vital aspect of credit risk management. According to Nepal Rastra Bank, "institutions are expected to develop their own limit structure while staying within the exposure limits set by the central bank." When determining these limits, factors such as the borrower's creditworthiness, the genuine need for credit, the state of the economy, and the institution's risk appetite should all be considered. The limits should be tailored to the specific products and activities involved. To mitigate concentration risk, institutions may also set limits for particular industries, economic sectors, or geographic regions (Vaidya, 2014).

The obligor may occasionally decide to disclose the facility restrictions to its affiliated businesses. If the transactions are significant and frequent, institutions should review these arrangements and establish appropriate restrictions. Credit limits should be assessed annually, or more frequently if the credit quality of the obligor starts to deteriorate. Any request for an increase in credit limits must be properly supported with relevant justification.

c) Loan Administration

An essential aspect of the lending process is the ongoing management of the loan

portfolio. The loan administration function primarily serves as a back-office role, overseeing and supporting the maintenance and extension of loans. A typical loan administration unit performs the following tasks (Reed et al., 1980):

i) Documentation

One of the key responsibilities of loan administration is ensuring the accuracy of documents, such as loan agreements, guarantees, and title transfers of collateral, in accordance with the authorized terms and conditions. To ensure proper execution and receipt, outstanding documents should be closely monitored and followed up on.

ii) Loan Disbursement

Before entering facility restrictions into the computer systems, the loan administration function must ensure that the loan application has received the necessary approvals. Payments should only be made once covenants have been met and collateral has been received. If any exceptions arise, approval from the relevant authorities should be obtained.

iii) Credit Monitoring

Once the loan has been approved and authorized for drawdown, it must be closely monitored. This includes ensuring timely repayments, conducting periodic collateral valuations, identifying early signs of irregularities, and tracking the borrower's adherence to the lending conditions.

iv) Loan Repayment

When the principal or interest installment is due, the obligor should be notified in advance. Any deviations, such as non-payment or late payment, must be recorded and reported to management. Once payment is received, proper documentation should be updated, and any necessary revisions should be made.

v) Maintenance of Loan Files

Institutions should establish clear standards and procedural guidelines for maintaining loan files. These files should not only document all communications with the borrower but also include sufficient information to assess the borrower's financial condition and repayment history. Data should be organized in a way that allows for

easy review by NRB inspectors, as well as internal and external auditors.

vi) Collateral and Security Documents

Institutions must ensure that all security documents are stored in a dual-control, fireproof safe. A register should be maintained to track the movement of these documents. Additionally, procedures should be in place for monitoring and reviewing the relevant insurance coverage for specific facilities and collateral. Regular physical inspections of security documents are also essential to ensure their accuracy and security (Reed et al., 1980).

2.2 Empirical Review

Noman et al. (2015) conducted a study to examine the impact of credit risk on banking profitability in Bangladesh. The aim was to assess how credit risk influences the profitability of the country's banking sector. The study used 172 observations from 18 private commercial banks over a period from 2003 to 2013, utilizing an imbalanced panel data set. For profitability indicators, the research employed Return on Average Assets (ROAA), Return on Average Equity (ROAE), Net Interest Margin (NIM), and Loan Loss Reserves to Gross Loans (LLRGL). In terms of credit risk indicators, the study used Non-Performing Loans to Gross Loans (NPLGL), Loan Loss Reserves to Gross Loans (LLRGL), Loan Loss Reserves to Non-Performing Loans (LLRNPL), and the Capital Adequacy Ratio (CAR). The study reveals a significant negative impact of Non-Performing Loans to Gross Loans (NPLGL) and Loan Loss Reserves to Gross Loans (LLRGL) on all profitability indicators, as demonstrated using the OLS random effect model, GLS, and system GMM. Furthermore, the data indicated that the Capital Adequacy Ratio (CAR) had a significant negative effect on Return on Average Equity (ROAE). Additional analysis showed that the adoption of Basel II had a notably positive impact on Net Interest Margin (NIM), but a significantly negative impact on ROAE. The research offers several key policy implications aimed at enhancing profitability and protecting banks against financial crises.

Gijaw et al. (2015) investigated the impact of credit risk on the profitability performance of commercial banks in Ethiopia. The primary goal of the study was to analyze how credit risk affected the profitability of Ethiopian commercial banks. To

achieve this, secondary data was collected from eight commercial banks over a 12-year period (2003–2014), sourced from the National Bank of Ethiopia and the annual reports of the individual banks. The study found that credit risk indicators, such as non-performing loans, loan loss provisions, and capital sufficiency, significantly influenced the profitability of Ethiopian commercial banks. The analysis, which used descriptive statistics and a panel data regression model, concluded that in order to sustain the current level of profitability in Ethiopian commercial banks, there is a need for improved credit risk management.

Alshatti (2015) examined the impact of credit risk management on the financial performance of Jordanian commercial banks. The main objective of the study was to assess how credit risk management practices affected the financial performance of these banks. The study employed correlation and multiple regression analysis to analyze the data. The findings revealed that the Capital Adequacy Ratio (CAR) had an insignificant negative effect on both Return on Assets (ROA) and Return on Equity (ROE). Conversely, the Credit to Investment and Credit Facilities (CICF) ratio had a positive but insignificant effect on both ROA and ROE. Provision for facilities loss to net facilities had a significant negative effect on ROA and ROE. The Leverage Ratio showed a significant negative effect on ROA but an insignificant positive effect on ROE. Finally, the Non-Performing Loan Ratio (NPLR) had a significant positive effect on both ROA and ROE.

Bhattarai (2016) analyzed the effect of credit risk on the performance of Nepalese commercial banks. The study aimed to examine how credit risk influences the performance of these banks. It used descriptive and causal-comparative research designs, analyzing pooled data from 14 commercial banks over the period 2010 to 2015 using a regression model. The findings revealed that the Capital Adequacy Ratio (CAR) and Cash Reserve Ratio (CRR) had an insignificant positive effect on Return on Assets (ROA), while Non-Performing Loans (NPL) had a significant negative effect on ROA. Additionally, cost per loan and bank size showed a significant positive effect on ROA. The study concluded that there is a significant relationship between credit risk indicators and bank performance.

Otieno and Nyagol (2016) explored the relationship between credit risk management and financial performance in microfinance banks in Kenya. The primary objective of the study was to evaluate how credit risk management practices influence the financial performance of these banks. The researchers used a multiple regression model and panel data analysis with the system GMM technique to test the significance of the relationship between credit risk management and financial performance. The findings from the GMM analysis revealed a significant negative relationship between credit risk management and both Return on Average Assets (ROAA) and Return on Average Equity (ROAE). Specifically, the study found that credit risk management, as measured by the Portfolio at Risk (PAR) and Loan Loss Provision to Credit Risk (LLPCR) parameters, had a strong negative correlation with bank performance. The study concluded that there is a significant correlation between performance and credit risk management, with credit risk management practices having a direct impact on the performance of microfinance banks.

Maharjan et al. (2016) analyzed the relationship between bank credit risk, liquidity, and profitability in Nepalese commercial banks. The main objective of the study was to examine how bank credit risk affects the profitability and liquidity of commercial banks in Nepal. The study used Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) as dependent variables, while Total Debt to Equity, Loan to Deposit Ratio, Non-Performing Loans to Gross Loans (NPL), and Loan Loss Provision (PL) were chosen as independent variables. Regression models were employed to investigate the relationships between these factors. The study found that the Loan to Deposit Ratio and Loan Loss Provision (PL) had an insignificant negative effect on both ROA and ROE. In contrast, the Debt to Equity Ratio showed a significant positive impact on ROE and an insignificant negative impact on ROA. Finally, the Non-Performing Loan (NPL) ratio had a significant positive effect on ROA but an insignificant positive effect on ROE.

Annor and Obeng (2017) analyzed the effect of credit risk management on the profitability of selected commercial banks listed on the Ghana Stock Exchange. The primary aim of their study was to explore how credit risk influences the profitability of these banks. They collected secondary data from the annual reports of six chosen banks and the Ghana Banking Survey for the relevant years. The researchers used the

Random Effect Model within the panel estimation framework for their analysis. Their findings revealed that the Non-Performing Loan Ratio (NPLR) and Capital Adequacy Ratio (CAR) had a significant positive impact on Return on Equity (ROE), while the Loan Loss Provision Ratio (LLPR) had a significant negative effect on ROE. Additionally, the loan-to-assets ratio showed an insignificant negative impact on the banks' ROE.

Ifeanyi and Francis (2017) examined the impact of credit management on the profitability of deposit money banks in Nigeria. The study focused on the relationship between the profitability of Deposit Money Banks (DMBs), measured by Return on Assets (ROA), and credit management practices in Nigeria from 2006 to 2015. Secondary data was sourced from the Central Bank of Nigeria's Statistical Bulletins and the annual reports of all currently operating DMBs. The researchers employed multiple regression analysis for the study. The results indicated that non-performing loans had a negative and insignificant effect on profitability, while loans, advances, and loan loss provisions had a positive but small effect. Overall, the regression models demonstrated a good fit and were statistically robust.

Shrestha (2017) investigated the impact of credit risk management on the profitability of Nepalese commercial banks. The primary objective was to assess how credit risk management influences the profitability of these banks. The study employed descriptive statistics, correlation analysis, and several diagnostic tests to verify the assumptions of the linear regression model. The findings revealed that both capital adequacy and asset growth ratio had a significant positive effect on Return on Assets (ROA) and Return on Equity (ROE). Conversely, the Non-Performing Loan Ratio (NPLR) and leverage had a significant negative impact on both ROA and ROE. The cash reserve ratio was found to have an insignificant negative effect on ROA and ROE. Additionally, the cost per loan asset ratio had an insignificant positive effect on ROA, but a significant positive impact on ROE.

Singh and Sharma (2018) explored the impact of credit risk on the profitability of Indian public sector banks. The study aimed to assess how credit risk influenced the financial performance of 26 public sector banks. Secondary data spanning six years (2011–2016) was collected from various sources, including journals, websites,

Reserve Bank of India reports, and Indian Banks' Association publications. The data were analyzed using PASW 18.0 software, employing multiple regression techniques. The results revealed a negative relationship between Return on Assets (ROA) and Non-Performing Loan Ratio (NPLR), while a strong positive correlation was found between ROA and the Capital Adequacy Ratio (CAR) and the Loan to Non-Performing Loan Ratio (LPNPL). The study indicated that credit risk factors (CAR, NPLR, and LPNPL) accounted for 55.7% of the variance in ROA, suggesting their significant impact on profitability. Although CAR and LPNPL were not found to be significant predictors of profitability, NPLR emerged as the most crucial credit risk factor in forecasting a bank's profitability. The study concluded that to minimize non-performing loans and maximize profitability, banks should focus on effective credit risk management.

Poudel (2018) examined the impact of credit risk on the profitability of commercial banks in Nepal. The main aim of the study was to assess how credit risk affects the profitability of Nepalese commercial banks. Data were collected from a sample of fifteen commercial banks operating in Nepal between 2002–2003 and 2014–2015. The study employed the one-way Fixed Effect Model (FEM), a key method for panel data analysis, to regress Return on Equity (ROE) against both macroeconomic and bank-specific variables. The findings indicated that credit risk has a significant negative impact on the profitability of Nepal's commercial banks. Additionally, inflation, interest spread rates, and solvency ratios were found to have a small negative effect on profitability. In contrast, GDP growth, total assets, and the capital adequacy ratio were identified as significant factors that positively influence profitability. Finally, the study found that interbank interest rates have a slight positive impact on profitability.

Al-Eitan and Bani-Khalid (2019) analyzed the relationship between credit risk and financial performance of Jordanian commercial banks through a panel data analysis. The study examined the effects of credit risk (CR) on the financial performance of banks listed on the Amman Stock Exchange from 2008 to 2017. The research used the Generalized Least Squares (GLS) method, along with both fixed and random-effect models for panel data analysis, to assess the performance of sixteen listed banks. The findings revealed that credit risk has a significant and negative impact on both Return

on Equity (ROE) and Return on Assets (ROA). In addition, the study showed that while total deposits and bank size positively and significantly influence financial performance, credit risk—measured by the ratio of doubtful debts to total loans, non-performing loans, and loan losses to total loans—has a significant negative effect on both ROA and ROE.

Olaoye and Fajuyagbe (2020) evaluated the impact of credit risk management on the profitability of selected deposit money banks in Nigeria, using a panel data approach. The primary objective of the study was to examine how credit risk management influences the profitability of specific deposit money banks in Nigeria. To explore the relationship between the banks' profitability and credit risk management, the study utilized a single panel-based model. Both descriptive and inferential analytical methods were applied to the collected data. The results revealed that while provisions for doubtful debts had a significant and positive effect on the profitability of the banks, credit risk management, as measured by non-performing loans, had a small negative impact on profitability.

