IMPACT OF CREDIT RISK ON PROFITABILITY OF DEVELOPMENT 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

Susmita Aryal

Campus Roll No: 4026/075

Exam Roll No: 14229/19

T.U. Registration No: 7-2-479-199-2014

Shanker Dev Campus

Group: Finance

Kathmandu, Nepal

September 2024

CERTIFICATION OF AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text. I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the reference section of the thesis.

Susmita Aryal

Roll No.: 14229/19

Date: 16 August 2024

…….

REPORT OF RESEARCH COMMITTEE

Ms. Susmita Aryal has defended research proposal entitled **"Impact of Credit Risk on Profitability of Development Banks in Nepal"** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor Madhusudan Gautam Submit the thesis for evaluation and viva-voce examination.

.....
Madhusudan Gautam
Dissertation Supervisor

Dissertation Proposal Defended Date:
.....

Dissertation Submitted Date:
.....

.....
Asso. Prof. Dr. Sajeeb Kumar Shrestha
Research Department

Dissertation Viva-voce Date:
.....

APPROVAL SHEET

We, the undersigned, have examined the thesis entitled **"Impact of Credit Risk on Profitability of Development Banks in Nepal"** Presented by Susmita Aryal Candidate for the degree of Master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

.....
Madhusudan Gautam
Dissertation Supervisor

.....
Internal Examiner

.....
Internal Expert

.....
External Expert

.....
Asso. Prof. Dr. Sajeeb Kumar Shrestha
Chairperson, Research Committee

.....

Campus Chief

ACKNOWLEDGEMENTS

This study entitled “Impact of Credit Risk on Profitability of Development Banks in Nepal” has been conducted to fulfill the requirements for the degree of Master in Business Studies of Tribhuvan University. The success of any initiative is mostly due to the dedication of a large number of incredible people who have continuously given their wise advice and helped out. I sincerely thank everyone who has inspired, encouraged, and advised me in order to make this research successful.

I am heartily thankful to my supervisor Mr. Madhusudan Gautam, whose encouragement, guidance, and support from the initial to the final level enabled me to develop an understanding of the subject. His insightful scholarship and meticulous accuracy were instrumental in shaping this work into its final form.

I want to express my special thanks to all of my colleagues and friends who helped me throughout this study. Words are not enough to describe my indebtedness to them.

To the above-mentioned people and to those who have not been mentioned, your sacrifice and encouragement are greatly appreciated and will always be in my memory. I am deeply appreciative of the time, dedication, and encouragement that they have significantly contributed to the completion of my thesis.

……..

Susmita Aryal

Shanker Dev Campus

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

ABBREVIATIONS

BS	Bank Size
CAR	Capital Adequacy Ratio
CRM	Credit Risk Management
GDP	Gross Domestic Product
LER	Leverage Ratio
LLPR	Loan Loss Provision Ratio
NPLR	Non-Performing Loan Ratio
NRB	Nepal Rastra Bank
ROA	Return on Assets
ROE	Return on Equity
SPSS	Statistical Package for the Social Sciences

ABSTRACT

Development banks are vital to economic growth, especially in emerging economies like Nepal, where they direct capital to key sectors such as infrastructure and SMEs. These banks face significant challenges in managing credit risk primarily non-performing loans (NPLs) and loan loss provisions which can impact their profitability and stability. Effective credit risk management is essential for maintaining financial performance and ensuring the sustainability of these institutions, particularly in the aftermath of global financial crises.

This study aims to analyze the current state of credit risk and its impact on the profitability of development banks in Nepal. It examines the relationships between credit risk factors (Non-Performing Loan Ratio and Loan Loss Provision Ratio), control variables (Bank Size, Leverage Ratio, Capital Adequacy Ratio, GDP Growth Rate), and profitability. The objectives include assessing the current positions of these factors, their relationships with profitability, and their impact on the financial performance of the banks.

The research uses secondary panel data from ten development banks in Nepal over a ten-year period (2013–2023), collected from publicly available financial statements. The study employs descriptive statistics, correlation analysis, and multiple regression analysis to explore the associations and impacts of credit risk on profitability.

The findings reveal that the Non-Performing Loan Ratio (NPLR) and Loan Loss Provision Ratio (LLPR) significantly negatively impact the profitability of development banks in Nepal. In contrast, factors such as Bank Size, Leverage Ratio, Capital Adequacy Ratio, and GDP Growth Rate exhibit varied significance levels, with some proving statistically insignificant. These results highlight the importance of robust credit risk management practices to bolster financial stability and profitability. Effective management of credit risk is crucial for enhancing the overall performance of development banks and ensuring their ability to contribute to economic development.

Keywords: Development banks, Credit Risk, Profitability, Non-performing Loan, Loan Loss Provision.

CHAPTER I
INTRODUCTION

1.1 Background of the Study

The financial sector serves as a cornerstone of a country's economic development, facilitating the efficient allocation of resources and fostering growth opportunities (Khan, Bashir, & Islam, 2021). Within this sector, development banks emerge as key players, wielding significant influence in channeling capital towards sectors crucial for national progress. Unlike commercial banks, development banks often possess a distinct mandate focused on fostering long-term economic development, particularly in emerging economies like Nepal. With branches and subsidiaries operating both domestically and internationally, development banks assume a vital role in mobilizing funds and directing investments towards strategic sectors such as infrastructure, agriculture, and small and medium-sized enterprises (SMEs) (Darlami, 2023).

Even in the aftermath of the recent global economic crisis (GFC), credit risk remains a prominent concern within the financial system, drawing attention from both scholars and industry professionals (Kurawa & Garba, 2014). Also referred to as default risk, performance risk, or counterparty risk, credit risk is defined as the possibility that a contractual party will fail to meet its obligations according to agreed terms (Brown & Moles, 2012). It represents the risk of financial loss incurred when funds extended by banks to customers in the form of loans are not repaid (Giesecke, 2004). Given the inherent nature of banking activities, credit risk stands out as a significant risk faced by banks, and the financial performance of banks hinges greatly on its efficient management, more so than any other type of risk (Giesecke, 2004).

Similarly, Burton, Nesiba, and Brown (2015) define credit risk as the likelihood of a debtor failing to repay the principal and/or interest due on an outstanding debt. As previously mentioned, interest on loans constitutes a major income source for development banks but also presents the primary source of credit risk (Bhattarai, 2019). When banks extend loans to customers, they expect timely repayment of both principal and interest according to agreed terms. Successful repayment of both principal and interest constitutes a performing loan (Kolapo et al., 2014). However, if either the principal or interest payment is not received on time, the loan is categorized

as a non-performing loan (NPL) (Kolapo et al., 2014). NPLs are typically classified into three categories: substandard loans, doubtful loans, and loss loans (Kolapo et al., 2012). A substandard loan refers to a loan not repaid more than 90 days from its due date, while a doubtful loan is not repaid more than 180 days from the due date. A loss loan, on the other hand, remains unpaid for more than 360 days from its due date. Accumulation of loans in the loss loan category represents a significant loss for the bank (Gestel & Baesens, 2016).

Kithinji (2010) identifies various sources of credit risk, including limited institutional capacity, inappropriate credit policies, volatile interest rates, inadequate laws, low capital and liquidity levels, directed lending, excessive licensing of banks, poor loan underwriting, ineffective management, negligence in credit assessment, subpar lending practices, government interference, and insufficient supervision by the central bank. To mitigate credit risk stemming from these factors, Laker (2016) suggests several measures: (i) ensuring well-capitalized banks, (ii) catering to a diverse customer base, (iii) facilitating information sharing about borrowers, (iv) maintaining stable interest rates, (v) increasing bank deposits and extending credit to borrowers, and (vi) minimizing non-performing loans.

Development banks act as intermediaries between savers and investors, leveraging their financial resources to bridge funding gaps and catalyze growth in targeted sectors. By mobilizing deposits and other sources of funds, these institutions facilitate the flow of capital towards productive investments, thereby stimulating economic activity and promoting inclusive development. However, the success of development banks in fulfilling their developmental mandate hinges upon their sustainability and financial viability (Bhattarai, 2014).

In order to effectively fulfill their intermediation function, development banks must operate in a sustainable manner, generating sufficient income to cover operational costs and maintain financial stability. This entails adopting sound lending practices, managing credit risks prudently, and diversifying revenue streams. Additionally, development banks often face unique challenges such as financing long-term projects with uncertain returns, navigating regulatory constraints, and balancing social objectives with financial sustainability (Bagale, 2023).

To ensure the stability and resilience of Nepal's financial system, the Nepal Rastra Bank (NRB) establishes comprehensive rules, regulations, and guidelines governing the operations of development banks. These institutions offer a range of financial services including deposit accounts, loans, trade finance, remittances, and electronic banking services, thereby playing a crucial role in facilitating economic activities and financing key sectors such as infrastructure development. Development banks are instrumental in providing financial support to individuals, businesses, and infrastructure projects, contributing significantly to the country's economic growth and development agenda. However, the management of non-performing loans, adherence to regulatory requirements, and adaptation to evolving economic environments pose challenges for Nepal's development banking sector. To enhance their operational efficiency and competitiveness, Nepal has also encouraged foreign investment in development banks, leading to joint ventures or partnerships with international counterparts (Bank, 2024).

Amongst the numerous risks faced by banks, credit risk holds particular significance for their financial performance, given that a substantial portion of their income is derived from interest earned on loans provided to customers (Kolapo, Ayeni, & Oke, 2012). The Asian financial crisis, originating in Thailand in 1997, had profound impacts on affected countries, including significant currency depreciation, depressed equity prices, and widespread financial and economic disruptions. Currency markets in emerging Asian economies experienced substantial declines, with drops ranging from 34% in the Philippines to 49% in Thailand, while equity markets also witnessed sharp declines, ranging from 29% in Thailand to 50% in South Korea during the second half of 1997 (Shabbir & Rehman, 2016). For instance, economic growth in the region, which had been robust at 6% to 8% prior to the crisis, plunged into recession within a year of its onset. These events underscore the critical importance of effective credit risk management for ensuring the stability and profitability of banks, particularly in times of economic turmoil.