Munangi and Sibindi (2020) examined the impact of credit risk on the financial performance of 18 South African banks from 2008 to 2018. The primary objective of the study was to assess how credit risk management influenced the profitability of these banks. Specifically, the research focused on the effects of provisions for doubtful debts and non-performing loans (NPLs) on the Return on Assets (ROA) of the selected banks. The study used panel data techniques, including fixed effects, random effects, and pooled ordinary least squares (pooled OLS) estimators for the analysis. The findings revealed that the Non-Performing Loan Ratio (NPLR) had a significant negative effect on ROA but an insignificant positive effect on Return on Equity (ROE). Additionally, the NPL to equity ratio showed an insignificant positive impact on ROA but a significant negative effect on ROE. The study also found that bank size and leverage had insignificant positive effects on both ROA and ROE. Finally, the Capital Adequacy Ratio (CAR) had a significant positive effect on ROA, but an insignificant negative effect on ROE.

Nelson (2020) examined the impact of credit risk management on the profitability of BGFI Bank Congo. The primary goal of the study was to assess how credit risk

management influenced the profitability of commercial banks in Congo. The research used MS Excel 2016 for data handling and EViews 9 for performing a descriptive analysis of the variables to better understand the relationship between credit risk and profitability. The findings revealed that the Capital Adequacy Ratio (CAR) had an insignificant negative effect on Return on Equity (ROE) but a significant positive effect on Return on Assets (ROA). The Non-Performing Loan Ratio (NPLR) was found to have an insignificant negative impact on both ROA and ROE. The Loan Loss Provision Ratio (LLPR) had a significant negative effect on ROE, though its impact on ROA was insignificant and negative. Finally, the ratio of Risk-Weighted Credit Losses to Total Assets (RCLSTF) showed an insignificant positive effect on ROE and an insignificant negative effect on ROA.

Risal and Poudel (2020) investigated the role of credit risk in explaining performance differences between A and B class banks in Nepal. The study aimed to explain how credit risk contributes to the performance disparity between these two categories of financial institutions. To address unobserved heterogeneity and reduce bias in parameter estimation, the researchers employed the Arellano-Bond method, which accounts for both cross-sectional and time dimensions in the data. The findings revealed that the Capital Adequacy Ratio (CAR) had a significant positive effect on Return on Assets (ROA) but a significant negative effect on Return on Equity (ROE). The Non-Performing Loan Ratio (NPLR) showed a significant negative impact on ROA, but an insignificant negative effect on ROE. The Credit Deposit Ratio (CDR) had a significant positive effect on both ROA and ROE, while Gross Domestic Product (GDP) growth and inflation (INF) were found to have a significant negative impact on both ROA and ROE. Additionally, the Loan Loss Provision to Total Loans Ratio (LLPTLA) had an insignificant negative effect on ROA but a significant negative impact on ROE.

Al Zaidanin and Al Zaidanin (2021) examined the impact of credit risk management on the financial performance of commercial banks in the United Arab Emirates (UAE). The study aimed to investigate the extent to which various factors—namely, the capital adequacy ratio, non-performing loans ratio, cost-income ratio, liquidity ratio, and loans-to-deposits ratio—affect the financial performance of sixteen commercial banks operating in the UAE over the period 2013–2019. Secondary data

were collected from the banks and analyzed using descriptive statistics, along with hypothesis testing via the random effects model. The results of the regression analysis indicated that the non-performing loans ratio and the cost-income ratio had a significant negative impact on the profitability of UAE commercial banks. In contrast, the capital adequacy ratio, liquidity ratio, and loans-to-deposits ratio were found to have weak positive relationships with return on assets (ROA), but their effects were statistically insignificant, meaning they were not significant predictors of bank profitability.

Biswas et al. (2021) analyzed the effect of credit risk on the profitability of commercial banks in Bangladesh, focusing on both public and private sector banks. The study used secondary data from annual reports and employed multiple regression analysis to explore the relationship between credit risk and profitability. The findings revealed a statistically significant positive relationship between Return on Assets (ROA), the cost-to-loan assets ratio, and the Capital Adequacy Ratio (CAR). Conversely, a significant negative correlation was found between Non-Performing Loans (NPLs), bank size, and ROA. The study also found no statistically significant relationship between the cash reserve ratio and ROA. Based on these results, the study concluded that bank size, NPLs, and CAR were the most important predictors of commercial banks' profitability among the five credit risk indicators analyzed.

Shrestha and Nirouala (2021) investigated the impact of credit performance and capital adequacy on the financial outcomes of commercial banks in Nepal. The study aimed to explore how credit performance and capital adequacy influence the profitability of Nepalese commercial banks. Secondary data from annual reports were used for the analysis, which employed multiple regression techniques. The findings revealed a statistically significant positive relationship between Return on Assets (ROA), the cost-to-loan assets ratio, and the Capital Adequacy Ratio (CAR). In contrast, a significant negative correlation was observed between Non-Performing Loans (NPLs), bank size, and ROA. The study also found no statistically significant relationship between the cash reserve ratio and ROA. Based on these results, the study concluded that bank size, NPLs, and CAR were the most important predictors of commercial bank profitability among the five credit risk indicators examined.

Chhetri (2021) examined the impact of credit risk management on the financial performance of Nepalese commercial banks. The study aimed to investigate how credit risk influences the financial performance of these banks. Using panel data from 17 commercial banks, with 85 observations collected between 2015 and 2020, the study employed a regression model with Return on Assets (ROA) as the dependent variable. The findings revealed that the Non-Performing Loan Ratio (NPLR) had a statistically significant negative effect on financial performance (ROA). Additionally, bank size (BS) and the Capital Adequacy Ratio (CAR) were found to have a negative, yet statistically insignificant, impact on ROA. The study also showed that the Credit to Deposit Ratio (CDR) had a positive but insignificant relationship with ROA, while the Management Quality Ratio (MQR) was positively and significantly correlated with the financial performance of Nepalese commercial banks. The study concluded that improving management quality could help reduce the high incidence of non-performing loans and mitigate their negative impact on financial performance.

Kawor and Atinyo (2022) investigated the relationship between credit risk and profitability of universal banks in Ghana. The main objective of the study was to assess how credit risk influences the profitability of universal banks in Ghana, using annual data from 22 banks over the period 2011 to 2020. The banks were selected using a criterion sampling technique. The relationship between credit risk and profitability was analyzed using Ordinary Least Squares (OLS) regression. Return on Assets (ROA) was used as the profitability metric, while Non-Performing Loans to Loans and Advances (NP/LA), Loans and Advances to Total Deposits (LA/TD), and Provision for Loan Loss to Net Loans (PLL/NL) were used as proxies for credit risk. The results indicated that both NP/LA and LA/TD had significant positive effects on ROA, while PLL/NL had a negative relationship with ROA. Overall, the study found that credit risk significantly impacts the profitability of universal banks in Ghana. The findings suggest that effective credit risk management is crucial, and bank management should take proactive steps to mitigate the risks associated with credit.

Dunyoh et al. (2022) examined the impact of credit risk on the financial performance of rural and community banks in Ghana. The study aimed to understand how credit risk influences the profitability and financial stability of these banks. Secondary data were collected from the annual reports of ten community and rural banks in Ghana,

covering the period from 2014 to 2018. These banks were selected based on the availability of complete financial records during the study period. The data were analyzed using STATA version 13. The findings revealed a negative correlation between credit risk indicators and financial performance metrics. The study concluded that credit risk significantly affects the financial performance of rural and community banks in Ghana. It also highlighted that credit risk has been increasing over time and is likely to continue impacting these banks' performance in the future.

Yeasin (2022) investigated the impact of credit risk management on the financial performance of commercial banks in Bangladesh. The main objective of the study was to examine how credit risk management influences the financial outcomes of these banks. Using a deductive research approach, the study focused on six commercial banks in Bangladesh, analyzing secondary data from 2010 to 2019. The data were analyzed through panel regression. The results indicated that the Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) had a statistically significant negative effect on the financial performance of the banks. In contrast, the Loan to Deposit Ratio (LDR) showed a statistically significant positive impact on the banks' financial performance. The study concluded that credit risk has a detrimental impact on the financial performance of commercial banks in Bangladesh.

Shrestha (2022) analyzed the effect of credit risk on the profitability of Nepalese commercial banks. The study aimed to explore how various credit risk indicators affect the profitability of these banks. The ratios used to quantify credit risk included the Total Loan to Total Deposit (TL/TD), Cash Reserve Ratio (CRR), Non-Performing Loan to Total Loan (NPL/TL), and Loan Loss Provision to Total Loan (LLP/TL), while profitability was measured using Return on Assets (ROA). The study used annual data from 18 commercial banks over the period 2013–2019 and applied the Fixed Effect model for analysis. The results showed that credit risk significantly impacts the profitability of Nepalese commercial banks. Specifically, the TL/TD ratio was found to have a significant positive effect on profitability, while both the NPL/TL and LLP/TL ratios had significant negative effects. The study concluded that to enhance profitability, bank management should focus on increasing the ratio of total loans to total deposits and reducing the ratios of non-performing loans and loan loss provisions to total loans.

Butola, Dube, and Jain (2023) analyzed the impact of credit risk management (CRM) on the profitability of Indian banks. The main objective of the study was to establish a statistical relationship between profitability and CRM in Indian banks. The researchers collected secondary data from 38 scheduled commercial banks in India and employed panel data regression for the analysis. Return on Assets (ROA) was used as the dependent variable to measure profitability. Independent variables representing CRM included the Credit to Deposit Ratio (CDR), Net Interest Margin (NIM), Operating Profits to Total Assets (OPA), Capital Adequacy Ratio (CAR), Provision Coverage Ratio (PCR), and Net Non-Performing Assets to Net Advances (NNPA). The findings revealed that ROA had a positive relationship with CDR, OPA, and CAR, while it showed a negative correlation with NIM, NNPA, and PCR. Notably, PCR exhibited a statistically significant correlation with profitability.

Table 1

Summary of Empirical Review

S. N.	Author (s)	Topic	Objectives	Methodology	Major Findings
1	Noman, Pervin, Chowdhur and Banna (2015)	The effect of credit risk on the banking profitability : A case on Bangladesh.	The study aimed to find the effect of credit risk on profitabilit y of the banking sectors of Banglades h.	Using OLS random effect model, GLS and system GMM the study finds a robust negative and significant effect of NPLGL, LLRGL on all profitability indicators.	This study found that NPL to loan had significant positive impact on profitability (ROA & ROE). Then, LLP to loan has insignificant negative effect on ROA but significant negative effect on ROE. At the meantime, LLP to NPL has insignificant positive influence on ROA & ROE. Finally, CAR has insignificant positive impact on ROA but significant negative impact on ROE.
2	Gijaw, Kebede and Selveraj (2015)	The impact of credit risk on profitability performanc e of commercial banks in Ethiopia.	The main objective of the study to examine the impact of credit risk on profitability of commercial banks in Ethiopia.	The data were analyzed using a descriptive statics and panel data regression model	NPLR has significant negative effect on ROA and ROE and CAR has positive insignificant impact on ROA but significant negative impact on ROE. Then, loan and advance ratio has insignificant positive impact on ROA and ROE. Finally, LLPR has significant positive impact on ROA and ROE.

3	Alshatti (2015)	The Effect of Credit Risk Management on Financial Performance of the Jordanian Commercial Banks.	To examine the effect of credit risk management on financial performance of the Jordanian commercial banks.	Two mathematical models have been designed to measure this relationship, the research revealed that the credit risk management effects on financial performance of the Jordanian commercial banks as measured by ROA and ROE.	This study found that CAR has insignificant negative effect on ROA and ROE. Then, CICF has positive insignificant effect on ROA and ROE. Provision for facilities loss to net facilities has significant negative effect on ROA and ROE. At the meantime, Leverage ratio significant negative effect on ROA but insignificant positive effect on ROE. Finally, NPLR has significant positive effect on ROA & ROE.
4	Bhattarai (2016)	Effect of credit risk on the performance of Nepalese commercial banks.	This study has examined the effect of credit risk on performance of Nepalese commercial banks.	The descriptive and causal comparative research designs have been adopted for the study. The pooled data of 14 commercial banks for the period 2010 to 2015 have been analyzed using regression model.	The regression results revealed that 'non-performing loan ratio' has negative effect on bank performance whereas 'cost per loan assets' has positive effect on bank performance. In addition to credit risk indicators, bank size has positive effect on bank performance. Capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance.
5	Otieno, Nyagol and Onditi (2016)	Relationship between credit risk management and financial performance: empirical evidence from microfinance banks in	This study evaluated relationship between credit risk management and financial performance of Microfinance banks in Kenya	This study is used descriptive, correlation and multiple regression analysis.	This study found that LLPR and portfolio at risk have significant negative effect on bank performance. Then, GDP and INF have significant positive effect on performance. Further, bank size has insignificant negative effect on bank performance (ROA and ROE) of the banks.

		Kenya.			
6	Maharjan, Anrud Yadav, Poudel, Shrestha, and Aryal (2016)	The relationship between bank credit risk, liquidity and profitability in Nepalese commercial banks.	This study examined the relationship between bank credit risk, profitability and liquidity of commercial banks in Nepal	The regression models were estimated to test the relationship between bank credit risk, liquidity and profitability in context of Nepal.	This study found that LTD and PL have insignificant negative effect on ROA and ROE. Likewise, debt to equity has significant positive impact on ROE and insignificant negative impact on ROA. Finally, NPL has significant positive effect on ROA and insignificant positive impact on ROE.
7	Annor and Obeng (2017)	Impact of credit risk management on the profitability of selected commercial banks listed on the Ghana stock exchange.	This study examined the effect of commercial bank lending on inflation in Nepal.	Secondary data was gathered from the annual reports of the six selected banks and Ghana banking survey for the years under consideration. The study adopted the Random Effect Model within the panel estimation technique framework.	The findings showed that indeed credit risk management have significant relationship with the profitability of banks. While capital adequacy ratio had positive relationship with a bank's profitability; non-performing loans, loan loss provisions ratio and loan to asset ratio shows statistically significant negative relationship with the profitability of a bank. inflation in Nepal.
8	Ifeanyi and Francis (2017)	Effect of Credit Management on Profitability of Deposit Money Banks in Nigeria.	This study examined the nexus between credit management and profitability (ROA) of Deposit Money Banks (DMBs) in Nigeria context for the period	Secondary data were sourced from Central Bank of Nigeria Statistical Bulletins and the Annual Reports of all the existing DMBs studied. The study employed multiple regression	The study found that loans and advances and loan loss provision have positive and insignificant effect on profitability, while non-performing loan has a negative and insignificant effect on profitability. The overall estimates of the two regressions have good fit and are adequate statistically.

			of 2006 to 2015.	technique.	
9	Shrestha (2017)	The impact of credit risk management on profitability: Evidence from Nepalese Commercial Banks.	This study examined the impact of credit risk management on profitability of Nepalese commercial banks.	In case, descriptive statistics, correlation analysis some diagnostic tests for the linear regression model assumption was presented.	This study shows that CAR and AGR have significant positive effect on ROA and ROE. NPLR and Leverage have significant negative impact on ROA and ROE. However, CRR has insignificant negative impact on ROA and ROE. Finally, CPLA has insignificant positive effect on ROA and significant positive impact on ROE.
10	Singh and Sharma (2018)	Impact of credit risk on profitability : a study of Indian public sector banks.	The present study was conducted to examine the impact of credit risk on profitability of twenty six public sector banks.	Software is used for data analysis to perform Multiple Regression.	This study revealed that NPLR had significant negative effect on profitability (ROA). However, CAR and PLNPL had insignificant positive effect on profitability (ROA) of Indian sector banks.
11	Poudel (2018)	Impact of credit risk on profitability of commercial banks in Nepal.	The main purpose of the study was to examine the impact of credit risk on profitability of the commercial banks in Nepal.	One way Fixed Effect Model (FEM) of panel data analysis is used as a major tool of analysis.	The results confirmed that credit risk has the significant negative impact on profitability of commercial banks in Nepal. In addition, solvency ratio, interest spread rate, and inflation have the insignificant negative impact on profitability. In contrast, capital adequacy ratio, total assets, and GDP growth have the significant positive impact on profitability of commercial banks in Nepal.
12	Al-Eitan and Bani-Khalid (2019)	Credit risk and financial performance of the Jordanian commercial banks: A panel data	This study examined the impact of credit risk (CR) on the financial performance of	A panel data analysis of both fixed and random-effect models and GLS method are employed	The results showed that CR has a negative and significant impact on return on assets (ROA) and return on equity (ROE). Further, the results indicated that CR (measured by the ratio of doubtful debts to total loans, non-performing loans and loan losses to total

		analysis.	Jordanian commercial banks listed in Amman Stock Exchange, for the period 2008-2017.		loans) has a negative and significant impact on ROA, and ROE. While, the total deposits and bank size have positive and significant impact on financial performance of these Jordanian commercial banks.
13	Olaoye and Fajuyagbe (2020)	Credit risk management and profitability of selected deposit money banks in Nigeria: Panel data approach.	The study investigated effects of credit risk management on the profitability of selected deposit money banks in Nigeria.	Data collated were analyzed using both descriptive and inferential methods of analysis.	Based on the findings, the study concluded that, risk management measured in terms of non-performing loans exert insignificant negative impact on profitability of deposit money banks, while, provision for doubtful debts had positive and significant effect on the profitability of deposit money banks in Nigeria.
14	Munangi and Sibindi (2020)	An empirical analysis of the impact of credit risk on the financial performance of South African banks.	The study investigated effects of credit risk management on the profitability of selected deposit money banks in Nigeria.	Panel data techniques, namely the pooled ordinary least squares (pooled OLS), fixed effects and random effects estimators were employed for this study.	This study found that NPLR has significant negative effect on ROA but insignificant positive effect ROE. Then, NPL to equity ratio has insignificant positive effect on ROA but significant negative effect on ROE. Likewise, SIZE and leverage have insignificant positive effect on ROA and ROE. Finally, CAR has significant positive effect on ROA but it has insignificant negative effect on ROE.
15	Nelson (2020)	The Effects of Non-performing Loans on Dynamic Network Bank Performance.	The main purpose of the study is to analyze credit risk indicators and profitability measurement ratios over the period of 2010-2019.	These datawill then be processed in MS Excel 2016, and back to Eviews 9 for descriptive analysis of the variables, thisallows us to explain the relationship between the	This study found credit risk management has a significant impact on profitability. The study also shows that other selected credit risk management indicators have a significant impact on the Bank's profitability, such as the loan provision ratio (LLPR) and the clean capital adequacy ratio.

				indicators of credit risk and profitability	
16	Risal and Poudel (2020)	Role of credit risk in performance difference between A and B Class Banks in Nepal.	This study presented an explanation for the performance differences between financial institutions in the A and B classes that arise from credit risk	This study used descriptive and multiple regression analysis to analyze the data.	This study found CAR has significant positive effect on ROA and significant negative effect on ROE. NPLR has significant negative impact on ROA and insignificant negative impact on ROE. CDR has significant positive effect on ROA and ROE but GPD and INF have significant negative effect on ROA and ROE. Moreover, LLPTLA has insignificant negative impact on ROA and significant negative impact on ROE.
17	Al Zaidanin and Al Zaidanin (2021)	The impact of credit risk management on the financial performance of United Arab Emirates commercial banks.	This study analyzed the effect of credit risk management on the financial performance of banks.	This study applied descriptive statistics and the random effect model for hypothesis testing.	This study found that non-performing loan and cost income ratio had significant negative effect on financial performance (ROA). Similarly, capital adequacy ratio, liquidity ratio and loan to deposit ratio had significant positive effect on ROA.
18	Biswas, Nath, Biswas and Rashid (2021)	Effect of credit risk on commercial banks' profitability: A case study of Bangladesh.	The main purpose of the study was to examine the impact of the credit risk on the profitability of the public and private sector banks in Bangladesh.	This study applied descriptive statistics and the multiple regression analysis.	This study revealed that non-performing loan ratio and bank size had significant negative effect on profitability. Then, capital adequacy ratio and cost to loan assets had significant positive effect on ROA. Finally, cash reserve ratio had insignificant positive effect on profitability of commercial banks in Bangladesh.
19	Shrestha and	The consequenc	This study aims at	Following random effect	This study found that CDR and NPLR has significant negative

	Nirouala (2021)	e of credit performance and capital adequacy: Evidence from commercial banks in Nepal.	examining the consequence of credit performance and capital adequacy of Nepalese commercial banks	GLS model, this study aims at examining the consequence of credit performance and capital adequacy of Nepalese commercial banks.	effect on profitability (ROA) and IRS has positive significant effect on ROA. Moreover, CAR has insignificant negative effect on ROA.
20	Chhetri (2021)	Effect of credit risk management on financial performance of Nepalese commercial banks.	The main purpose of this study was to investigate the effect of credit risk on the financial performance of commercial banks in Nepal.	This study used descriptive, correlation and multiple regression analysis.	This study revealed that NPLR has significant negative effect on profitability (ROA). CAR and bank size have insignificant negative effect on ROA. Moreover, CDR has insignificant positive effect on ROA and MQR has significant negative effect on ROA.
21	Kawor and Atinyo (2022)	The link between credit risk and profitability of Universal banks in Ghana.	The main objective of the study was to examine the relationship between credit risk and profitability.	This study used ordinary least squares to analyze the data.	This study revealed that non-performing loan and loan to deposit ratio had significant positive effect on profitability (ROA). Moreover, provision for loan loss to net loans had insignificant negative effect on profitability.
22	Dunyoh, Ankamah and Kosipa (2022)	The impact of credit risk on financial performance: Evidence from rural and community banks in	The study examined the impact of credit risk on financial performance of rural and community banks in	The secondary data for the analysis is from the rural and community banks' annual reports. Correlation and multiple regression	The findings showed negative relationships between the two credit risk indicators and the measures for financial performance. The study concluded that rural and community banks' financial performance was compromised by credit risk and that credit risk was steadily increasing and had the ability in the future to

		Ghana.	Ghana.	analysis is used in this study.	hinder rural and community banks' financial performance.
23	Yeasin (2022)	Impact of credit risk management on financial performance: A study of commercial banks in Bangladesh.	The study aimed to analyze the impact of credit risk management on financial performance of commercial banks.	This study used descriptive and multiple regression analysis.	NPLR has significant negative effect on ROA. However, CAR has insignificant negative effect on financial performance (ROA). Moreover, Loan to deposit ratio has insignificant positive effect on performance (ROA).
24	Shrestha (2022)	Effect of credit risk on profitability of Nepalese commercial banks.	This study examined the effect of credit risk on profitability of Nepalese commercial banks	Using the Fixed Effect model, this study finds the significant influence of credit risk on profitability of Nepalese commercial banks.	This study found that TL/TD has significant positive effect on profitability (ROA). NPL/TL and LLP/TL have significant negative effect on ROA. Moreover, CRR and SIZE have insignificant negative effect on profitability (ROA).
25	Butola, Dube and Jain (2023)	A study on impact of credit risk management on the profitability of Indian Banks.	The main aim of this study was to find a association between credit risk management and profitability within Indian banks.	This study used panel data multiple regression analysis to analyze the data.	This study found that the CDR, OPA and CAR are all positively related to the profit rate (ROA) while NIM, NNPA and PCR all found to be negatively related to the profit rate (ROA) and statistically show a significant association except PCR.

2.3 Research Gap

This refers to the research gap identified in previous studies. While various studies have been conducted on the relationship between liquidity and profitability in different banks by various scholars, experts, and researchers, the findings from these studies are often limited. These limitations arise due to factors such as insufficient

testing, adjustments to necessary variables, or incomplete analysis, which restrict the accuracy and applicability of the results. Given these constraints in the existing body of literature, there is a need for a new study that addresses these gaps and validates the findings through more comprehensive and refined research methodologies.

The purpose of this research differs significantly from previous studies. First, prior studies on credit management in banks focused on older periods, often lacking an analysis of more recent data. This research aims to fill that gap by examining the impact of credit management on the profitability of commercial banks up to the fiscal year 2022/23. Additionally, previous research did not explore the effect of credit management on the profitability of the specific five commercial banks included in this study. To address this, a new study was necessary to assess these banks' credit management practices. Furthermore, this study differs from prior work in terms of the explanatory variables used. While earlier studies may have focused on a limited set of factors, this research incorporates a wider range of variables, including the Cash Reserve Ratio (CRR), Credit to Deposit Ratio (CDR), Non-Performing Loan Ratio (NPLR), Leverage Ratio, and Bank Size. These factors are analyzed in relation to the dependent variables of profitability, measured by Return on Assets (ROA) and Return on Equity (ROE), to evaluate how credit management impacts the financial performance of commercial banks in Nepal. This study also distinguishes itself by using a variety of analytical tools, including descriptive analysis, correlation analysis, and regression analysis tools that were not utilized in previous studies. By employing these methods, this research aims to provide a clearer and more comprehensive understanding of credit risk and its implications for bank profitability. In summary, this study attempts to bridge the existing research gap by offering new insights into credit management practices and their effects on commercial banks' profitability.