The East Asia Financial crisis of the late 1990s was a striking event, affecting some of the fastest-growing economies globally (Radelet & Sachs, 2016). It emerged unexpectedly, yet it was the most severe crisis to hit developing nations since the 1982 debt crisis. During the global financial crisis (GFC) of the 1980s and 1990s, new

risk management techniques were introduced in the banking sector (Poudel, 2012), which later became focal points during subsequent financial crises (Bessis, 2011). Janet L. Yellen highlighted multiple perspectives on the causes of the GFC, with one view suggesting it was a liquidity crisis resembling a banking panic, fueled by depositors' fears of insolvency (Yellen, 2017). Another perspective emphasized vulnerabilities in affected nations' economic fundamentals, including risky lending practices by financial intermediaries. These practices, influenced by the tradition of "relationship lending," led to risky loan portfolios, which manifested when economic conditions deteriorated in these countries in early 1997.

Risk management holds significant importance for banks, aiming to mitigate financial and economic challenges and secure long-term success. Psillaki, Tsolas, and Margaritis (2010) emphasize that effective credit risk management not only enhances a bank's profitability and viability but also contributes to systemic stability and efficient capital allocation in the economy. Credit risk management encompasses identifying, measuring, monitoring, and controlling the risk of default in loan payments. Coyle (2000) and James (1966) define it as a crucial aspect of the bank's loan process. The uncertainty regarding the proportion of borrowers likely to default can lead to variations in profitability among banks. The primary objective of managing credit risk is to maximize a bank's return while maintaining an acceptable level of exposure (Ndoka & Islami, 2016). Senior management, as emphasized by Ndoka and Islami (2016), is responsible for developing and implementing policies and procedures for loan administration, with clear communication throughout the organizational hierarchy. Internal audits, as highlighted by Gestel and Baesens (2009), verify the effectiveness of credit risk management by monitoring credit discipline, loan policies, approval procedures, and overall risk exposure. Therefore, a robust credit risk management framework is indispensable for banks to effectively manage risks, enhance profitability, and ensure survival.

As of mid-April 2024, Nepal Rastra Bank announced the existence of 17 development banks functioning in Nepal. These banks are classified based on their capital and operational scope, with licenses issued for both district and national levels. The liquidity of these banks is influenced by various factors, and controlling profitability requires examining multiple aspects. Profitability in development banks is impacted

by a mix of bank-specific and macroeconomic factors. Macroeconomic factors include the nation's GDP, inflation, exchange rates, among others, while internal factors unique to each bank include loan growth, deposit ratio, non-performing loans, capital adequacy, loan loss provision, and bank size (Sahadev, 2024). Hence, the objective of this study is to assess the factors affecting the profitability of development banks in Nepal.

1.2 Statement of the Problem

The existing research landscape in Nepal predominantly focuses on the credit risk impact on profitability within commercial banks, leaving a significant gap in understanding the dynamics within development banks. Despite their growing importance in the financial ecosystem, there is a conspicuous absence of studies investigating the influence of credit risk management on the profitability of development banks in Nepal. This gap in research hampers a comprehensive understanding of the risk-performance relationship in the broader banking sector and underscores the need for targeted investigation into the unique challenges and opportunities faced by development banks in Nepal.

Banks are intensifying efforts to attract a broader customer base, resulting in an increase in both surplus and deficit units within the banking sector. In pursuit of revenue growth and market dominance, many banks have extended loans and advances that ultimately led to a surge in Non-Performing Loans (NPLs), posing significant concerns for banks and stakeholders alike. Recent developments in the banking sector are diverse, with some banks introducing new deposit products with higher interest rates, while others are lowering interest rates on loans to attract clients. Despite heightened competition, regulatory measures by the Nepal Rastra Bank, such as restrictions on margin lending and revised capital adequacy standards, are impacting banking operations. Amidst various risks, including credit risk, the primary focus of this thesis is to ascertain the influence of credit risk on the profitability of commercial banks in Nepal (Maharjan, 2020).

In recent years, the financial landscape of Nepal has witnessed the burgeoning significance of development banks in driving economic growth and fostering financial inclusion. However, amidst this expansion, concerns persist regarding the effective management of credit risk and its ramifications on the profitability of these

institutions. While development banks play a pivotal role in financing small and medium enterprises (SMEs), agricultural ventures, and infrastructure projects, they are inherently exposed to various credit risks stemming from loan defaults, economic fluctuations, and regulatory changes. The dearth of comprehensive studies focusing specifically on the impact of credit risk on the profitability of development banks in Nepal underscores a critical knowledge gap in the literature (Ghimire, 2019).

Banks utilize deposits to extend credit to borrowers, a primary revenue-generating activity. As credit transactions and the number of loan customers increase in the economy, credit expansion becomes unavoidable. This trend leads to a rise in the bank deposit-loan ratio, correlating with heightened credit risk. Mismanagement of credit risk not only diminishes net profit but also exacerbates liquidity crises and adversely affects the bank's reputation. Consequently, customer confidence in the banking industry may decline, potentially leading to disengagement from banking services. The relationship between credit risk and financial performance has garnered significant scholarly attention due to its recognized impact on banks' overall financial health (Chhetri, 2021).

Despite the overall positive performance of Nepalese banks, the presence of certain institutions reporting losses underscores the need for a deeper examination of the determinants of bank performance. Inspired by the lessons learned from the global financial crisis (GFC) and subsequent bailouts in developed countries, this study serves as a proactive measure to mitigate potential risks within the Nepalese banking sector. By gaining insights into the performance drivers of banks and their associated determinants, this research aims to contribute towards the sustainable development of the banking sector and the broader economy (Ahmeti et al., 2023).

Building upon the insights from Bhattarai (2014) and Poudel (2019), this study seeks to expand its scope by incorporating additional explanatory variables identified through an extensive literature review. The inclusion of these variables aims to provide a more comprehensive understanding of the factors influencing the performance of Nepalese development banks. Moreover, the research endeavors to enhance its robustness by expanding the sample size to include a broader range of development banks, thus ensuring a more representative analysis of the sector.

In the context of banks' profitability, several key variables play significant roles, as indicated by studies conducted by Khanal (2019), Al-Qudah (2020), Abdelmagid (2020), and Ahamed (2021). Bank Size (BS), calculated as the natural logarithm of total assets, is anticipated to exhibit a positive relationship with profitability, as observed by Khanal (2019) study. Conversely, Al-Qudah (2020) asserts that the Non-Performing Loan Ratio (NPLR), indicating the percentage of troubled loans, is projected to have a negative impact on profitability. Adnan and Yasin (2022) mentioned that Leverage Ratio (LER), reflecting the ratio of debt to EBITDA, is expected to negatively influence profitability. Additionally, Ahamed (2021) came to the conclusion that the Loan Loss Provision Ratio (LLPR), representing provisions for potential loan losses, is anticipated to be negatively correlated with profitability,. Therefore, while Bank Size may enhance profitability, factors such as Non-Performing Loan Ratio, Leverage Ratio, and Loan Loss Provision Ratio may pose challenges that could undermine profitability for, as highlighted in the aforementioned studies.

The following questions will be asked to acquire the knowledge of impact of credit risk and profitability of development banks.

1. What is the current position of credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate), and profitability of selected development banks in Nepal?
2. Is there any relationship between credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate), and the profitability (ROA, ROE) of development banks in Nepal?
3. What is the impact of credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), and control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate) on the profitability of selected development banks in Nepal?

1.3 Objectives of the Study

The objectives of the study are as follows;

- To analyze the current position of credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate), and profitability of selected development banks in Nepal.
- To examine the relationship between credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate), and profitability of development banks in Nepal.
- To evlauate the impact of credit risk (Non-performing Loan Ratio and Loan Loss Provision Ratio), and control variables (Bank Size, Leverage ratio, Capital Adequacy Ratio, GDP growth rate) on the profitability of the selected development banks in Nepal.

1.4 Research Hypothesis

The study will test the following null hypotheses on the relation between profitability and the defined independent variables, Bank Size, Non-performing Loan Ratio, Leverage ratio, and Loan Loss Provision Ratio.

H_{01}: Non-performing loan ratio has a significant negative effect on the profitability of development banks.

H_{02}: Loan Loss Provision ratio has a significant negative effect on the profitability of development banks.

H_{03}: Capital adequacy ratio has a significant positive effect on the profitability of development banks.

H_{04}: Leverage ratio has a significant negative effect on the profitability of development banks.

H_{05}: Bank size has a significant positive effect on the profitability of development banks.

H_{06}: GDP growth rate has a significant positive effect on the profitability of development banks.

1.5 Rationale of the Study

The absence of prior research specifically focusing on development banks, as opposed to commercial banks, underscores the significance and novelty of the proposed study. By venturing into uncharted territory within the realm of financial research, the study

holds immense potential to fill critical knowledge gaps and broaden the understanding of credit risk management dynamics within Nepal's banking sector.

Traditionally, research efforts have predominantly centered on commercial banks, largely overlooking the distinct operational characteristics and risk profiles of development banks. Therefore, the proposed study represents a pioneering endeavor that not only breaks new ground but also sheds light on an overlooked segment of the financial landscape. This unique focus on development banks holds profound implications for policymakers, regulators, investors, and development bank stakeholders alike.

From a regulatory and policymaking standpoint, the lack of prior research on development banks presents a notable blind spot in the formulation of regulatory policies and risk management frameworks. By addressing this gap, the study provides regulators and policymakers with a more holistic understanding of the financial ecosystem, enabling them to tailor regulatory interventions and policy initiatives that cater to the specific needs and challenges faced by development banks. This, in turn, can lead to more effective risk mitigation strategies and enhanced financial stability within the sector.

For investors, the dearth of research on development banks represents a missed opportunity to gain insights into an often-overlooked segment of the financial market. The proposed study offers investors a fresh perspective on the risk-return dynamics associated with investment in development banks, enabling them to make more informed investment decisions and diversify their portfolios effectively. Moreover, by highlighting the unique risk factors inherent in development bank operations, the study empowers investors to better assess and manage their risk exposure in the Nepalese financial market.

From the standpoint of development banks themselves, the lack of prior research presents both challenges and opportunities. On one hand, the absence of empirical evidence specific to development banks may hinder their ability to implement robust risk management strategies and optimize their operations effectively. On the other hand, the proposed study offers development banks a valuable opportunity to gain actionable insights into the credit risk management practices and performance drivers

that are unique to their operations. By leveraging the findings of the study, development banks can enhance their risk management frameworks, strengthen their financial resilience, and better fulfill their mandate of promoting economic development and financial inclusion.