CHAPTER - III
RESEARCH METHODOLOGY

Research methodology describes the method, procedures and plans of conducting research. It is a blue print to achieve goal. It includes research design, population and sample, sampling design, nature and sources of data and data collection instruments, research framework and definition of variables and method of analysis.

3.1 Research Design

A research design is a detailed plan or framework for conducting a study. This research employs both descriptive and causal research designs. The descriptive design is used to assess the current state and position of credit risk and profitability in commercial banks, while the causal research design examines the relationship and influence of the independent variable (credit risk) on the dependent variable (profitability) within these banks.

3.2 Population and Sample, and Sampling Design

As of August 2024, there are 20 commercial banks operating in Nepal, which make up the population for this study. Five of these banks—NABIL, NIMB, LSL, SBI, and EBL—have been selected as the sample using purposive sampling. These banks are considered to be among the leading commercial banks in Nepal, as they have consistently earned profits. Despite the competitive market, these banks strive for success by effectively managing credit, which is a core function of all commercial banks. For this reason, the researcher has chosen these specific banks for the study.

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

For this study, secondary data were collected from the websites of relevant offices and annual reports. Secondary data refer to information that has already been collected or used by other parties and is publicly available in the form of statistics. The primary sources of data include published materials such as books, journals, research papers, and the annual reports of commercial banks. Additionally, the data include various theses related to the topic and reports from

the Nepal Rastra Bank (NRB).

3.4 Method of Analysis

This study employs descriptive analysis, correlation analysis, and multiple regression to examine how credit risk management influences the profitability of Nepalese commercial banks, as determined by various credit-related factors.

3.4.1 Descriptive Analysis

Mean ($\bar{X}$)

The arithmetic average of a variable is considered the best value to represent the entire group. The mean values for variables such as loans and advances, total deposits, current ratio, interest rate spread, and inflation rate are calculated using this method. The formula for calculating the mean is:

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

Where,

ΣX = Sum of given Observation

n = No. of Observation

Standard Deviation

Since the standard deviation satisfies most of the criteria for a reliable measure of dispersion, it is considered the absolute measure of dispersion. It overcomes the limitations found in other measures of dispersion. A higher standard deviation indicates greater variability, while a lower standard deviation suggests less variability. Dispersion measures the extent to which data points deviate from the central value. In other words, it helps assess the variability or spread of the data. The standard deviation is calculated for various ratios such as the interest rate spread, inflation rate, loans and advances, total deposits, and current ratio. The formula for calculating standard deviation is:

$$\text{Standard Deviation (S.D.)} = \sqrt{\frac{\Sigma(X - \bar{X})^2}{n}}$$

3.4.2 Correlation Analysis

The correlation coefficient measures the relationship between two independent variables, indicating how closely they are related. It is a statistical tool used to determine the extent to which changes in one variable are associated with changes in another. When two variables are correlated, changes in the value of one variable are linked to changes in the value of the other. The correlation coefficient quantifies the strength and direction of this relationship.

$$\text{Correlation Coefficient (r)} = \frac{n\Sigma XY - \Sigma X\Sigma Y}{\sqrt{n\Sigma X^2 - (\Sigma X)^2}\sqrt{n\Sigma Y^2 - (\Sigma Y)^2}}$$

Where,

r = coefficient of correlation

ΣXY = Sum of product of two series.

ΣX^2 = Sum of squared in X series

ΣY^2 = Sum of squared in Y series

n = number of years

The value of the correlation coefficient can range from -1 to +1, with +1 and -1 representing the extreme limits. A correlation coefficient of +1 indicates a perfect positive correlation, meaning that as one variable increases, the other also increases in direct proportion. Conversely, a value of -1 signifies a perfect negative correlation, where an increase in one variable corresponds to a decrease in the other. A value of 0 indicates no correlation, meaning there is no relationship between the two variables.

3.4.3 Multiple Regressions Analysis

Multiple linear regression is used to examine the relationship between two or more explanatory variables and a response variable by fitting a linear equation to observed data. Each value of the independent variable (x) corresponds to a value of the dependent variable (y). In this analysis, the profitability of banks—measured by return on assets (ROA) and return on equity (ROE)—is tested for its relationship with explanatory variables. These explanatory (independent) variables are bank-specific (internal) factors, including cash reserve ratio (CRR), non-performing loan ratio (NPLR), credit to deposit ratio (CDR), leverage ratio (LEV), and bank size (SIZE). The following model is used to explore the relationship and impact of these variables in the study.

Model 1: $ROA_{it} = \beta_0 + \beta_1 CRR_{it} + \beta_2 CDR_{it} + \beta_3 NPLR_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + e_{it}$ (1)

Model 2: $ROE_{it} = \beta_0 + \beta_1 CRR_{it} + \beta_2 CDR_{it} + \beta_3 NPLR_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + e_{it}$ (2)

Where:

ROA_{it} = Return on assets of bank i^{th} for the time period t

ROE_{it} = Return on equity of bank i^{th} for the time period t

$NPLR_{it}$ = Non-performing ratio of bank i^{th} for the time period t

CRR_{it} = Cash reserve ratio of bank i^{th} for the time period t

CDR_{it} = Credit to deposit ratio of bank i^{th} for the time period t

$LEV_i t$ = Interest spread ratio of bank i^{th} for time period t

$SIZE_{it}$ = Bank size i^{th} for the time period t

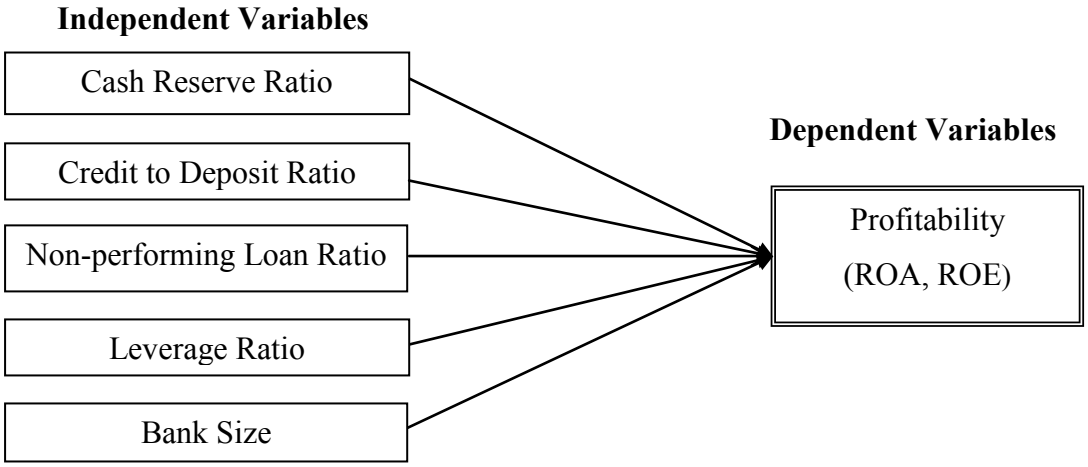
β_0 = The intercept (constant)

β_1, β_2, β_3, β_4 β_5 = Regression coefficient of independent variables.

e = error component.

3.5 Research Framework and Definition of Variables

The researcher creates the following conceptual framework for the study, drawing on reviews of both theoretical and empirical literature.



Source: Gijaw et al. (2015); Bhattarai (2016); Poudel (2018); Munangi and Sibindi (2020); Shrestha and Nirouala (2021) and Biswas et al. (2021)

Figure 1 Research Framework of the Study

Dependent Variables

Return on Assets (ROA)

Previous studies on the link between credit risk and bank performance have shown that return on assets (ROA) is a key indicator of a bank's financial success (Shrestha,

2022). ROA measures how efficiently bank managers are using the bank's available resources to generate profit. It is calculated by dividing profit after tax by total assets. This ratio reflects the profit generated per dollar of assets and highlights the management's ability to effectively utilize the bank's financial and investment resources. A bank's ROA is influenced both by its internal policy choices and by external factors, such as the economic environment and government regulations. It serves as a measure of how well a bank's assets are being managed to produce profits.

$$\text{Return on Assets (ROA)} = \frac{\text{Net profit After Tax}}{\text{Total Assets}}$$

Return on Equity (ROE)

The return on equity (ROE) ratio is the most widely used internal performance indicator of shareholder value. ROE represents the return distributed to shareholders on their invested equity. According to Poudel (2018), ROE measures a company's profitability by showing how much profit it generates from the capital contributed by shareholders. It reflects the proportion of net income returned as a percentage of shareholders' equity. Net income for the entire fiscal year is calculated after preferred share distributions and before dividends to common shareholders. This ratio is derived by dividing net profit after taxes by the average total equity of shareholders.

$$\text{Return on Equity (ROE)} = \frac{\text{Net profit After Tax}}{\text{Shareholders equity}}$$

Independent Variables

Cash Reserve Ratio

The cash reserve ratio (CRR) is a key tool used to explore the link between credit risk and bank performance. The CRR represents the minimum percentage of customer deposits that commercial banks are required to keep as reserves with the central bank. By adjusting the CRR, the central bank can influence the liquidity in the economy. Increasing the reserve requirement reduces the amount of capital circulating in the economy, as banks will have less money to lend, which in turn lowers the money supply. This reduction in available funds for spending and investment can slow down economic growth. Additionally, with a higher CRR, banks may face lower interest rates and reduced profitability. Since holding cash reserves doesn't generate income

for banks, it can be viewed as a drain on their profits. Bhattarai (2016) found that the impact of the cash reserve ratio on return on assets (ROA) was minimal.

$$\text{Cash Reserve Ratio (CRR)} = \frac{\text{Cash and Bank Balance}}{\text{Total Deposit}}$$

Credit to Deposit Ratio (CDR)

The Loan to Deposit Ratio (LDR), also known as the Credit to Deposit Ratio (CDR), is calculated by dividing the total amount of loans and advances by the total amount of deposits. For a lending institution, maintaining an appropriate level of liquidity is essential to support its ongoing operations. Since many loans made to clients are not liquid and take time to mature, banks must ensure they have enough reserves and may also allocate part of their non-lending assets to short-term securities for quick access to funds when needed. The CDR serves as an indicator of credit risk, as it reflects the balance between loans (outflows) and deposits (inflows) for a bank. Banks borrow funds at higher interest rates and use them to secure loans for clients. Deposits represent the bank's debt to its depositors. A well-functioning bank typically has a portfolio of secure loans that generate interest, which in turn helps cover the obligations to depositors (Shrestha, 2022).

$$\text{Credit to Deposit Ratio (CDR)} = \frac{\text{Loan \& Advance}}{\text{Total Deposit}} \times 100$$

Non-performing Loan Ratio

The Non-Performing Loan Ratio (NPLR) is a key indicator of credit risk and financial stability. An increase in the NPLR is often viewed as a sign of a bank's failure in managing its credit policies, leading to reduced revenues and contributing significantly to financial crises. Since the NPLR reflects the proportion of non-performing loans within a bank's total loan portfolio, it also serves as an indicator of how effectively a bank assesses credit risk (Bhattarai, 2016). While "non-performing loan" typically refers to loans that are late in payment rather than those that are in default, once a loan becomes non-performing, the likelihood of full repayment diminishes significantly.

$$\text{Non-performing Loan Ratio} = \frac{\text{Non-performing Loan}}{\text{Loan and Advance}} \times 100$$

Leverage Ratio

A leverage ratio is a financial metric that assesses the proportion of capital a company has in the form of debt, or it evaluates a company's ability to meet its debt obligations. The debt-to-equity ratio, a common leverage measure, indicates the extent to which a company's assets are funded by debt rather than equity. Companies that rely on debt for financing must make regular interest payments, and as a company increases its use of debt, it faces higher interest costs, which in turn reduces the profits available to shareholders. Consequently, investors generally prefer companies with lower levels of debt. Shrestha (2017) found that a higher leverage ratio has a negative impact on banks' profitability.

$$\text{Leverage Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}} \times 100$$

Bank Size (SIZE)

The natural logarithm of total assets is used to represent a bank's size. Since it influences a bank's performance, bank size is considered an important internal variable in this study. Poudel (2018) found that larger bank size negatively affected performance, arguing that managing a larger bank becomes increasingly difficult. In contrast, Bhattarai (2016) found that bank size had a positive effect on performance, suggesting that larger banks benefit from economies of scale, which help reduce costs. Additionally, large banks can access capital at lower costs.

CHAPTER IV
RESULTS AND DISCUSION

This chapter presents the empirical results of the research. It begins with a descriptive analysis, followed by an explanation of the findings from the pooled regression and panel data analyses. After the methodology and data description were outlined in Chapter Three, secondary data for all variables in the study were collected for Nepalese commercial banks from 2013/14 to 2022/23. Descriptive statistics are first calculated to understand the characteristics of the dataset. Panel data analysis is then performed to test the various hypotheses put forward in the study. The subsequent sections provide a discussion of the test results.

4.1 Results

4.1.1 Position and Status of Credit Risk Indicators of Banks

This study examines credit risk situations using financial and statistical methods, analyzing data from the past ten years of sample institutions. By assessing the cash reserve ratio, credit-to-deposit ratio, non-performing loan ratio, leverage ratio, and bank size, the research explores the profitability of four commercial banks.

4.1.1.1 Cash Reserve Ratio

The cash reserve ratio (CRR) is a key variable used to analyze the link between credit risk and the performance of banks. The CRR represents the minimum percentage of customer deposits that commercial banks are required to keep as reserves with the central bank. By adjusting the CRR, the central bank can influence liquidity levels. Increasing the reserve requirement reduces the available capital in the economy, as banks have less money to lend, thereby decreasing the money supply. This restriction on money flow limits spending and investment, potentially stalling economic growth. Additionally, banks may face lower profitability and reduced interest rates.

Table 2

Cash Reserve Ratio

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	13.26	12.21	21.21	22.68	22.27
2014/15	15.35	16.34	30.23	15.79	9.13
2015/16	9.31	15.93	24.66	11.99	12.74
2016/17	11.01	16.22	22.49	14.24	15.66
2017/18	10.26	12.58	24.08	12.83	10.76
2018/19	6.49	14.28	23.26	12.45	7.31
2019/20	11.82	12.65	17.68	12.13	10.92
2020/21	5.19	7.24	21.75	7.94	5.20
2021/22	5.60	6.10	10.48	7.88	7.64
2022/23	7.88	7.75	11.14	9.43	10.24
Mean	9.62	12.13	20.70	12.74	11.19
SD	3.37	3.85	6.09	4.33	4.88
CV	35.01	31.75	29.44	34.02	43.59

Source: Appendix –I

Table 2 illustrates the cash reserve ratios (CRR) of the sample banks in Nepal, showing significant fluctuations over time. The highest CRR was recorded by EBL in the fiscal year 2014/15, at 30.23 percent, while the lowest ratio was observed for NABIL in the fiscal year 2020/21, at 5.19 percent. EBL's average CRR is the highest among the sample banks, at 20.70 percent, indicating a strong liquidity position and smooth daily operations. However, this higher CRR has also led to a decrease in the bank's profitability, interest income, and lending capacity due to its reduced ability to lend funds. In contrast, NABIL exhibits the lowest average CRR, at 9.62 percent, and also has the lowest standard deviation among the banks, suggesting that it faces the least risk in terms of liquidity fluctuations. Based on these ratios, EBL is the most consistent in terms of liquidity management, with the lowest coefficient of variation (CV) at 29.44 percent, indicating a relatively stable liquidity position compared to the other banks.

4.1.1.2 Credit to Deposit Ratio

The credit to deposit ratio (CDR), as the name implies, is calculated by dividing the total amount of loans and advances by the total deposits held by a bank. To sustain its regular operations, a lending institution that accepts deposits must maintain a certain level of liquidity. The loan to deposit ratio (CDR) is an important measure of a bank's profitability. It represents the difference between the funds flowing out (loans) and the

funds coming in (deposits). As long as the loans are secured by debtors, the amount the bank lends out generates higher interest income.

Table 3

Credit to Deposit Ratio

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	72.55	64.74	76.60	70.46	74.91
2014/15	62.84	77.44	65.57	73.06	78.78
2015/16	69.02	72.03	72.50	78.67	83.00
2016/17	75.59	77.27	81.28	83.25	83.06
2017/18	83.56	86.50	80.89	86.10	86.65
2018/19	81.25	88.46	86.04	83.54	88.36
2019/20	79.72	84.08	82.27	82.93	87.42
2020/21	90.63	90.39	84.01	90.25	90.84
2021/22	94.23	89.05	89.38	88.25	91.20
2022/23	84.71	78.74	84.10	86.51	85.10
Mean	79.41	80.87	80.26	82.30	84.93
SD	9.65	8.33	7.00	6.43	5.17
CV	12.16	10.30	8.72	7.82	6.09

Source: Appendix –I

Table 3 presents the credit to deposit ratios of the sample banks in Nepal, showing a fluctuating trend across different banks. In the fiscal year 2021/22, NABIL had the highest credit to deposit ratio at 94.23%, while SBI recorded the lowest ratio in fiscal year 2014/15, at 62.84%. LSL achieved the highest average credit to deposit ratio at 84.93%, while NABIL had the lowest average ratio at 79.41%. This indicates that LSL has been the most successful in using its deposits to fund loans and advances, while also generating a healthy profit. LSL also has the lowest standard deviation among the sample banks, suggesting that it carries the least amount of risk. Additionally, based on the coefficient of variation (CV) of the ratios, LSL shows the highest consistency, with the lowest CV of 6.09%.

4.1.1.3 Non-performing Loan Ratio

The quality of a bank's loan portfolio has a direct impact on its performance, with losses from overdue loans representing one of the biggest risks to the institution. Non-performing loan (NPL) ratios are considered key indicators of asset quality, as they reflect the proportion of loans that are not being repaid as scheduled. Different researchers use various financial ratios to assess bank performance, but maintaining a

low percentage of non-performing loans is a top priority for all commercial banks. A high proportion of NPLs negatively affects a bank's performance, whereas a low NPL ratio indicates a healthier loan portfolio. Therefore, a lower NPL ratio to total loans signals better performance and a stronger financial position for the bank.

Table 4

Non-performing Loan Ratio

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	2.30	0.26	0.99	1.82	5.20
2014/15	1.86	0.19	0.67	1.27	3.01
2015/16	1.17	0.14	0.39	0.69	1.25
2016/17	0.81	0.10	0.26	0.85	1.40
2017/18	0.54	0.20	0.20	1.38	1.24
2018/19	0.74	0.20	0.16	2.86	1.03
2019/20	0.99	0.23	0.22	3.00	1.87
2020/21	0.83	0.23	0.12	2.54	1.40
2021/22	1.62	0.15	0.12	1.52	1.31
2022/23	3.39	2.45	0.79	4.67	2.91
Mean	1.42	0.41	0.39	2.05	2.06
SD	0.89	0.72	0.31	1.22	1.31
CV	62.33	172.53	80.04	59.04	63.31

Source: Appendix –I

Table 4 presents the non-performing loan (NPL) ratios, or credit risk, for the sample banks in Nepal. The average NPL ratios for all the banks are below five percent. In the 2013/14 fiscal year, LSL had the highest NPL ratio at 5.20%, while SBI recorded the lowest ratio at just 0.10% in the 2016/17 fiscal year. LSL also had the highest average NPL ratio at 2.06%, while EBL had the lowest average NPL ratio at 0.39%. This suggests that EBL has demonstrated the best performance in managing its non-performing loans, indicating the lowest credit risk among the sample banks. EBL's strong performance implies that it closely monitors loan usage and follows up effectively on repayments. Additionally, EBL has the lowest standard deviation among the banks, signaling that it carries the least risk. Based on the coefficient of variation (CV), NIMB showed the highest level of consistency in managing its NPLs, with the lowest CV of 59.04%.

4.1.1.4 Bank Size

The natural logarithm of total assets is used to represent a bank's size in this study. Bank size is included as an internal bank-specific independent variable because it can influence the bank's performance. The relationship between bank size and performance can be either positive or negative. As a bank grows larger, managing its operations can become more complex and challenging. However, larger banks often benefit from economies of scale, which allow them to raise capital more cost-effectively. As a result, bank size is considered one of the key indicators of a bank's financial performance.

Table 5

Bank Size (Total Assets)

(Rs. in million)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	87275	61073	70445	86174	29661
2014/15	115986	59277	99153	104345	37389
2015/16	127300	78515	113885	129783	58739
2016/17	140332	99752	116510	150818	71456
2017/18	169076	102539	144818	171894	82783
2018/19	201139	118314	170077	185842	94611
2019/20	237680	132402	185023	203024	126299
2020/21	291066	137809	211650	227930	137763
2021/22	419818	153103	225381	244449	170252
2022/23	481204	185958	250090	446186	361666
Mean	227087.60	112874.20	158703.20	195044.50	117061.90
SD	133057.84	40835.52	59386.13	101965.60	96793.85
CV	58.59	36.18	37.42	52.28	82.69

Source: Appendix –I

Table 5 shows the bank size of the sample banks in Nepal. In the fiscal year 2013/14, LSL had the smallest size, with total assets of Rs. 29,661 million, while NABIL had the largest size in the fiscal year 2022/23, with total assets of Rs. 481,204 million. The highest average bank size was recorded by NABIL at Rs. 227,087.60 million, while SBI had the lowest average bank size at Rs. 112,874.20 million. This demonstrates that, on average, NABIL had the largest bank size throughout the study period. Larger bank size allows for cost savings through economies of scale and the ability to raise funds more affordably. Among the sample banks, SBI had the lowest standard deviation, indicating that it carries the least risk. Additionally, SBI exhibited the

highest level of stability in its ratios, with the lowest coefficient of variation (CV) of 36.18%, reflecting consistent performance over time.

4.1.1.5 Leverage Ratio

The leverage ratio is a financial metric used to assess the proportion of capital that comes from debt, or to evaluate a company's ability to meet its debt obligations. One common measure of leverage is the debt-to-equity ratio, which shows the extent to which a company's assets are financed by debt versus equity. Companies that rely on debt financing are required to pay interest regularly, and the more debt a company uses, the higher its interest payments will be. These interest payments reduce the earnings available to equity shareholders. As a result, companies with lower levels of debt are often preferred by investors, as they are seen as less risky and more likely to generate stable returns.

Table 6

Leverage Ratio

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	10.42	12.46	11.91	9.87	9.99
2014/15	11.23	9.50	13.39	9.64	10.17
2015/16	9.98	10.35	12.38	6.97	8.29
2016/17	8.96	8.58	9.09	7.06	6.55
2017/18	7.21	7.01	7.98	5.91	6.16
2018/19	7.67	7.36	8.65	6.27	6.71
2019/20	8.19	7.96	8.93	6.47	8.43
2020/21	7.60	7.95	9.23	6.07	8.33
2021/22	6.92	7.95	8.89	6.19	9.27
2022/23	7.46	9.18	8.86	7.02	8.46
Mean	8.56	8.83	9.93	7.15	8.24
SD	1.50	1.63	1.88	1.43	1.39
CV	17.54	18.47	18.92	20.07	16.91

Source: Appendix –I

Table 6 presents the leverage ratios of commercial banks in Nepal. In the fiscal year 2014/15, EBL had the highest leverage ratio at 13.39%, while NIMB recorded the lowest leverage ratio of 5.91% in the 2017/18 fiscal year. EBL's highest average leverage ratio was 9.93%, while NIMB had the lowest average leverage ratio at 7.15%. This suggests that EBL relies significantly on debt financing, with a larger proportion of its funding coming from creditors compared to its own equity. Given

that EBL has the highest debt-to-equity ratio, this high reliance on debt could pose risks for creditors. Among the sample banks, LSL had the lowest standard deviation, indicating that it carries the least amount of risk. Furthermore, based on the CV of the ratios, LSL demonstrated the highest degree of consistency, with the lowest CV of 16.91%, reflecting a stable approach to managing leverage.

4.1.2 Profitability Position and Status of Banks

This study uses financial and statistical techniques to analyze the profitability (i.e., ROA and ROE) of four commercial banks, based on historical data spanning 10 years. By examining the return on equity (ROE) and return on assets (ROA) of each bank, the study assesses the profitability position of the sample banks over the period.

4.1.2.1 Return on Assets (ROA)

Return on assets (ROA) is a key indicator used to assess and compare the financial performance of banks. It measures how efficiently a bank generates profit relative to its total resources (assets). ROA is calculated by dividing the bank's net income for the year by its total assets, typically using the average value of assets for the year.