Overall, the significance of the proposed study lies not only in its potential to advance academic knowledge but also in its practical implications for regulatory policy, investment decision-making, and operational effectiveness within Nepal's banking sector. By focusing on development banks, the study fills a crucial research gap and offers stakeholders a deeper understanding of the dynamics shaping credit risk management and financial performance in this important segment of the financial industry.

1.6 Limitations of the Study

1. While the decision to focus solely on development banks for this research study offers various advantages, it also presents a limitation in terms of the broader scope of Nepal's financial sector. By choosing to exclude other types of financial institutions licensed by the Nepal Rastra Bank, such as commercial banks, finance companies, micro-finance institutions, savings and credit cooperatives, and non-government organizations, the study may overlook valuable insights and perspectives from these diverse segments.
2. Limiting the study to just 10 out of the 17 licensed development banks in Nepal restricts the generalizability of the findings. The study may not fully represent the diverse range of credit risk management practices and financial performance across all institutions.
3. The study solely examines a limited number of performance metrics, namely Return on Assets (ROA) and Return on Equity (ROE), which are associated with credit practices.
4. Certain financial comparison tools utilized in the study may possess inherent biases or limitations, potentially skewing the interpretation of results and impacting the overall outcomes of the research.
5. The exclusive dependence on secondary data sources, such as published reports and information extracted from internet sources, might constrain the

depth and breadth of the analysis, limiting the ability to capture nuanced insights or identify subtle trends within the data.

6. The assumption of data accuracy without independent verification poses a notable risk, as inaccuracies or biases in the collected information could inadvertently influence the study findings, potentially undermining the validity and reliability of the research outcomes.

CHAPTER II
LITERATURE REVIEW

This chapter has three sections. The first section is:

2.1 Theoretical Review

2.1.1 The Credit Risk Theory

Credit risk pertains to the possibility of experiencing a monetary loss because of a decrease in the creditworthiness of a party involved in a financial transaction (Liu, Mirzaei & Vandoros, 2018). Essentially, it stems from the risk of default, which is the likelihood that a party fails to meet its contractual obligations. This risk primarily affects the lender and encompasses potential losses in both principal and interest. Such losses can be total or partial and may occur under various circumstances, such as when an insolvent bank cannot repay funds to depositors. Robert Merton introduced the theory of credit risk in 1974 through his default model, which is foundational in understanding credit risk. Merton proposed a model that evaluates a company's credit risk by likening its equity to a call option on its assets. Two primary methods for modeling credit risk emerged: the structural approach and the intensity-based approach, also known as the reduced form approach. Building upon Merton's model, Clifford V. Rossi developed three essential approaches for measuring credit risk, including credit spreads, credit portfolio management, and loss distribution generated through Monte Carlo simulation. To mitigate lender risk, lenders may conduct credit checks on potential borrowers, require borrowers to obtain insurance such as mortgage insurance, or seek collateral or guarantees from third parties. Generally, the higher the risk, the higher the interest rate demanded by lenders (Owojori, Akintoye & Adidu, 2017).

2.1.2 The Anticipated Income Theory

The Anticipated Income Theory, developed by H.V. Prochnow in 1944 and based on US commercial bank practices, proposes that banks should plan term-loan liquidation based on borrowers' anticipated income, regardless of their business nature. This theory underscores banks' ability to extend loans based on borrowers expected short-term and long-term incomes, linking medium and long-term loans to future borrower income. Loans are repaid in installments from future borrower income rather than as a lump sum at loan maturity. Banks grant more loans when expected incomes are

regular and reliable, aiding efficient credit risk management as bank management can plan credit based on anticipated income. Also known as the "cash flow approach" to lending, this theory fulfills liquidity, safety, and profitability objectives, rivaling the commercial loan theory by focusing on suitable loan types for banks to offer, differing from the conclusions of advocates of the commercial loan theory (Moti, Masinde & Mugenda, 2012).

2.1.3 The Concept of Risk

Financial institutions play a crucial role as intermediaries in circulating funds from surplus units to deficit units. However, this role exposes them to various risks, which remain a focal point of current financial studies garnering attention from scholars and professionals alike. Effective risk management emerges as a key determinant of success for banking institutions. As highlighted by Boahene et al. (2012), the banking business inherently involves substantial risk, and a bank's ability to generate profits and enhance shareholder wealth hinges on its approach to risk and its management. Risk, in this context, refers to the possibility that actual outcomes deviate from expected values, encompassing the likelihood of variations between actual and anticipated returns. Specifically in banking, risk is defined as the cumulative threats that may arise until all loaned funds and other commitments are repaid by the borrower.

2.1.3.1 Credit Risk

Lending presents various risks, with credit risk playing a predominant role, particularly because loans typically represent a significant portion of banks' assets, often comprising half to three-quarters of total bank assets. Credit risk has been extensively studied due to its importance in bank lending decisions and overall profitability. As described by Greuning et al. (2003), credit risk refers to the possibility of delayed or non-payment, which can lead to cash flow difficulties and impact a bank's liquidity. Essentially, credit risk arises when a party fails to fulfill the terms of an exchange, resulting in potential losses. This risk stems from uncertainties regarding a counterparty's ability or willingness to meet their contractual obligations. In essence, credit risk is likened to a serious financial ailment that can cause significant problems if not effectively managed (Ramchandra et al., 2018).

2.1.3.2 Interest Rate Risk

Interest rate risk poses a significant threat to financial institutions, manifested in a reduction of net interest income (Bessis, 2011). This risk occurs when interest rates change unexpectedly, resulting in interest expenses exceeding interest revenues. Typically, financial institutions acquire funds through short-term borrowings like savings deposits or commercial papers and then lend these funds for longer durations, such as through mortgages or bonds. If interest rates increase, the cost of short-term liabilities escalates more rapidly than the returns generated from long-term assets (Burton et al., 2015).

2.1.3.3 Liquidity Risk

Liquidity risk occurs when financial institutions are required to make payments, but their available assets are predominantly long-term and can only be swiftly converted at a loss (Burton, Nesiba, & Brown, 2015). This scenario may arise if depositors unexpectedly withdraw their funds and it becomes challenging to attract additional deposits. To mitigate this risk, financial institutions can hold highly liquid assets that can be readily converted into the necessary funds, thus reducing their exposure to liquidity risk (Burton et al., 2015).

2.1.3.4 Operational risk

Operational risk pertains to challenges associated with accurately processing, executing, and recording trades for cash exchange, as well as managing system failures and complying with regulatory requirements (Dam, 2010). While individual operational issues may seem minor for a well-managed institution, their cumulative impact can be significant and costly. This internal definition of operational risk should be tailored to each bank's unique circumstances, including its size, sophistication, operational complexity, and the full spectrum of operational threats it faces. Understanding and addressing these factors are key to mitigating the substantial risks inherent in operational incidents (Santomero, 1997).

2.1.4 Credit Risk Management

Numerous researchers have identified various factors contributing to bank failures, with a significant emphasis on the composition of banks' equity, primarily consisting of loans, as highlighted by Kitua (1996). Any deterioration in loan quality can pose significant challenges for banks. Information asymmetry between financial

institutions and borrowers further complicates the identification of creditworthy borrowers, necessitating the implementation of systems to assess borrower creditworthiness and mitigate adverse selection and moral hazard risks, as outlined by Santomero (1997). Effective credit risk management (CRM) is crucial for mitigating distinctive losses and ensuring a uniform assessment of borrowers, thereby enhancing the financial stability of banks. Poudel (2012) underscores the importance of CRM in shaping a bank's financial performance, emphasizing its integral role in the credit process. While there may be initial challenges associated with CRM implementation, the long-term benefits outweigh the short-term drawbacks, ultimately strengthening the financial position of financial institutions.

2.1.5 Credit Risk Management Strategies

Credit risk management strategies refer to the methods banks employ to minimize the adverse impacts of credit risk. A robust credit risk management framework is crucial as it aids in boosting revenue and ensuring the bank's longevity. Various methods are employed to mitigate credit risk, including the following approaches.

i. Selection

Gestel et al. (2015), effective Credit Risk Management (CRM) starts with the careful selection of borrowers and appropriate product offerings tailored to their needs. This necessitates the presence of skilled loan officers and robust risk assessment models. This initial stage is pivotal as decisions are made collectively by the committee members. At this juncture, borrowers deemed at risk of default may either be declined credit or required to provide additional collateral to mitigate the potential impact of default.

ii. Limitation

This approach benefits the bank by mitigating the extent of loss incurred from a borrower. It helps prevent scenarios where the failure of a counterparty to fulfill their obligations significantly impacts the bank's financial performance. By minimizing the number of riskier transactions, the bank reduces its exposure to potential losses (Gestel et al., 2015).

iii. Diversification

Gestel et al. (2015) emphasized the importance for banks to engage with diverse counterparties, including individuals and various industries. This diversification

helps spread the risk across a wide range of borrowers, thereby enabling banks to mitigate the impact of potential losses. This strategy is particularly effective for large and international banks.

iv. Credit Enhancement

Gestel et al. (2015), when a bank identifies an excessive level of risk associated with a particular type of borrower, it addresses this by obtaining an insurance policy to hedge against potential future losses. This approach enhances the quality of the loan portfolio and is termed credit risk mitigation. While these strategies do not eliminate credit risk, they effectively reduce the level of exposure to such risks for banks. Consequently, this risk mitigation contributes to increased profitability for the banks.

2.1.6 Profitability of Development Bank

Profitability in the banking industry refers to a bank's ability to generate earnings relative to its expenses and costs incurred over a specific period. It reflects the bank's capacity to manage associated risks while enhancing its capital and signifies the effectiveness of its management and competitiveness within the industry. Various metrics are used to gauge bank profitability, including return on capital employed, return on assets, return on equity, net profit margin, cost-to-income ratio, net interest margin, risk-adjusted return on capital, price-earnings ratio, total share return, return on invested equity, and cash flow to assets. However, according to Brealey, Myers, Allen, and Mohanty (2012), the key indicators of bank profitability are return on assets (ROA), return on equity (ROE), and net profit margin.

Profitability stands as a fundamental objective for development banks, with efforts directed toward increasing it (Duffie & Singleton, 2012). All activities within banks, whether direct or indirect, impact their profitability. Determining bank profitability involves two broad categories: internal determinants and external determinants (Staikouras & Wood, 2011). Internal determinants are influenced by management decisions and policy objectives under their control, encompassing capital allocation, liquidity management, and expense control (Guru, Staunton, & Balashanmugam, 2002). External determinants, on the other hand, are external factors beyond management's control (Staikouras & Wood, 2011). This study primarily focuses on internal determinants, aiming to assess the impact of credit risk management on bank

profitability. However, certain credit-related factors, such as the level of non-performing loans, are beyond management control, while some management decisions are influenced by external regulations. Hence, the model specification includes some external determinants as well.

2.1.7 Bank profitability indicators

Given the significance of bank profitability in this research, a detailed examination of the suitable metrics for measuring bank profitability is provided. As previously noted, there exists a range of metrics for assessing bank profitability, and the selection of a specific measure hinges on the research objective and the practices of the sample banks. In this study, return on assets (ROA) and return on equity (ROE) will serve as the primary indicators of bank profitability. ROA and ROE are not only conventional performance measures but also regarded as the most critical metrics for evaluating bank profitability in the literature (Kolapo et al., 2012).

2.1.7.1 Return on Asset (ROA)

Return on Assets (ROA) is a critical metric for assessing the performance of development banks, which often have distinct objectives compared to commercial banks. Development banks typically focus on financing projects and initiatives aimed at fostering economic development, often in underserved or high-risk areas. As such, their asset bases may include a mix of loans, investments, and other development-oriented assets (Boahene et al.,2012). A higher ROA for development banks signifies their effectiveness in utilizing these assets to generate income and support their developmental goals. However, achieving a high ROA in the context of development banking requires striking a delicate balance between financial sustainability and social impact. Development banks must carefully manage credit risk, align investments with their development objectives, and navigate complex socio-economic factors to optimize their ROA while fulfilling their developmental mandate (Kolapo et al, 2012).

2.1.7.2 Return on Equity (ROE)

Return on Equity (ROE) is an essential metric for evaluating the financial performance and sustainability of development banks. Unlike commercial banks, which primarily focus on maximizing shareholder returns, development banks often prioritize broader socio-economic goals, such as poverty alleviation, infrastructure

development, and fostering sustainable growth (Boahene et al.,2012). A higher ROE indicates that a development bank is effectively leveraging its shareholders' equity to generate profits and support its developmental objectives. However, achieving a high ROE in the context of development banking requires balancing financial returns with social impact and risk management. Development banks must carefully allocate capital, manage operational efficiency, and navigate complex socio-political dynamics to optimize their ROE while fulfilling their developmental mandate and serving the needs of their stakeholders and communities (Kolapo et al., 2012).

2.1.8 Determinants of Profitability of Development Banks

The factors influencing bank performance can be categorized into two main groups: bank-specific (internal) factors and macroeconomic (external) factors. These factors are random variables that determine the outcomes. Internal factors consist of individual characteristics specific to a bank, which directly impact its performance. These factors are primarily influenced by the decisions made internally by management and the board of directors. On the other hand, external factors encompass sector-wide or country-wide influences that are beyond the control of any single bank. These external factors affect the profitability of banks but are not directly within the realm of the bank's management control (Bagale, 2023).

2.1.8.1 Non-performing Loan

Non-performing loans (NPLs) refer to assets held by banks that do not generate income. Essentially, they represent loans that borrowers have failed to repay in a timely manner, leading to bad or doubtful debts. Typically, loans that remain unpaid for three months or more are classified as non-performing. However, if the debtor resumes payments on a non-performing loan, it transitions back into a performing loan status, even if the missed payments have not been fully recovered. Institutions often opt to sell non-performing loans to other investors to mitigate risk and clean up their balance sheets. Efforts to address the NPL issue in development banks require comprehensive strategies aimed at improving credit risk management practices, enhancing financial literacy among borrowers, strengthening regulatory oversight, and promoting economic growth and diversification (Duffie & Kenneth J, 2012). Development banks can benefit from adopting prudent lending practices, including rigorous borrower screening, collateral management, and loan monitoring systems. However, such sales should be carefully evaluated due to potential financial

ramifications, including impacts on profit and loss statements, as well as tax implications (Dahal, 2017).

2.1.8.2 Bank Size

The size of a bank reflects both the advantages and disadvantages it faces within the banking industry (Athanasoglou, Brissimis, & Delis, 2008). Larger banks tend to be more active in various markets, offering a wider range of products and benefiting from better risk diversification (Lehar, 2005). Moreover, larger banks may achieve efficiency gains by operating in less competitive environments (Flamini, Schumacher, & McDonald, 2009). However, according to Demirgüç- Kunt and Maksimovic (1998), the impact of factors like financial and legal environments on a bank's profitability is closely tied to its size. In this study, bank size, measured by the logarithm of the book value of total assets in its currency (Lehar, 2005), is considered a control variable to analyze bank financial performance.

While few authors have investigated the relationship between bank size and credit risk management's impact on profitability, Bhattarai (2014) discovered a positive correlation between bank size and performance. This suggests that as a bank's size increases, its profitability tends to rise, particularly among small and medium-sized banks. In contrast, Abdelrahim (2013) found a significant and strongly negative effect of bank size on the effectiveness of credit risk management among Saudi banks.

2.1.8.3 Leverage Ratio

Excessive leverage ratios within the banking system are widely regarded as a significant factor contributing to the global financial crisis (Board, 2009; Turner, 2009). The leverage ratio indicates the extent to which a bank is using debt to fund its operations relative to its shareholder equity (Reddy & Prasad, 2011). It essentially measures the proportion of a bank's capital that is financed through debt and evaluates the bank's ability to meet its financial obligations. When a bank employs aggressive leveraging, relying heavily on debt, it signifies heightened risk, as excessive debt can lead to substantial liabilities that are difficult to manage. Moreover, a high leverage ratio can lead to unstable earnings for banks due to increased interest expenses. While shareholders may initially benefit from rising earnings, if the cost of debt surpasses returns, it could ultimately result in bankruptcy, leaving shareholders with no returns. Additionally, a high leverage ratio offers less protection to depositors and poses

significant risks to them (Reddy & Prasad, 2011). Therefore, maintaining an appropriate leverage ratio in banking is crucial to prevent the accumulation of excessive leverage, which could potentially harm the broader financial system and the economy, and to enhance risk management practices (Miu, Ozdemir, & Giesinger, 2010).

Relatively few studies have explored the impact of credit risk management on banks' financial performance using leverage ratios as an indicator. Alshatti (2015) discovered a negative correlation between leverage ratio and banks' financial performance. Consistent with prior research, it is posited that there exists a negative relationship between leverage ratio and bank performance.

2.1.8.4 Loan Loss Provision Ratio

Loan loss provisions serve as an anticipation of future loan losses by banks, representing their expectation of potential defaults. This provision is recorded as a contra income account, allowing banks to recognize expected losses from specific loan portfolios in their profit and loss statements (Aduda & James, 2021). Depositors are safeguarded against unexpected losses through capital adequacy reserves and protected against anticipated losses through loan loss provision reserves. The underlying principle of loan loss provisions is that bank managers express their confidence or concern regarding the quality of the bank's assets. An increase in loan loss provisions typically indicates a decrease in asset quality, while a decrease suggests an improvement, as noted by (Dahal 2017).

2.1.8.5 Capital Adequacy Ratio

Capital plays a pivotal role as a bank-specific factor influencing the profitability of banks. It represents the bank's funds available to support its operations and serve as a buffer during adverse situations. Capitalization creates liquidity for banks, particularly crucial considering the vulnerability of deposits to bank runs. Furthermore, higher levels of bank capital decrease the likelihood of distress. However, there are drawbacks, such as weaker demand for liability due to the preference for cheaper sources of funds (Kafle, 2023). Capital adequacy, therefore, becomes imperative, indicating the level of capital required by banks to withstand various risks like credit, market, and operational risks, absorbing potential losses and safeguarding the interests of the bank's stakeholders. The capital adequacy ratio serves as a measure of the

bank's internal strength to weather crises, directly correlating with its resilience. Ultimately, capital adequacy has a direct impact on banks' profitability, as highlighted by Dahal (2017).

2.2 Empirical Literature Review

A comprehensive exploration of the literature has been conducted to assess how risk management affects financial performance across multiple facets. Given the specific focus of this study on credit risk management in banking, particular emphasis was placed on examining research that investigates the effects of credit risk management on the performance of banks within diverse national contexts.

2.2.1 Review of International Studies

Ogboi and Unuafe (2013) examined the impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria. The objective of the study is to investigate the influence of credit risk management and capital adequacy on the financial performance of banks in Nigeria from 2004 to 2009, using a panel data model. Data from annual reports and accounts of selected Nigerian banks were utilized. The analysis revealed that effective credit risk management and sufficient capital adequacy positively impact bank profitability, except for loans and advances, which were found to have a negative effect on profitability. The findings suggest the importance of rigorous credit appraisal processes before loan disbursement and the enhancement of Tier-One capital to improve the financial stability and performance of Nigerian banks.

Adeus et al. (2014) conducted a comprehensive study examining the factors influencing the profitability levels of commercial banks in Nigeria. The objective of the study was to analyze the variables affecting the profitability levels of commercial banks in Nigeria using panel data analysis. Utilizing time series and cross-sectional data collected from a sample of fourteen banks spanning from 2000 to 2013, the researchers employed a panel data approach for analysis. Internal and external drivers, including capital adequacy ratio, asset quality, management effectiveness, liquidity ratio, inflation, and economic growth, were scrutinized in relation to profitability, measured by return on assets (ROA). The findings underscored the significance of asset quality, management effectiveness, and economic growth as influential factors impacting commercial banks' profitability. These factors were deemed statistically

significant in both fixed effect and random effect models for profitability. Notably, asset quality emerged as particularly crucial across all models, indicating the substantial influence of credit risk on the profitability of commercial banks.

Li and Zou (2014) investigated how credit risk management influences the profitability of European commercial banks between 2007 and 2012. The objective of the study is to assess the impact of credit risk management on the profitability of European commercial banks. They gathered data from the largest 47 commercial banks in Europe and employed multivariate regression analysis for analysis. The study utilized capital adequacy ratio and non-performing loan ratio as indicators of credit risk management, and ROA and ROE as indicators of profitability. Despite using capital adequacy ratio and non-performing loan ratio as proxies for credit risk management, the study concluded that credit risk management does not positively impact the profitability of commercial banks. Additionally, the relationships between the proxies were found to be unstable and fluctuating.