Table 7

Return on Assets

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	2.66	1.51	2.20	2.25	0.83
2014/15	1.81	1.80	1.59	1.88	1.26
2015/16	2.21	1.70	1.52	1.97	1.62
2016/17	2.57	1.54	1.72	2.06	1.65
2017/18	2.36	1.97	1.78	2.13	1.78
2018/19	2.11	1.94	1.80	1.79	1.44
2019/20	1.46	1.17	1.36	1.19	1.35
2020/21	1.56	0.70	0.84	1.56	1.05
2021/22	1.01	1.07	1.10	1.55	1.15
2022/23	1.33	1.06	1.34	0.83	0.63
Mean	1.91	1.45	1.52	1.72	1.28
SD	0.56	0.43	0.39	0.44	0.37
CV	29.30	29.62	25.43	25.78	28.87

Source: Appendix –I

Table 7 presents the return on assets (ROA) for the sample banks in Nepal. In the fiscal year 2013/14, NABIL achieved the highest ROA at 2.66%, while LSL recorded

the lowest ROA at 0.63% in the fiscal year 2022/23. NABIL also had the highest average ROA at 1.91%, whereas LSL had the lowest average ROA at 1.28%. The fact that NABIL had the highest ROA indicates that the bank was able to effectively manage and optimize its operations, maximizing the return on its assets. This suggests that NABIL efficiently utilized its assets to contribute to the overall ROA. Among the sample banks, LSL exhibited the lowest standard deviation, implying that it carries the least amount of risk. Additionally, based on the coefficient of variation (CV) of the ratios, EBL showed the highest degree of consistency, with the lowest CV of 25.43%, indicating stable and consistent performance in terms of ROA.

4.1.2.2 Return on Equity (ROE)

Return on equity is the other indicator used to evaluate profitability success. The return on equity (ROE) ratio is the most commonly utilized internal performance metric of shareholder value. Return on equity is the sum paid to shareholders on their equity. A measure of a business's profitability called return on equity illustrates how much money a bank produces with the cash that its shareholders have invested. The percentage of shareholders' equity that the net income produced was represented as.

Table 8

Return on Equity

(In percent)

Year	NABIL	SBI	EBL	NIMB	LSL
2013/14	30.36	20.35	28.40	24.48	9.15
2014/15	22.07	18.86	22.84	20.01	14.07
2015/16	24.31	19.25	20.32	15.66	15.04
2016/17	25.63	14.78	17.38	16.65	12.42
2017/18	19.34	15.81	16.00	14.71	12.78
2018/19	18.28	16.20	17.33	13.00	11.08
2019/20	13.39	10.44	13.50	8.92	12.74
2020/21	13.37	6.25	8.56	11.04	9.80
2021/22	8.03	9.57	10.88	11.17	11.84
2022/23	11.25	10.77	13.25	6.69	5.98
Mean	18.61	14.23	16.85	14.23	11.49
SD	7.10	4.74	5.88	5.30	2.63
CV	38.14	33.33	34.91	37.22	22.91

Source: Appendix –I

Table 8 presents the return on equity (ROE) for the sample banks in Nepal. In the fiscal year 2013/14, NABIL achieved the highest ROE at 30.36%, while LSL

recorded the lowest ROE at 5.98% in the fiscal year 2022/23. NABIL also had the highest average ROE at 18.61%, while LSL had the lowest average ROE at 11.49%. This suggests that NABIL's management has been the most successful in generating returns for shareholders, indicating superior profitability compared to its competitors. In other words, NABIL has outperformed its rivals in terms of profitability. Among the sample banks, LSL had the lowest standard deviation, indicating that it is the least risky. Furthermore, based on the coefficient of variation (CV) of the ratios, LSL demonstrated the highest degree of consistency with the lowest CV of 22.91%, reflecting stable and reliable performance in generating returns on equity.

4.1.3 Descriptive Statistics of Variables

Table 9 presents the descriptive statistics for the variables utilized in the investigation. The outcome demonstrates the lowest and greatest performance measures for Nepalese commercial banks in terms of the profitability indices ROE and ROA, as well as other independent variables.

Table 9

Descriptive Statistics of Variable of Banks

Variables	N	Minimum	Maximum	Mean	Std. Deviation
CRR	50	5.19	30.23	13.2736	5.88487
CDR	50	62.84	94.23	81.5556	7.42785
NPLR	50	.10	5.20	1.2708	1.18712
LEV	50	5.91	13.39	8.5416	1.76418
LSIZE	50	4.47	5.68	5.1387	.25430
ROA	50	.63	2.66	1.5752	.47866
ROE	50	5.98	30.36	15.0800	5.67939

Source: Appendix –II

Table 9 shows the descriptive statistics of dependent and independent variables used in the study. The first independent variable is the cash reserve ratio, which had an average of 13.2736 percent during the course of the research, a standard deviation of 5.88487 percent, a maximum of 30.23 percent, and a minimum of positive 5.19 percent. Similarly, the ratio of credit to deposit, the second independent variable, exhibits variation ranging from 62.84 percent to 94.23 percent, with an average of 81.5556 percent and a standard deviation of 7.42785. The non-performing loan ratio, which is the third independent variable, has a standard deviation of 1.18712 and an average of 1.2708 percent, ranging from a minimum of 0.10 percent to a maximum of

5.20 percent. It is the primary credit risk indicator. It is intended to indicate that sample banks are operating at peak efficiency or are flawlessly managing their non-performing loans (NPLs), indicating minimal credit risk due to the average NPL of less than 5 percent. Commercial banks also have sound credit policies. The leverage ratio varied at the same time, from 5.91 to 13.39 percent. Then, with a low standard deviation of 1.76418, the average leverage ratio is 8.5416 percent. The control variable, which is the total assets or bank size, has a mean of 5.1387 and a standard deviation of 0.25430. Its range is 4.47 to 5.68. According to ROA, the greatest return on assets is 2.66 percent, the minimum is 0.63 percent, and the average return on assets for the research period is 1.5752 percent with a standard deviation of 0.47866 percent. With a standard deviation of 5.67939, the ROE mean is 15.0800 ranges from a low of 5.98 percent to a maximum of 30.36 percent.

4.1.4 Correlation Analysis

This study attempted to determine the fundamental relationship between the dependent variable, "profitability," and the independent variables, cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio, and bank size. The many variables listed above were examined and noted. A correlation value of 0 signifies the absence of a linear relationship between the two variables. The correlation coefficient between two variables goes from +1, which represents a perfect positive link, to -1, which represents a perfect negative relationship. In Table 10, the correlation matrix is displayed as follows.

Table 10

Pearson Correlation Coefficients of Study Variables

	CRR	CDR	NPLR	LEV	LSIZE	ROA	ROE
CRR	1						
CDR	-.536**	1					
NPLR	-.186	.002	1				
LEV	.534**	-.755**	-.135	1			
LSIZE	-.400**	.502**	.084	-.444**	1		
ROA	.210	.400**	-.277	.063	-.271	1	
ROE	.430**	.714**	-.274	.573**	-.426**	.846**	1

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

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

Source: Appendix-III

Table 10 reveals the correlation test between both dependent and independent variables using correlation coefficient matrix. The correlation test shows that cash reserve ratio (CRR) has insignificant positive relation with ROA in 5 percent level of significance. At the same time, cash reserve ratio (CRR) has significant positive relation with ROE. Likewise, there is significant positive correlation between credit to deposit ratio (CDR) and ROA and also significant positive relationship between credit to deposit ratio (CDR) and ROE. However, there is insignificant negative correlation between non-performing loan ratio (NPLR) and ROA and also insignificant negative relationship between NPLR and ROE at 5 percent level of significance. Then, leverage ratio (LEV) has insignificant positive relationship with ROA but significant positive relationship with ROE. Finally, bank size has insignificant negative relationship with ROA and significant negative relationship with ROE of the banks.

4.1.5 Regression Analysis

Multiple regression analysis is used to explore how a variable behaves in relation to other variables. It involves various modeling and analytical methods to examine the relationship between a dependent variable (such as ROA and ROE) and independent factors like the cash reserve ratio, credit-to-deposit ratio, non-performing loan ratio, leverage ratio, and bank size.

4.1.5.1 Regression Analysis between Independent Variables and ROA

Return on assets (ROA) serves as the dependent variable, while the independent variables include the cash reserve ratio, credit-to-deposit ratio, non-performing loan ratio, leverage ratio, and bank size. These factors are analyzed to assess the credit management practices of commercial banks in Nepal.

Table 11

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657[a]	.431	.367	.38097

a. Predictors: (Constant), LSIZE, NPLR, LEV, CRR, CDR

Source: Appendix-IV

The R square is 0.431. This means that the independent variables (LSIZE, NPLR, LEV, CRR, and CDR) explain 43.10 percent of the variation in the dependent variable (ROA). The R value in this study, which is 0.657, shows that the study variables have a high association with one another. This suggests that the independent factors had a significant impact on the ROA. Regression analysis is perfectly correlated with standard error of estimate.

Table 12

Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.841	5	.968	6.671	.000[b]
	Residual	6.386	44	.145		
	Total	11.227	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), LSIZE, NPLR, LEV, CRR, CDR

Source: Appendix- IV

ANOVA Table 12 depicts the overall regression model fitness for the data. It shows p-value of 0.000 which is less than 0.05 this indicates that cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size predicts the return on assets (ROA) considerably or the overall model is significant.

Table 13

Regression Coefficient of Independent Variables with ROA

Variables	Coefficients	t-statistics	Sig. or p-value
(Constant)	8.942	5.206	.000
CRR	.001	.037	.970
CDR	.055	-4.568	.000
NPLR	-.144	-3.024	.004
LEV	-.186	-3.790	.000
LSIZE	-.212	-.838	.407

Source: Appendix-IV

Table 13 presents the regression coefficient of independent variables cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size of sample banks and the intercept value of dependent variable ROA.

The regression model's results show a positive relationship between the cash reserve ratio (CRR) and return on assets (ROA), with a coefficient estimate of 0.001. This

suggests that, assuming other factors remain unchanged, a one percent increase in the cash reserve ratio leads to a 0.001 percent rise in the banks' ROA. However, with a p-value of 0.970, this relationship is statistically insignificant at the 5% significance level. Therefore, the cash reserve ratio has an insignificant positive impact on the ROA of the sample banks.

The regression results reveal a positive correlation between the credit to deposit ratio (CDR) and return on assets (ROA), with a coefficient estimate of 0.055. This suggests that a one percent increase in the CDR, while holding other factors constant, leads to a 0.055 percent increase in the banks' ROA. With a p-value of 0.000, the relationship is statistically significant at the 5% significance level. As a result, the credit to deposit ratio (CDR) has a significantly positive effect on the ROA of the sample banks.

The regression analysis shows a negative correlation between the non-performing loan ratio (NPLR) and return on assets (ROA), with a coefficient estimate of -0.144. This means that a one percent decrease in the NPLR, while keeping other variables constant, results in a 0.144 percent decrease in the banks' ROA. The p-value of 0.004 indicates that this relationship is statistically significant at the 5% significance level. Therefore, the non-performing loan ratio (NPLR) has a statistically significant negative impact on the ROA of the sample banks.

The regression results indicate a negative relationship between the leverage ratio (LEV) and return on assets (ROA), with a coefficient estimate of -0.186. This suggests that, when all other variables are held constant, a one percent increase in the leverage ratio leads to a 0.186 percent decrease in the banks' ROA. With a p-value of 0.000, the relationship is statistically significant at the 5% significance level. Therefore, the leverage ratio has a statistically significant negative effect on the banks' return on assets (ROA).

The regression model results indicate a negative relationship between bank size (LogSize) and return on assets (ROA), with a coefficient estimate of -0.212. This means that, while holding all other variables constant, a one percent increase in bank size leads to a 0.212 percent decrease in the banks' ROA. However, the p-value for

bank size is 0.407, suggesting that this relationship is statistically insignificant at the 5% significance level. Therefore, bank size (LogSize) has an insignificant negative effect on the ROA of the banks.

4.1.5.2 Regression Analysis between Independent Variables and ROE

Return on equity (ROE) is the dependent variable, while the independent variables include the cash reserve ratio, credit-to-deposit ratio, non-performing loan ratio, leverage ratio, and bank size. These factors are analyzed to assess the credit management practices of commercial banks in Nepal.

Table 14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.766[a]	.587	.540	3.85054

a. Predictors: (Constant), LSIZE, NPLR, LEV, CRR, CDR

Source: Appendix- V

The R square is 0.587. This means that the independent variables (LSIZE, NPLR, LEV, CRR, and CDR) explain 58.70 percent of the variation in the dependent variable (ROE). The R statistic in this study, which is 0.766, shows that the study variables have a very strong association with one another. This suggests that the independent factors had a significant impact on the ROA. Regression analysis is perfectly correlated with standard error of estimate.

Table 15

Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	928.147	5	185.629	12.520	.000[b]
	Residual	652.371	44	14.827		
	Total	1580.518	49			

a. Dependent Variable: ROE

b. Predictors: (Constant), LSIZE, NPLR, LEV, CRR, CDR

Source: Appendix- V

ANOVA Table 15 depicts the overall regression model fitness for the data. It shows p-value of 0.000 which is less than 0.05 this indicates that cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size predicts the return on equity (ROE) considerably or the overall model is significant.