Bayyoud and Sayyad (2015) studied the impact of credit risk on the performance of the top five Nigerian commercial banks. The study was motivated by the adverse effects of credit risk on bank profitability, which served as the foundation for formulating policy measures to address credit risk and enhance the bank's asset value while reducing overall risk. Hypothesis testing and linear regression analysis were employed to analyze the data. The study utilized non-performing loan ratio and loan-to-advances ratio as measures of credit risk, and ROA as a measure of profitability. Results indicated that both the non-performing loan ratio and the loan-to-advances ratio had a negative impact on profitability. This research underscores the significant relationship between bank performance and credit risk management.

Ndoka and Islami (2016) researched the association between credit risk management and profitability across 16 commercial banks in Albania spanning from 2005 to 2015, utilizing regression analysis. The objective of the study was to analyze the relationship between credit risk management and profitability of 16 commercial banks in Albania from 2005 to 2015. They employed non-performing loan ratio and capital adequacy ratio as independent variables and ROA and ROE as dependent variables. Their findings suggest a direct correlation between the effectiveness of credit risk management and the profitability of commercial banks in Albania, underscoring the

importance of vigilant management of non-performing loans for improved financial performance.

Isanzu (2017) described how credit risk affects the financial performance of Chinese banks. Given that credit creation is a core activity of banks, they are inevitably exposed to credit risk. Using panel data regression analysis, the study aimed to determine the influence of credit risk on the financial performance of smaller Chinese banks over an eight-year period. The findings indicated an improvement in credit risk management practices over time, with prudent techniques being employed to mitigate the adverse effects of credit risk on bank financial performance. The study highlighted non-performing loans and capital adequacy as significant indicators of credit risk that impact financial performance. It recommends that managers prioritize enhancing capital adequacy to positively influence financial performance, while also implementing modern strategies and techniques to reduce non-performing loans through effective credit risk management.

Abdelrahim (2019) investigated a study to explore the factors influencing the effectiveness of credit risk management in Saudi Banks. The study objectives were to identify the characteristics of credit risk management of Saudi Banks, investigate the determinants of effectiveness, identify serious challenges facing its effectiveness, and explore methods for its development. They employed both descriptive and analytical methods, utilizing the CAMEL model to assess credit risk management performance. The sample of 100 purposively selected respondents, comprising bank managers and financial experts from Saudi Banks in Taif, Mecca, Jeddah, and Riyadh, excluding certain banks due to resource limitations. The study identified various independent variables, including capital adequacy ratio, asset quality, management soundness, earnings of credit facilities, liquidity, and bank size. The findings revealed that liquidity significantly positively impacts the effectiveness of credit risk management in Saudi Banks, whereas bank size has a notably negative effect. However, variables such as capital adequacy, asset quality, management soundness, and earnings were found to have an insignificant impact on credit risk management effectiveness.

Alshatti (2019) studied the impact of credit risk indicators on the financial performance of thirteen Jordanian commercial banks from 2009 to 2018. The objective was to investigate the relationship between credit risk indicators and the

financial performance of Jordanian commercial banks. Using panel regression analysis and data from bank annual reports, the study found that non-performing loans/gross loans positively affect financial performance, while provision for facilities loan/net facilities ratio has a negative effect. However, variables like capital adequacy ratio and credit interest/credit facilities ratio showed no significant impact. The study suggests that Jordanian banks should enhance their credit risk management systems, improve credit granting processes, and ensure effective credit administration for better profitability.

Gadzo, Kportorgbi, and Gatsi (2019) evaluated the impact of credit and operational risk on the financial performance of universal banks. The study utilized a Structural Equation Model (SEM). Their objective was to understand how these risks affect the financial performance of universal banks within the Ghanaian context. The information was gathered from the relevant sample bank's yearly reports. Regression models and Pearson's correlation coefficients are estimated to examine the impact credit and operational risk on the financial performance of universal banks. Their analysis revealed a departure from previous findings, showing that credit risk negatively influences financial performance, aligning with the principles of information asymmetry from the lemon theory. Additionally, operational risk was found to negatively impact the financial performance of Ghanaian universal banks. Furthermore, specific bank-related factors such as asset quality, bank leverage, cost-to-income ratio, and liquidity were shown to significantly influence credit risk, operational risk, and financial performance positively.

Similarly, Abu-Alrop and Kokh (2020) delved into the analysis of how credit risk affects the profitability of Russian banks within the timeframe of 2008 to 2017. Their aim was to understand the impact of credit risk on the financial performance of these banks. To assess credit risk, they utilized the ratio of Loan Loss Provisions (LLP) to Total Loans (TL) and the ratio of TL to Total Assets (TA), while Return on Assets (ROA) and Return on Equity (ROE) were employed as measures of profitability. Employing multivariate regression analysis, their study also uncovered a notable negative correlation between credit risk and bank performance.

Munangi and Bongani (2020) examined the influence of credit risk on the profitability of South African commercial banks spanning from 2008 to 2018. Their primary

objective was to understand how credit risk affects the financial performance of these banks. To measure profitability, they utilized Return on Assets (ROA) and Return on Equity (ROE), while Non-Performing Loans (NPL) served as the metric for assessing credit risk. Employing a range of models including Pooled OLS, Random Effect, and Fixed Effect, the study unveiled a significant adverse impact of credit risk on the financial performance of the banks under scrutiny. Moreover, they observed positive impacts of growth and capital adequacy, alongside a negative influence of leverage on financial performance.

Aduda and Gitonga (2021) explored the relationship between credit risk management and profitability among commercial banks in India. The objective was to investigate the association between credit risk management and profitability across thirty commercial banks in India. The study utilized both primary (questionnaire-based) and secondary (annual reports and financial statements) data spanning from 2011 to 2020. They employed regression analysis with non-performing loan ratio (NPLR) as the independent variable representing credit risk management and Return on Equity (ROE) as the dependent variable for bank profitability. The study found that profitability ratios significantly influence credit risk management, with regression analysis revealing a negative and statistically significant relationship between NPLR and ROE. Overall, the research suggests that credit risk management moderately impacts profitability in the Indian commercial banking sector.

Berrios (2022) assessed the relationship between bank credit risk and profitability and liquidity. The objective was to examine the relationship between increased bank risk and the global financial crisis. The first phase incorporated recent data, including insider holdings and CEO compensation and tenure. The second phase utilized regression modeling with data from the Mergent Online database, involving a sample of 40 randomly selected banks for the period 2013 to 2021, totaling approximately 200 observations. Performance variables included net interest margin, return on assets, return on equity, and cash flow to assets, while independent variables comprised insider holdings, prudence in lending, CEO compensation, CEO tenure, loans to deposits, and total debt to equity. Results indicated that higher CEO tenure and insider holdings negatively affected bank performance, though further evidence is needed for generalization. Regression findings showed a negative association between loans to

deposits and cash flows, but a positive correlation between lesser prudence in lending and financial performance.

Msomi (2022) aimed to review the macroeconomic and bank-specific factors influencing non-performing loans in commercial banks. The objective of the study was to investigate the factors influencing non-performing loans in commercial banks. Using fixed and random effect models, the study analyzed data from 47 listed commercial banks across six different countries (Nigeria, Benin, Burkina Faso, Gambia, Guinea, and Liberia) spanning the period 2008 to 2019. The findings revealed that the liquidity ratio, capital adequacy ratio, and inflation rate significantly influenced the non-performing loan rate. The study emphasizes the importance of banks thoroughly assessing loan applications and ensuring compliance with capital adequacy requirements. Additionally, it underscores the need for banks to prevent employees from indiscriminately granting loans to maintain job security, and for West African economies to maintain low inflation rates to facilitate timely loan repayments.

Annas, Humairoh and Endri (2024) analyzed the macroeconomic and bank-specific factors on non-performing loan: evidence from an emerging economy. The objective was to identify the influence of macroeconomic and bank-specific factors on non-performing loans (NPLs) within the banking sector listed on the Indonesia Stock Exchange from 2017 to 2021, utilizing a sample of 32 banks. Employing a panel data regression model for analysis, the research reveals that Interest Rates (IR), World Oil Prices (WOP), and Operating Expenses and Operating Income (BOPO) positively affect NPLs, whereas Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), and Inflation (INF) have a negative impact. Loan Deposits Ratio (LDR) does not significantly affect NPLs. Notably, macroeconomic variables demonstrate a stronger influence on NPLs compared to bank-specific factors, suggesting the importance for bank management to anticipate and adapt to changes in macroeconomic conditions, particularly in lending practices affected by IR. Investors considering banking stocks are advised to take into account market risk factors such as IR, INF, and OP when making investment decisions.

Table 1

Review Matrix of International Studies

S.No.	Authors	Article	Methodologies	Findings

1	Ogboi et al,. (2013)	Impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria.	Panel Data Estimation Technique	Effective credit risk management and sufficient capital adequacy positively impact bank profitability, except for loans and advances, which were found to have a negative effect on profitability

S.No	Authors	Article	Methodologies	Findings
2	Adeusi et al,. (2014)	Risk management and financial performance of banks in Nigeria.	Panel Data Estimation Technique	The findings underscored the significance of asset quality, management effectiveness, and economic growth as influential factors impacting commercial banks' profitability.
3	Liu et al,. (2014)	The impact of bank competition and concentration on industrial growth.	Multivariate Regression Analysis	Credit risk management does not positively impact the profitability of commercial banks
4	Bayyoud et al,. (2015)	The impact of credit risk on the performance of the top five Nigerian commercial banks.	Hypothesis testing and linear regression analysis	Both non-performing loan ratio and loan-to-advances ratio negatively impacted profitability.
5	Ndoka et al,. (2016)	The Impact of Credit Risk Management in the Profitability of Albanian Commercial Banks During the Period 2005-2015	Multiple Regression Model	There is a positive correlation between efficient credit risk management and profitability in Albanian commercial banks.
6	Isanzu et al,. (2017)	The impact of credit risk on financial performance of Chinese banks.	Panel data regression analysis	Non-performing loans and capital adequacy are significant indicators of credit risk that impact financial performance
7	Abdelrahim, (2019)	Effectiveness of credit risk management of Saudi banks in the light of global financial crisis: A qualitative study.	Descriptive and analytical methods, utilizing the CAMEL model	Liquidity significantly positively impacts the effectiveness of credit risk management in Saudi Banks, whereas bank size has a notably negative effect.

8	Alshatti, (2019)	The effect of credit risk management on financial performance of Nepalese Development banks.	Secondary Data and Regression analysis	Capital adequacy ratio and credit interest/credit facilities ratio showed no significant impact
9	Gadzo et al,. (2019)	Credit risk and operational risk on financial performance of universal banks in Ghana.	Least squared structural equation model	Asset quality, bank leverage, cost-to-income ratio, and liquidity were shown to significantly influence credit risk, operational risk, and financial performance positively.

S.No	Authors	Article	Methodologies	Findings
10	Abu et al,. (2020)	Impact of credit risk on the performance of Russian commercial banks.	Multivariate regression analysis	There is a negative correlation between credit risk and bank performance.
11	Munangi et al,. (2020)	An empirical analysis of the impact of credit risk on the financial performance of South African banks.	Pooled OLS, Random Effect, and Fixed Effect	There is a positive impact of growth and capital adequacy, alongside a negative influence of leverage on financial performance
12	Aduda et al., (2021)	The relationship between credit risk management and profitability among the commercial banks in India.	Primary and secondary (annual reports and financial statements) data	Profitability ratios significantly influence credit risk management, with regression analysis revealing a negative and statistically significant relationship between NPLR and ROE
13	Berríos, (2022)	The relationship between bank credit risk and profitability and liquidity.	Regression modeling	Regression findings showed a negative association between loans to deposits and cash flows, but a positive correlation between lesser prudence in lending and financial performance.
14	Msomi, (2022)	Dynamic panel investigation of the determinants of South African commercial banks' operational efficiency	Fixed and random effect models	The findings revealed that the liquidity ratio, capital adequacy ratio, and inflation rate significantly influenced the non-performing loan rate

15	Annas, (2024)	Macroeconomic and bank-specific factors on non-performing loan: evidence from an emerging economy.	Panel data regression model	The study shows macroeconomic variables like Interest Rates (IR) and bank-specific factors such as Operating Expenses and Operating Income (BOPO) positively affect non-performing loans (NPLs)

2.2.1 Review of National Studies

Bhattarai (2014) investigated the impact of credit risk on the performance of Nepalese commercial banks. It aimed to assess the impact of credit risk on the performance of Nepalese commercial banks and propose strategies to enhance credit risk management practices. The study analyzed pooled data from fourteen banks over the period 2010 to 2018, resulting in 77 observations. The study included independent variables such as capital adequacy ratio, non-performing loan ratio, cost per loan assets, cash reserve ratio, and bank size, while return on assets served as the dependent variable. Regression analysis was employed for data assessment. Findings revealed inadequate credit risk management practices among the commercial banks, as evidenced by the negative influence of non-performing loan ratio and the positive effect of cost per loan assets on bank performance. Given the significant relationship between credit risk and bank performance, the author recommended the implementation of robust credit risk management strategies, including thorough credit evaluation procedures before loan disbursement.

Kattel (2015) analyzed the study of credit risk identification techniques followed by commercial banks in Nepal. The primary aim of this study is to investigate the current credit risk identification methods employed by commercial banks in Nepal. Through the development and administration of a questionnaire to nine commercial banks operating in Nepal, the research seeks to understand the perceptions of Nepalese bankers regarding the importance of credit risk identification techniques and the utilization of various tools to assess borrower risk. The findings reveal that Nepalese bankers recognize the significance of employing diverse techniques to accurately gauge risk levels. Moreover, the study highlights that Nepalese commercial banks utilize a variety of methods including interviews, root cause analysis, checklist analysis, SWOT analysis, scenario analysis, expert judgment, simulation, and stress

testing. Additionally, significant differences were observed among the three categories of banks—State-Owned, Private, and Joint Venture—in terms of the tools and techniques utilized for credit risk identification.

Tuladhar (2017) analyzed a study to assess the influence of credit risk management on the profitability of Nepalese commercial banks. The primary objective was to investigate this impact through the analysis of panel data spanning a five-year period from selected banks. Utilizing a regression model, the study examined the relationship between credit risk and bank performance. The findings indicate that credit risk management significantly affects the profitability of Nepalese commercial banks. Specifically, factors such as coverage ratio, capital adequacy ratio, and bank size positively impact bank performance. Conversely, leverage ratio, non-performing loan ratio, and female board membership were found to negatively impact bank performance. However, liquidity ratio, asset quality, and cash reserve ratio were deemed insignificant in determining bank performance. The study recommends effective credit risk management strategies for Nepalese commercial banks, emphasizing the maintenance of optimal capital adequacy ratios, diligent monitoring of non-performing loans, enhancement of coverage ratios, balanced leverage ratios, promotion of female board representation, and strategic efforts to increase bank size to enhance financial performance.

Gautam (2018) conducted a study on the determinants affecting the financial performance of Nepalese commercial banks. The research selected ten commercial banks as a sample to analyze the factors influencing financial performance from 2006/07 to 2016/17. Data were collected from the annual reports of the respective banks, and multiple linear regression models were employed for data analysis. The findings reveal that return on assets is positively correlated with capital adequacy ratio, management effectiveness, and gross domestic product while displaying a negative relationship with asset quality and liquidity management. The results highlight the significant impact of capital adequacy ratio, managerial effectiveness, gross domestic product, liquidity management, and asset quality on the financial performance of commercial banks.

Shrestha (2018) argued a comparative study on the credit management practices of Nepalese commercial banks, aiming to analyze sector-wise loans and advances,

security-wise loans and advances, priority and deprived sector loans, evaluation of non-performing loans, as well as issues of profitability and liquidity position. Utilizing descriptive statistics, the study revealed that HBL exhibits a safer liquidity position compared to SBI and NBL, with SBI showing aggressive credit deployment and HBL demonstrating a moderate trend in credit mobilization. NBL appeared defensive in credit mobilization but mobilized higher deposits for investment. SBI had a higher deposit mobilization ratio compared to HBL, while NBL had a higher ratio of investment to total loans and advances. Additionally, NBL had a higher loan loss provision ratio compared to SBI and HBL, which had similar ratios.

Poudel (2019) presented a study on Portfolio Management Analysis of Development Banks in Nepal. The objective of the study was to conduct a portfolio management analysis of development banks in Nepal. Using data from 10 banks spanning from 2010 to 2018 and employing multiple regression analysis, the study focused on parameters such as default rate, cost per loan assets, and capital adequacy ratio. The results revealed an inverse relationship between these factors and banks' financial performance, with default rate being the most significant predictor. Consequently, the author recommended that Nepalese banks prioritize risk management efforts, particularly in managing default rates and maintaining optimal capital levels, to enhance overall performance and resilience.

Ojha (2020) conducted a comparative analysis of risk management practices among NABIL, SCBL, and HBL. The objective of the study is to analyze and compare the risk management practices of NABIL, SCBL, and HBL and evaluate their impact on bank performance. Secondary data from these sample commercial banks spanning an 8-year period was extracted from their annual reports. Descriptive statistics and a panel data regression model were employed for data analysis. The study identified several variables, including provision to total loans, loan to total assets, credit administration (cost to total loans), and size (economies of scale), as significant factors influencing bank performance. However, there were variations in the magnitude and direction of their effects on the selected profitability measure, Return on Assets. Based on the findings, the study recommends that Nepalese banks should enhance their credit risk management capabilities, exercise control over overhead costs associated with lending, and prioritize increasing the size of the loan book while maintaining sound credit planning.

Chhetri (2021) studied the effect of credit risk management on the financial performance of Nepalese Commercial banks from 2010 to 2019. The objective was to investigate the influence of credit risk indicators on the financial performance of commercial banks in Nepal. Using annual reports as secondary data, panel regression analysis was conducted. The study evaluated credit risk management indicators like capital adequacy ratio, credit interest/facilities, provision for facilities loss/net facilities, leverage ratio, and non-performing loans against financial performance indicators ROA and ROE. Results indicated a positive correlation between non-performing loans/gross loans and financial performance and a negative correlation with provision for facilities loan/net facilities ratio. However, no significant effects were found for the capital adequacy ratio and credit interest/facilities ratio.

In a study by Goet (2022), the profitability of listed commercial banks operating in Nepal was examined about various bank-specific characteristics, including capital adequacy. The research utilized panel data comprising 21 observations from three listed banks out of a total of 27 banks to assess factors such as Return on Assets (ROA) and Return on Equity (ROE) that impact banks' profitability. Profitability was measured in terms of shareholders' equity, regulatory capital, operating efficiency, asset size of the bank, and loans and advances. The findings indicate a significant association between net profit and shareholders' equity, tier 1 capital, total capital, and loans and advances, but not with tier 2 capital. Furthermore, the study reveals that the credit deposit ratio notably influences return on assets, while other factors do not exhibit a significant impact.

Bagale (2023) conducted a study to examine The impact of credit risk management on bank profitability in Nepali commercial banks. This study aims to assess the influence of credit risk management practices on the profitability of commercial banks in Nepal Data from 15 commercial banks operating in Nepal from 2011 to 2020 were collected and analyzed using descriptive statistics, correlation analysis, and pooled regression analysis with panel data. Return on equity (ROE) was used as the indicator of bank profitability, while credit risk management was measured using indicators such as capital adequacy ratio, cash reserve ratio, loan loss provision ratio, non-performing loan ratio, and bank size. The sample comprised 15 commercial banks operating in the Nepali economy, with data spanning from 2011 to 2020. The findings reveal that credit risk management significantly impacts Nepali commercial banks' profitability.

While cash reserve ratio, loan loss provision ratio, and non-performing loan ratio had a negligible negative effect on return on equity, bank size and liquidity ratio positively influenced it, with liquidity ratio showing a notably positive impact. Conversely, capital adequacy ratio had a significant negative impact on return on equity. The study concludes that the effectiveness of a bank's profitability is closely linked to its credit risk management practices.

Bhatt et, al. (2023) surveyed a study to examine the impact of credit risk and liquidity risk management on the profitability of deposit money held by banks in Nepal. The objective was to evaluate the influence of credit risk and liquidity risk management on the profitability of deposit money held by banks in Nepal and to propose strategies for enhancing risk monitoring and compliance. The study used questionnaire responses from 80 participants. The analysis, employing descriptive statistics and correlation analysis, revealed a significant relationship between bank liquidity and the profitability of deposit money in Nepalese banks. Consequently, the authors recommended the establishment of effective internal control systems for risk monitoring and emphasized the importance of maintaining balanced deposit-loan ratios to mitigate asset-liability mismatches.