Table 16

Regression Coefficient of Independent Variables with ROE

Variables	Coefficients	t-statistics	Sig. or p-value
(Constant)	67.867	3.909	.000
CRR	-.013	-.114	.910
CDR	.533	-4.354	.000
NPLR	-1.299	-2.696	.010
LEV	-.033	-.066	.947
LSIZE	-1.402	-.549	.585

Source: Appendix- V

Table 15 shows the regression coefficient of independent variables cash reserve ratio, credit to deposit ratio, non-performing loan ratio, leverage ratio and bank size of sample banks and the intercept value of dependent variable ROE.

The regression model results show a negative relationship between the cash reserve ratio (CRR) and return on equity (ROE), with a coefficient estimate of -0.013. This suggests that, assuming other factors remain constant, a one percent increase in the cash reserve ratio leads to a 0.013 percent decrease in the banks' ROE. However, with a p-value of 0.910, this relationship is statistically insignificant at the 5% significance level. Therefore, the cash reserve ratio has an insignificant negative effect on the return on equity of the sample banks.

The regression analysis results reveal a positive correlation between the credit to deposit ratio (CDR) and return on equity (ROE), with a coefficient estimate of 0.533. This means that, assuming other variables remain constant, a one percent increase in the CDR leads to a 0.533 percent increase in the banks' ROE. With a p-value of 0.000, this relationship is statistically significant at the 5% significance level. Therefore, the credit to deposit ratio (CDR) has a significantly positive impact on the ROE of the sample banks.

The regression results show a negative relationship between the non-performing loan ratio (NPLR) and return on equity (ROE), with a coefficient estimate of -1.299. This suggests that, while holding other variables constant, a one percent decrease in the NPLR leads to a 1.299 decrease in the banks' ROE. The p-value of 0.010 indicates that this relationship is statistically significant at the 5% significance level. Therefore, the non-performing loan ratio (NPLR) has a statistically significant negative impact on the ROE of the sample banks.

The regression results indicate a negative relationship between the leverage ratio (LEV) and return on equity (ROE), with a coefficient estimate of -0.033. This suggests that, while holding all other variables constant, a one percent increase in the leverage ratio leads to a 0.033 percent decrease in the banks' ROE. However, with a p-value of 0.947, this relationship is statistically insignificant at the 5% significance level. Therefore, the leverage ratio has a statistically insignificant negative impact on the return on equity of the banks.

The regression model results show a negative relationship between bank size (LogSize) and return on equity (ROE), with a coefficient estimate of -1.402. This suggests that, while holding all other variables constant, a one-unit increase in bank size results in a 1.402 unit decrease in the banks' ROE. However, the p-value for bank size (LogSize) is 0.585, indicating that this relationship is statistically insignificant at the 5% significance level. Therefore, bank size (LogSize) has an insignificant negative impact on the return on equity (ROE) of the banks.

4.2 Discussion

The primary objective of this study is to assess the impact of credit risk on the profitability of commercial banks in Nepal. Credit risk directly affects key profitability indicators, such as return on assets (ROA) and return on equity (ROE). The study found that, in terms of the non-performing loan ratio (NPLR), all sample banks were performing well and effectively managing their NPLs, resulting in low credit risk. In terms of profitability, particularly with respect to ROA and ROE, all the banks especially NABIL demonstrated strong performance, with NABIL leading in profitability. This suggests that NABIL is generating more income and achieving superior performance compared to the other banks, thanks to its highest ROE.

The correlation analysis found that the cash reserve ratio (CRR) has an insignificant positive relationship with return on assets (ROA) of banks, which aligns with the findings of Bhattarai (2016), who also observed an insignificant relationship between CRR and ROA. However, this result contradicts Shrestha (2017), whose study found a different relationship. On the other hand, CRR shows a significant positive correlation with return on equity (ROE), which is consistent with the findings of Al Zaidanin and Al Zaidanin (2021), but contrasts with Shrestha (2017), who reported a negative relationship between CRR and ROE. Furthermore, the study finds a significant positive correlation between the credit to deposit ratio (CDR) and ROA, which differs from the findings of Shrestha and Niroula (2021). Additionally, there is a significant positive relationship between CDR and ROE, a result that does not align with the prior study of Kawor and Atinyo (2022). Meanwhile, the non-performing loan ratio (NPLR) shows an insignificant negative relationship with both return on assets (ROA) and return on equity (ROE) of commercial banks. This finding is consistent with Shrestha (2017), who also observed an insignificant negative relationship between NPLR and ROA. However, it contradicts the findings of Bhattarai (2016) and Biswas, Nath, Biswas, and Rashid (2021), who reported different results. The leverage ratio (LEV) exhibits an insignificant positive relationship with ROA, which does not align with Shrestha (2017), but it shows a significant positive relationship with ROE, consistent with the findings of Maharjan et al. (2016). Finally, bank size demonstrates an insignificant negative relationship with ROA and a significant negative relationship with ROE, which matches the findings of Poudel (2018). However, this contradicts Bhattarai (2016), who found a positive association between bank size and ROA.

The multiple regressions found that cash reserve ratio (CRR) has insignificant positive impact on ROA of banks. This is consistent with the finding of Bhattarai (2016); Biswas et al. (2021) concluded that insignificant positive impact of cash reserve ratio on ROA of the banks. This is also consistent with the finance distress theory because inadequate liquidity may arise the poor performance means there is always positive relationship between them but opposite to the finding of Shrestha (2017); Shrestha (2022). At the sometime, loan to deposit ratio has significant positive impact on ROA of commercial banks in Nepal. The result is consistent with Risal and

Poudel (2020). However, it contradicts with the finding of Maharjan et al. (2016); Shrestha and Nirouala (2021) mentioned that loan to deposit ratio has negative effect on profitability (ROA) of commercial banks. NPLR is found to have negative and significant impact on ROA in Nepalese commercial banks. This is also consistent with Bhattarai (2016); Maharjan et al. (2016) and Munangi and Sibindi (2020); Al Zaidanin and Al Zaidanin (2021) which found that NPLR has negative effect on ROA. This finding is also consistent with the finance distress theory means credit risks greatly affect financial performance of banks. However, it contradicts with the finding of Annor and Obeng (2017) concluded that there is positive and significant impact of NPLR on ROA of the banks. This study also found that leverage ratio has statistically significant negative effect on ROA of banks which is similar with the finding of Shrestha (2017) but it is not consistent with finding of Munangi and Sibindi (2020). The effect of bank size (LogSize) on ROA is insignificant negative of the banks. This is similar with the finding of Otieno, and Nyagol (2016); Biswas, Nath, Biswas and Rashid (2021) which observed that bank size had negative impacts on ROA of the banks. However, it contradicts with the finding of Bhattarai (2016) concluded that bank size had positive impact on ROA of the banks.

The regression analysis also shows that CRR is found to have insignificant negative effect on ROE of banks. This is consistent with the finding of Shrestha (2017); Shrestha (2022) concluded that there is negative and significant effect of CRR on ROE of banks but it is not consistent with the prior study of Biswas et al. (2021); Ayim and Agyemang (2021) concluded that insignificant positive impact of cash reserve ratio on profitability of the banks. Likewise, credit to deposit ratio has significant positive impact on ROE which is consistent with the findings of prior empirical studies of Risal and Poudel (2021). However, it contradicts with the finding of Maharjan et al. (2016) mentioned that credit to deposit ratio had negative impact on ROE of the banks. Further, non-performing loan ratio (NPLR) has negative and statistically significant impact on ROE. This is consistent with Gijaw, Kebede and Selveraj (2015); Al-Eitan and Bani-Khalid (2019); Poudel (2018); Dunyoh, Ankamah and Kosipa (2022). However, it does not consistent with the finding of Munangi and Sibindi (2020) which concluded that there is positive effect of NPLR on ROE of the banks. This study also found that leverage ratio has statistically insignificant negative effect on ROE of banks which is consistent with the finding of Shrestha (2017) but

opposite to the finding of Munangi and Sibindi (2020). Finally, the effect of bank size (LogSize) on ROE is insignificant negative of the banks. This is similar with the finding of Otieno, and Nyagol (2016) which observed that bank size had negative impacts on ROE of the banks. However, it contradicts with the finding of Al-Eitan and Bani-Khalid (2019); Munangi and Sibindi (2020) concluded that bank size had positive impact on ROE of the banks.

CHAPTER V
SUMMARY AND CONCLUSION

The final chapter presents the conclusions and summary of the findings. Based on the data analysis, the key conclusions and results are outlined. Ultimately, these conclusions and significant discoveries have led to the formulation of implications.

5.1 Summary

Credit risk plays a crucial role in the growth and profitability of companies, particularly financial institutions. The marginal losses faced by commercial banks when borrowers default highlight that credit risk remains a challenge despite banks' efforts to mitigate it. While banks face various issues, credit risk management—whether directly or indirectly—remains a primary factor in their operations. The goal of credit risk management is to minimize exposure to risk, thereby optimizing the entity's risk-adjusted returns. Banks are responsible for managing both the risks associated with individual credits or transactions and the overall credit risk within their portfolios. However, concerns have arisen regarding failures in fulfilling responsibilities, inadequate oversight, and high default rates. To enhance profitability through effective credit risk management, it is essential to examine how different aspects of credit risk impact financial performance. Consequently, the aim of this study is to investigate the effect of credit risk on the profitability of Nepali banks.

The primary goal of this study is to explore credit management and profitability in Nepali banks. The specific objectives include: analyzing the current state of credit risk management and profitability among commercial banks in Nepal, investigating the relationship between credit risk management and profitability, and examining the impact of credit risk factors on the profitability of these banks. To achieve these objectives, both descriptive and causal research designs have been employed. The descriptive research helps analyze credit risk and profitability, assessing the position of the banks through measures such as average values, standard deviations, and the maximum and minimum values, which provide insights into the characteristics of the data for commercial banks. The causal research design is used to examine the effect of credit risk on the profitability of these banks. There are 20 commercial banks operating in Nepal, which make up the population for this study. From this group, five

banks—NIMB, LSL, NABIL, SBI, and EBL—have been selected as the sample using a purposive sampling method. These banks are considered to be leading commercial banks in Nepal, as they have maintained profitability despite the competitive market environment. Their success is largely attributed to effective credit management, which is a core function of any commercial bank. Therefore, the researcher has chosen these banks for the study. The study is based on secondary data, which has been collected from the annual reports of the selected banks over a ten-year period (2013/14-2022/23). To analyze the data, descriptive analysis, correlation analysis, and multiple regression techniques have been applied using SPSS version 26. In this study, Return on Assets (ROA) and Return on Equity (ROE) are used as dependent variables, while the cash reserve ratio, credit-to-deposit ratio, non-performing loans, leverage ratio, and bank size serve as explanatory variables.

The study reveals that, in terms of credit risk, EBL has the best performance, maintaining the lowest non-performing loan (NPL) ratio among the banks, which indicates that EBL has the lowest credit risk. Regarding profitability, NABIL stands out with the highest Return on Assets (ROA) ratio, demonstrating the bank's effective management of its overall operations. Additionally, NABIL also excels in generating profit, as evidenced by its highest Return on Equity (ROE), reflecting strong income generation and consistent performance. Therefore, NABIL is shown to be the most successful in terms of both profitability and overall financial performance. The correlation analysis indicates that the cash reserve ratio (CRR) and leverage ratio have an insignificant negative relationship with Return on Assets (ROA), but a significant positive relationship with Return on Equity (ROE). Additionally, the credit-to-deposit ratio (CDR) shows a significant positive correlation with both ROA and ROE, suggesting it positively impacts profitability. On the other hand, the non-performing loan (NPL) ratio demonstrates an insignificant negative relationship with both ROA and ROE. Bank size is found to have an insignificant negative relationship with ROA, while it has a significant negative relationship with ROE. The multiple regression analysis reveals that the cash reserve ratio has an insignificant positive effect on ROA and an insignificant negative impact on ROE. The credit-to-deposit ratio, however, has a significant positive impact on profitability. In contrast, the non-performing loan ratio has a significant negative effect on profitability. Furthermore, the leverage ratio has a significant negative

impact on ROA and an insignificant negative effect on ROE. Finally, bank size shows an insignificant negative impact on both ROA and ROE, indicating that it does not significantly influence the profitability of commercial banks in Nepal.

5.2 Conclusion

The research findings indicate that EBL maintains a strong liquidity position, while LSL has the highest credit-to-deposit ratio. EBL stands out by effectively managing its non-performing loans (NPLs), resulting in the lowest credit risk among the banks. This suggests that EBL is doing the best in terms of credit risk management. Additionally, EBL appears to rely more on external funding from creditors rather than equity from owners. In terms of profitability, NABIL leads with the highest Return on Assets (ROA), enabling it to efficiently manage its operations. This means that NABIL is maximizing its return on investment by making optimal use of its assets. NABIL also stands out as having the most effective management in terms of profit generation. Furthermore, with the highest Return on Equity (ROE) among the banks, NABIL is not only generating more income but also demonstrating superior overall performance compared to the other banks.