Khanal and Pitambar (2023) examined credit risk management and its impact on performance of commercial banks: With reference to Nepal. This research aims to examine how credit risk management influences the financial performance of commercial banks in Nepal. The study utilizes the Pooled Ordinary Least Square estimator to analyze balanced panel data from ten commercial banks spanning the period 2012 to 2021. Credit risk indicators such as Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPLR), Credit Deposit Ratio (CDR), Market Quality Ratio (MQR), and Bank Size (BS) are considered, while Return on Assets (ROA) is used as the measure of financial performance. The findings reveal that CAR, NPLR, and BS have a positive yet insignificant effect on ROA, while CDR exhibits a negative and insignificant effect. Additionally, MQR demonstrates a positive and significant impact on ROA. Overall, the results suggest that effective credit risk management significantly influences the financial performance of commercial banks in Nepal, underscoring the importance of prudent risk management practices for bank success.

Table 2

Review Matrix of National Studies

S.No.	Authors	Article	Methodologies	Findings
1	Tuladhar, (2017)	Impact of credit risk management on profitability of Nepalese commercial banks.	Panel Data Estimation Technique	Factors such as coverage ratio, capital adequacy ratio, and bank size positively impact bank performance
2	Shrestha, (2018)	The Impact of Credit Risk Management on Profitability: Evidence from Nepalese Commercial Banks.	Descriptive statistics	HBL has safer liquidity, SBI is aggressive in credit, HBL moderately mobilizes credit, NBL is defensive in credit but gathers more deposits, SBI mobilizes more deposits, NBL invests more than loans.
S.No.	**Authors**	**Article**	**Methodologies**	**Findings**
3	Bhattarai, (2019)	Effect of Credit Risk on the Performance of Nepalese Commercial Banks.	Descriptive, Correlation and Regression Analysis	Poor credit risk management seen with non-performing loan ratio affecting performance and higher cost per loan assets boosting it, highlighting the need for improved credit evaluation.
4	Paudel, (2019)	Portfolio Management Analysis of Development Banks in Nepal.	Multiple regression analysis	The results revealed significant variations in default rates, cost per loan assets, and capital adequacy ratios among Nepali development banks, reflecting diverse levels of risk management and operational efficiency.
5	Ojha, (2020)	Risk Management Practices Liabilities of commercial banks	Correlation and Multiple Regression models	The study found provision to total loans, loan to total assets, credit administration (cost to total loans), and size (economies of scale) to be significant factors impacting bank performance.
6	Chhetri, (2021)	Effect of credit risk management on financial performance of Nepalese commercial banks.	Panel Data Estimation Technique	There is a positive correlation between non-performing loans/gross loans and financial performance and a

				negative correlation with provision for facilities loan/net facilities ratio.
7	Goet, (2022)	Impact of Capital Adequacy on Profitability of Commercial Banks in Nepal.	Descriptive Methods and Secondary Data	Credit deposit ratio notably influences return on assets, while other factors do not exhibit a significant impact
8	Bagale, (2023)	Credit risk management and profitability of commercial banks in Nepal.	Descriptive statistics, correlation analysis, and pooled regression analysis.	Effective credit risk management significantly impacts Nepali commercial banks' profitability, with liquidity ratio notably boosting return on equity alongside bank size.
9	Bhatt et al., (2023)	Examining the determinants of credit risk management and their relationship with the performance of commercial banks in Nepal.	Descriptive statistics and Correlation analysis	The findings of the study show a significant relationship between bank liquidity and the profitability of deposit money in Nepalese banks.
10	Khanal et al., (2023)	Credit risk management and its impact on performance of commercial banks: With reference to Nepal.	Quantitative Research Method	CAR, NPLR, and BS have a positive yet insignificant effect on ROA, while CDR exhibits a negative and insignificant effect

2.3 Research Gap

Despite their importance in driving inclusive growth, the lack of dedicated research on the credit risk-profitability nexus within the context of Nepalese development banks represents a notable gap in the existing literature. However, the lending practices and financial dynamics of development banks warrant specific attention due to their distinct mandates, target clientele, and risk management strategies. The regulatory environment, guided by directives from the Nepal Rastra Bank (NRB), undergoes periodic changes, necessitating an up-to-date understanding of how these directives influence the lending policies and financial performance of development banks. This study aims to bridge this research gap by delving into the impact of evolving NRB directives on the lending practices and profitability of development banks in Nepal. Furthermore, while previous research has overlooked crucial variables such as Capital Adequacy, Non-performing Loan ratios, Loan Loss Provision, and Loan and Advance to Deposit ratios in the context of development banks, this study seeks to address these gaps comprehensively. By conducting an in-depth analysis of lending efficiency, investment behavior, and risk management practices of development banks, this research endeavors to provide valuable insights for policymakers, bank management, and stakeholders, facilitating informed decision-making and contributing to the sustainable development of the banking sector in Nepal.

By bridging this research gap, this thesis aims to contribute valuable insights into the specific challenges and opportunities faced by development banks in Nepal concerning credit risk management and its implications for financial performance. This study has the potential to inform policymakers, bank management, and stakeholders about the effectiveness of current risk mitigation strategies, thereby facilitating informed decision-making and fostering the sustainable development of the banking sector in Nepal.

CHAPTER III
RESEARCH METHODOLOGY

This chapter has six sections. The first section is:

3.1 Research Design

This section outlines the approach the research intends to adopt, serving as the overarching plan for conducting the study. Among the five distinct research designs in the quantitative research technique (descriptive, correlational, survey, evaluation, and quasi-experimental), the researcher applied descriptive and causal-comparative design The main objective is to investigate the correlation between credit risk and the profitability of selected development banks in Nepal. The research design employed here is descriptive and causal-comparative. It delves into credit risk management and its influence on bank profitability. Furthermore, correlation and multiple regression analysis are utilized to examine whether financial performance is influenced by the variables specified in the research objectives. Various financial and statistical tools are employed to accomplish the research objective, facilitating the drawing of conclusions regarding the impact of credit risk on profitability.

3.2 Population, Sample and Sampling Design

Population

The population of development banks in Nepal during the study period was 17 (NRB, 2024). Nepal Rastra Bank is the governing authority of Nepalese Development Banks.

Sample and Sample Design

Creswell (2009) states that the goal of survey research is to draw conclusions about the population's traits, attitudes, and behaviors by extrapolating findings from the sample to the whole. Finding out more about the population through sample use is the ultimate purpose of survey research. Ten years of balanced data from ten development banks (2013–2023) were taken into consideration for this study.

Table 3

List of Sample Banks

S.NO	Name	Time Period	Abbreviation	No.of Observations
1	Muktinath Bikas Bank Limited	2013/14-2022/23	MBBL	10
2	Jyoti Bikas Bank Limited	2013/14-2022/23	JBBL	10
3	Kamana Sewa Bikas Bank Limited	2013/14-2022/23	KSBLL	10
4	Mahalaxmi Bikas Bank Limited	2013/14-2022/23	MLBL	10
5	Garima Bikas Bank Limited	2013/14-2022/23	GBBL	10
6	Sangrila Development Bank Limited	2013/14-2022/23	SADBL	10
7	Sindhu Bikas Bank Limited	2013/14-2022/23	SINDU	10
8	Excel Development Bank Limited	2013/14-2022/23	EDBL	10
9	Miteri Development Bank Limited	2013/14-2022/23	MDB	10
10	Shine Resunga Development Bank Limited	2013/14-2022/23	SRDB	10

3.3 Source of Data and Instrument of Data Collection

This research relies on secondary data extracted from the publicly available financial statements of development banks in Nepal. Panel data are used in this investigation. Panel data is employed because it allows for individual-specific characteristics, which allows it to account for variation across different units throughout time. Additionally, it provides more information by merging cross-section and time series observations. The study's data was gathered from the Balance Sheets and Income Statements Analysis published by Nepalese Development Banks throughout a ten-year period (2013 to 2023). When it comes to time and money, it is less expensive to collect. The audited yearly financial statements of the relevant Nepali development banks provided the panel data for this study. These statistics contain variables unique to each bank.

The study employs relevant methodologies to ascertain outcomes aligned with the study's objectives. The primary aim is to assess whether credit risk significantly

impacts the profitability of banks in Nepal, particularly in terms of returns on assets (ROA) and returns on equity (ROE).

3.4 Data Analysis Tools and Techniques

This section discusses the application of an economic and statistical model to secondary data analysis. The study employed descriptive, correlational, and regression analysis techniques. The variables' CV values, as well as their mean and standard deviation, are included in the descriptive statistics and have been utilized to explain the features of sample banks. The direction and strength of the association between dependent and independent variables have been determined by correlation analysis. The regression analysis has been used both alone and in conjunction with other variables to determine the independent variable's effect over the dependent variable. A thorough examination of models and statistical tests of significance is covered in the sections that follow.

3.4.1 Correlation Analysis

It is a statistical tools for measuring the magnitude of linear relationship between the two variables. Karl Person's measure, known as Karl person correlation coefficient between two variables' series x and y, denoted by r (x, y), r can be obtained as:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2}\sqrt{n\sum y^2 - (\sum y)^2}}$$

where r = correlation coefficient,

n = no. of years

$\sum x$ = Sum of series X

$\sum y$ = Sum of series Y

$\sum XY$ = Sum of the product X and Y variables

$(\sum x)2$ = Sum of square of series X

$(\sum y)2$ = Sum of squares of series Y

The coefficient of correlation, typically denoted as r, always falls within the range of +1 to -1. When r = +1, it indicates a perfect positive correlation between the variables, meaning they move in the same direction. Conversely, when r = -1, it signifies a

perfect negative correlation, implying the variables move in opposite directions. A coefficient of r = 0 suggests no discernible relationship between the variables.

This coefficient not only quantifies the strength of correlation but also discerns its direction. The closer r is to either +1 or -1, the stronger the relationship between the variables. Conversely, the closer r is to 0, the weaker the relationship. These insights are crucial for understanding the association between variables (Chaudhary et al., 2014).

3.4.2 Multiple Regression Analysis

Regression analysis, a mathematical technique, elucidates the average relationship between variables in their original units of data, crucial for estimating or predicting unknown variables from known ones. It involves determining the impact of independent variables, such as NPLR, LLPR LER, CAR, BS, and, GDPG on a dependent variable like profitability. In the context of assessing the influence of credit risk management on a bank's profitability, two regression models are typically employed. These models aim to uncover the relationships between credit risk management indicators and profitability, thereby providing insights into how changes in credit risk management practices may affect a bank's overall profitability.