The correlation analysis concluded that the cash reserve ratio (CRR) and leverage ratio have an insignificant negative relationship with Return on Assets (ROA) but a significant positive relationship with Return on Equity (ROE). Similarly, the credit-to-deposit ratio (CDR) shows a significant positive correlation with both ROA and ROE, indicating its positive impact on profitability. In contrast, the non-performing loan (NPL) ratio has an insignificant negative relationship with both ROA and ROE. Finally, bank size exhibits an insignificant negative relationship with ROA, while it has a significant negative relationship with ROE.

The multiple regression analysis concluded that the cash reserve ratio (CRR) has an insignificant positive effect on Return on Assets (ROA) and an insignificant negative impact on Return on Equity (ROE) for the banks. In contrast, the credit-to-deposit ratio (CDR) has a significant positive impact on profitability. The non-performing loan (NPL) ratio, on the other hand, has a significant negative effect on profitability. Additionally, the leverage ratio has a significant negative impact on ROA, while its effect on ROE is insignificant. Finally, bank size shows an insignificant negative

impact on both ROA and ROE, suggesting it does not significantly influence the profitability of the sample banks.

5.3 Implications

This study has the following implications;

- This study found that the credit-to-deposit ratio, non-performing loan (NPL) ratio, and leverage ratio significantly impact the profitability of banks, while the cash reserve ratio and bank size have an insignificant effect on profitability. Based on these findings, the study offers valuable insights for bank management and policymakers, suggesting the need for effective credit risk management strategies. These strategies should focus on minimizing asset security risks, reducing the high percentage of non-performing loans, and addressing their negative impact on profitability. Furthermore, improving loan administration and credit analysis practices can enhance overall banking efficiency and financial performance.
- Based on the study's analysis of various aspects of bank credit risk and its impact on profitability, it can be concluded that effective credit risk management will benefit not only banks but also individuals, businesses, and the broader economy. This, in turn, contributes to the overall welfare of the financial sector, supporting economic stability and growth within the community as a whole.
- The research also encourages commercial bank management to reflect on their past actions and offers valuable guidance for setting future goals and strategies. By providing up-to-date information, statistics, and insights into the challenges associated with credit risk, this study serves as a useful resource. As such, it is relevant not only to bankers, shareholders, and depositors but also to future researchers and students in the field.
- Future researchers interested in exploring credit risk management and its impact on the profitability of Nepalese commercial banks can refer to these findings as a valuable resource. These results provide a foundation for further investigation into the relationship between credit risk and profitability in the context of Nepalese banking sector.

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APPENDICES

APPENDIX – I

Data of Sample Banks

Banks	Year	CRR	CDR	NPLR	LEV	SIZE	ROA	ROE
NABIL	2013/14	13.26	72.55	2.30	10.42	87275	2.66	30.36
	2014/15	15.35	62.84	1.86	11.23	115986	1.81	22.07
	2015/16	9.31	69.02	1.17	9.98	127300	2.21	24.31
	2016/17	11.01	75.59	0.81	8.96	140332	2.57	25.63
	2017/18	10.26	83.56	0.54	7.21	169076	2.36	19.34
	2018/19	6.49	81.25	0.74	7.67	201139	2.11	18.28
	2019/20	11.82	79.72	0.99	8.19	237680	1.46	13.39
	2020/21	5.19	90.63	0.83	7.60	291066	1.56	13.37
	2021/22	5.60	94.23	1.62	6.92	419818	1.01	8.03
	2022/23	7.88	84.71	3.39	7.46	481204	1.33	11.25
SBI	2013/14	12.21	64.74	0.26	12.46	61073	1.51	20.35
	2014/15	16.34	77.44	0.19	9.50	59277	1.80	18.86
	2015/16	15.93	72.03	0.14	10.35	78515	1.70	19.25
	2016/17	16.22	77.27	0.10	8.58	99752	1.54	14.78
	2017/18	12.58	86.50	0.20	7.01	102539	1.97	15.81
	2018/19	14.28	88.46	0.20	7.36	118314	1.94	16.20
	2019/20	12.65	84.08	0.23	7.96	132402	1.17	10.44
	2020/21	7.24	90.39	0.23	7.95	137809	0.70	6.25
	2021/22	6.10	89.05	0.15	7.95	153103	1.07	9.57
	2022/23	7.75	78.74	2.45	9.18	185958	1.06	10.77
EBL	2013/14	21.21	76.60	0.99	11.91	70445	2.20	28.40
	2014/15	30.23	65.57	0.67	13.39	99153	1.59	22.84
	2015/16	24.66	72.50	0.39	12.38	113885	1.52	20.32
	2016/17	22.49	81.28	0.26	9.09	116510	1.72	17.38
	2017/18	24.08	80.89	0.20	7.98	144818	1.78	16.00
	2018/19	23.26	86.04	0.16	8.65	170077	1.80	17.33
	2019/20	17.68	82.27	0.22	8.93	185023	1.36	13.50
	2020/21	21.75	84.01	0.12	9.23	211650	0.84	8.56
	2021/22	10.48	89.38	0.12	8.89	225381	1.10	10.88
	2022/23	11.14	84.10	0.79	8.86	250090	1.34	13.25
NIMB	2013/14	22.68	70.46	1.82	9.87	86174	2.25	24.48
	2014/15	15.79	73.06	1.27	9.64	104345	1.88	20.01
	2015/16	11.99	78.67	0.69	6.97	129783	1.97	15.66
	2016/17	14.24	83.25	0.85	7.06	150818	2.06	16.65
	2017/18	12.83	86.10	1.38	5.91	171894	2.13	14.71
	2018/19	12.45	83.54	2.86	6.27	185842	1.79	13.00
	2019/20	12.13	82.93	3.00	6.47	203024	1.19	8.92
	2020/21	7.94	90.25	2.54	6.07	227930	1.56	11.04
	2021/22	7.88	88.25	1.52	6.19	244449	1.55	11.17
	2022/23	9.43	86.51	4.67	7.02	446186	0.83	6.69
LSL	2013/14	22.27	74.91	5.20	9.99	29661	0.83	9.15
	2014/15	9.13	78.78	3.01	10.17	37389	1.26	14.07
	2015/16	12.74	83.00	1.25	8.29	58739	1.62	15.04
	2016/17	15.66	83.06	1.40	6.55	71456	1.65	12.42
	2017/18	10.76	86.65	1.24	6.16	82783	1.78	12.78
	2018/19	7.31	88.36	1.03	6.71	94611	1.44	11.08
	2019/20	10.92	87.42	1.87	8.43	126299	1.35	12.74
	2020/21	5.20	90.84	1.40	8.33	137763	1.05	9.80
	2021/22	7.64	91.20	1.31	9.27	170252	1.15	11.84
	2022/23	10.24	85.10	2.91	8.46	361666	0.63	5.98

Source: Annual Reports of Sample Banks

APPENDIX -II

Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
CRR	50	5.19	30.23	13.2736	5.88487
CDR	50	62.84	94.23	81.5556	7.42785
NPLR	50	.10	5.20	1.2708	1.18712
LEV	50	5.91	13.39	8.5416	1.76418
LSIZE	50	4.47	5.68	5.1387	.25430
ROA	50	.63	2.66	1.5752	.47866
ROE	50	5.98	30.36	15.0800	5.67939
Valid N (listwise)	50				

Source: SPSS version 26

APPENDIX -III

Pearson Correlation Coefficients

		CRR	CDR	NPLR	LEV	LSIZE	ROA	ROE
CRR	Pearson Correlation	1	-.536**	-.186	.534**	-.400**	.210	.430**
	Sig. (2-tailed)		.000	.197	.000	.004	.143	.002
	N	50	50	50	50	50	50	50
CDR	Pearson Correlation	-.536**	1	.002	-.755**	.502**	-.400**	-.714**
	Sig. (2-tailed)	.000		.987	.000	.000	.004	.000
	N	50	50	50	50	50	50	50
NPLR	Pearson Correlation	-.186	.002	1	-.135	.084	-.277	-.274
	Sig. (2-tailed)	.197	.987		.350	.560	.051	.054
	N	50	50	50	50	50	50	50
LEV	Pearson Correlation	.534**	-.755**	-.135	1	-.444**	.063	.573**
	Sig. (2-tailed)	.000	.000	.350		.001	.664	.000
	N	50	50	50	50	50	50	50
LSIZE	Pearson Correlation	-.400**	.502**	.084	-.444**	1	-.271	-.426**
	Sig. (2-tailed)	.004	.000	.560	.001		.057	.002
	N	50	50	50	50	50	50	50
ROA	Pearson Correlation	.210	.400**	-.277	.063	-.271	1	.846**
	Sig. (2-tailed)	.143	.004	.051	.664	.057		.000
	N	50	50	50	50	50	50	50
ROE	Pearson Correlation	.430**	.714**	-.274	.573**	-.426**	.846**	1
	Sig. (2-tailed)	.002	.000	.054	.000	.002	.000	
	N	50	50	50	50	50	50	50

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

Source: SPSS version 26

APPENDIX -IV

Multiple Regression Analysis of Sample Banks (In ROA)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657[a]	.431	.367	.38097

a. Predictors: (Constant), LSIZE, NPLR, CRR, LEV, CDR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.841	5	.968	6.671	.000[b]
	Residual	6.386	44	.145		
	Total	11.227	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), LSIZE, NPLR, CRR, LEV, CDR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	8.942	1.718		5.206	.000		
	CRR	.001	.012	.005	.037	.970	.638	1.568
	CDR	.055	.012	-.858	-4.568	.000	.366	2.732
	NPLR	-.144	.048	-.357	-3.024	.004	.926	1.080
	LEV	-.186	.049	-.686	-3.790	.000	.394	2.537
	LSIZE	-.212	.253	-.112	-.838	.407	.718	1.392

a. Dependent Variable: ROA

Source: SPSS version 26

APPENDIX -V

Multiple Regression Analysis of Sample Banks (In ROE)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.766[a]	.587	.540	3.85054

a. Predictors: (Constant), LSIZE, NPLR, CRR, LEV, CDR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	928.147	5	185.629	12.520	.000[b]
	Residual	652.371	44	14.827		
	Total	1580.518	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), LSIZE, NPLR, CRR, LEV, CDR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	67.867	17.363		3.909	.000		
	CRR	-.013	.117	-.014	-.114	.910	.638	1.568
	CDR	.533	.122	-.697	-4.354	.000	.366	2.732
	NPLR	-1.299	.482	-.271	-2.696	.010	.926	1.080
	LEV	-.033	.497	-.010	-.066	.947	.394	2.537
	LSIZE	-1.402	2.553	-.063	-.549	.585	.718	1.392

a. Dependent Variable: ROE

Source: SPSS version 26

CREDIT MANAGEMENT OF COMMERCIAL BANKS IN NEPAL

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ABSTRACT This study investigates the credit management of commercial banks in Nepal. Nepalese commercial banks provided secondary data for ten-year periods (2013/14– 2022/23). For data analysis, multiple regression analysis and correlation are used. This study demonstrates that EBL has the lowest credit risk position among them, as seen by the non-performing loan ratio, which suggests that EBL is doing the best or preserving its NPLs properly.

NABIL's profitability position in terms of ROA allowed them to manage their whole activities

because of their highest ratio. But out of all of them, NABIL has the finest or most efficient management for

making money. Furthermore, because NABIL has the greatest ROE, it may be claimed that it is producing more money and doing better than the others. The correlation study shows that the leverage ratio

and cash reserve ratio (CRR) have a strong positive relationship with ROE and an insignificant negative relationship with ROA. Similarly, the profitability ROA and ROE are significantly positively correlated with the credit to deposit ratio (CDR). Nonetheless, there is a negligible inverse link between the non- performing loan ratio and ROE and ROA. Additionally, bank size shows a strong negative correlation with the banks' ROE and an insignificant negative correlation with their ROA. The cash reserve ratio has a negligible negative influence on the banks' ROE and a negligible positive impact on their ROA, according to multiple regression analysis. Nonetheless, the ratio of credit to deposits significantly boosts profitability. However, the ratio of non-performing loans has a major detrimental effect on profitability. Additionally, the leverage ratio has a negligible negative effect on the sample banks' ROE and a considerable negative impact on their ROA. Furthermore, the profitability (ROA and ROE) of Nepal's commercial banks is negligibly impacted by bank size.

Keywords: Return on assets, cash reserve ratio, credit to deposit ratio, non- performing loan ratio and

leverage ratio.