Model 1:

$$ROA_{it} = \beta_0 + \beta_1 NPLR + \beta_2 LLPR + \beta_3 CAR + \beta_4 LER + \beta_5 BS + \beta_6 GDP + e \quad (1)$$

Model 2:

$$ROE_{it} = \beta_0 + \beta_1 NPLR + \beta_2 LLPR + \beta_3 CAR + \beta_4 LER + \beta_5 BS + \beta_6 GDP + e \quad (2)$$

Where,

i = Name of Bank

t= Time

$\beta 0$ = Constant Term

$\beta 1$- $\beta 6$ = Coefficients of Independent Variables

ROA = Return on assets

ROE = Return on equity

NPLR = Non-performing Loan Ratio

LLPR = Loan Loss Provision Ratio

CAR= Capital Adequacy Ratio

LER = Leverage Ratio

BS = Bank Size

GDPG = GDP Growth Rate

Table 4

Summary of Expected Relationship with Bank Profitability

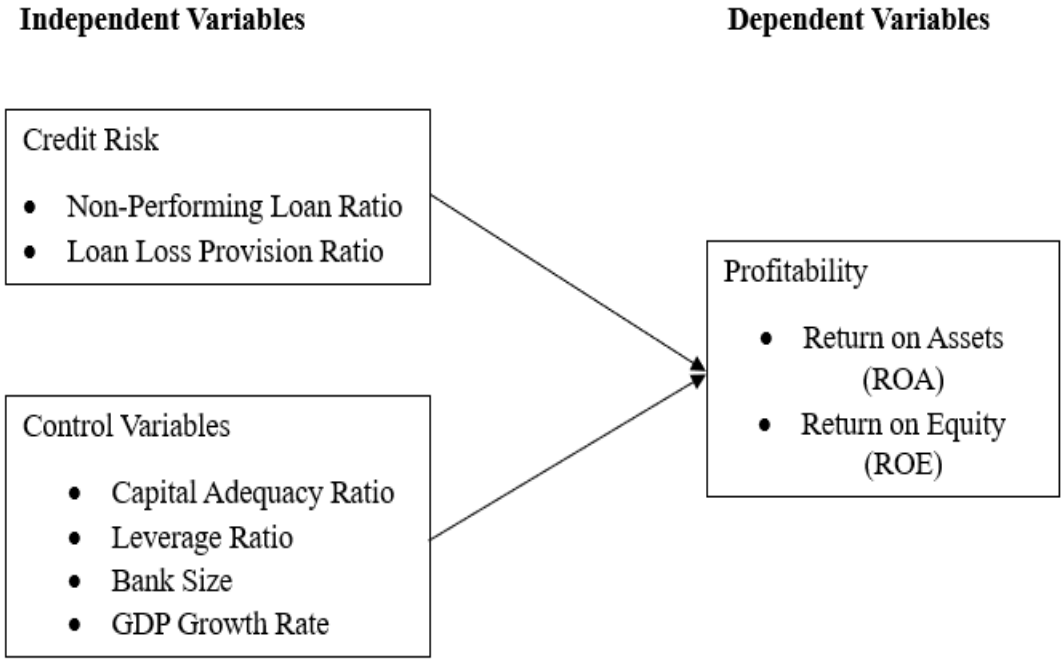
Abbreviation variables	Description	Measurement	Expected Sign
NPLR	Non-performing Loan Ratio	Impaired loans (NPLs)/Gross loans	-
LLPR	Loan Loss Provision Ratio	Loan Loss Provision/Total Loans	-
CAR	Capital Adequacy Ratio	Capital Fund/ Risk Weighted Assets	+
LER	Leverage Ratio	Total liabilities/EBITDA	-
BS	Bank Size	Natural logarithm of total assets	+
GDPG	GDP growth rate	(GDP in current period - GDP in the previous period)/ GDP in the previous period	+

3.5 Research Framework

Figure 1 illustrates the research framework of the study. On the left side, the independent variables are shown whereas the dependent variable is Profitability for which ROA and ROE are used as indicators, as shown in the right side of the figure. The independent variables are Non-Performing Loans Ratio, Loan Loss Provision Ratio, Capital Adequacy Ratio, Leverage Ratio, Bank Size, and GDP Growth Rate.

Figure 1

Research Framework



Source: Reema, 2017

3.6 Operational Definition of Variables

i. Return on Assets (ROA)

This refers to the ratio of net operating profit generated by a business's operations within a specific timeframe to the total assets of the business. It can be expressed using the following formula:

$$\text{ROA} = \frac{\text{Net Income after tax}}{\text{Total Asset}}$$

ii. Return on Equity (ROE)

Return on equity (ROE) is a metric that assesses the profitability of a corporation by indicating the percentage of net income returned in relation to shareholders' equity. It demonstrates how efficiently a company generates profit from the capital invested by its shareholders. ROE can be calculated using the following formula:

$$\text{ROE} = \frac{\text{Net Income after tax}}{\text{Total Equity Capital}}$$

iii. Bank Size (BS)

It is a metric employed to evaluate the magnitude of financial resources a bank should possess to navigate through various levels of risk associated with its operations. It can be calculated using the following formula

$$BS = Ln\ (Bank's\ Total\ Assets)$$

iv. Non-performing Loans ratio (NPLR)

This refers to loans that a bank anticipates may result in the loss of funds due to nonpayment of credit.

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

v. Leverage Ratio (LER)

It is a financial metric used to assess a company's ability to manage its debt obligations relative to its operational earnings.

$$LER = \frac{Total\ Liabilities}{Earnings\ Before\ Interest\ Taxes\ Depreciation\ \&\ Amortization}$$

vi. Loan loss provision ratio (LLPR)

It signifies the amount of money set aside by banks from their annual earnings as a safeguard against potential losses from non-performing loans or to cover the shortfall of a lost loan facility.

$$LLPR = \frac{Loan\ loss\ Provision}{Total\ Loans}$$

vii. Capital Adequacy Ratio

This is the measure financial overseers use to determine the highest amount of funds a bank should be prepared to risk when it comes to potentially endangering credit assets. It's determined through the following calculation.

$$CAR = \frac{Total\ Capital}{Risk\text{-}Weighted\ Assets}$$

viii. GDP Growth rate (GDPG)

It measures the percentage change in the total market value of goods and services produced within a country over a specified period, indicating economic expansion or contraction and reflecting business conditions, and debt repayment capacity.

$$GDPG = \frac{\text{GDP in current period - GDP in previous period}}{\text{GDP in previous period}}$$

CHAPTER IV
RESULTS AND DISCUSSION

4.1 Descriptive Analysis

Table 5 shows an overview of the dependent and independent variables' descriptive statistics for ten development banks from 2013 to 2022 with a total of 100 observations. The mean, standard deviation, minimum, maximum, and CV for the independent and dependent variables utilized in this study are included in the descriptive statistic table. It displays the average indicators of variables calculated from banks' balanced financial accounts.

Table 5

Descriptive Statistics of Variables

Variables	N	Mean	Median	Max	Min	SD	CV
ROA	100	1.5648	1.4700	3.6000	-0.2100	0.8322	0.5318
ROE	100	14.8769	13.4914	46.9489	-1.6180	7.1989	0.4839
NPLR	100	1.2024	0.9650	3.9200	0.0044	1.0564	0.8785
LLPR	100	1.8166	1.5571	6.0743	-0.1195	1.2374	0.6812
CAR	100	15.5888	14.1250	30.6500	11.1900	4.0688	0.2610
LER	100	39.3914	26.1100	107.5391	12.1430	26.1584	0.6641
BS	100	23.2091	23.18232	25.2137	19.8018	1.2614	0.0543
GDPG	100	4.5290	5.2250	8.9800	-2.3700	3.2265	0.7124

Source: Results from SPSS

When banks' profitability is expressed as a return on asset, it demonstrates how productive they are at creating revenue from the assets they have available. Table 5 shows that, a single investment in asset has generated an average profit of 1.56 percent for a selected group of development banks in Nepal; the most lucrative banks have made 3.6 percent profit, while the least profitable have made a loss of -0.21

percent, with a range of 1.47 percent. The limited range of profitability indicates that, during the study period, there was little diversity among Nepali development banks.

When banks' profitability is expressed as a return on equity (ROE), it provides insights into their ability to generate returns for shareholders based on the equity invested.In Table 5, the average ROE for a selected group of development banks in Nepal stands at 14.88%. This indicates that, on average, these banks generate a return of 14.88% on the equity invested by shareholders. The most profitable banks have achieved an impressive ROE of 46.95%, showcasing their ability to generate substantial returns for shareholders. Conversely, the least profitable banks have reported a negative ROE of -1.62%, indicating a loss on equity investment. With a range of 13.49%, the variability in ROE suggests differing levels of operational efficiency and profitability among Nepali development banks. However, the relatively narrow range of ROE indicates that there was limited diversity in profitability among these banks during the study period, reflecting consistent performance across the sector in terms of returns generated for shareholders.

Table 5 shows that, the average NPLR for the selected group of development banks in Nepal is 1.20%. This suggests that, on average, 1.20% of the loans extended by these banks are classified as non-performing, indicating potential credit risk exposure. The variability in NPLR, reflected by the coefficient of variation (CV) of 87.85%, suggests significant differences in loan performance among the banks. A higher CV indicates greater variability in loan quality across the banks, with some institutions potentially facing higher levels of credit risk than others. The range of NPLR values, from a minimum of 0.0044% to a maximum of 3.92%, underscores the diversity in loan portfolio quality and risk management practices among the development banks.

The average LLPR for the selected group of development banks in Nepal is 1.82%. This suggests that, on average, 1.82% of the bank's total loan portfolio is set aside as provisions for potential losses. The variability in LLPR, as reflected by the coefficient of variation (CV) of 68.12%, indicates differences in risk management practices among the banks. A higher CV suggests greater variability in the level of provisioning across the banks, with some institutions adopting more conservative approaches to loan loss provisioning than others. The range of LLPR values, from a minimum of -

0.12% to a maximum of 6.07%, highlights the diversity in risk appetite and provisioning strategies among the development banks.

A higher CAR indicates a greater capacity to absorb potential losses and withstand adverse economic conditions.Table 5 shows that, the average CAR for the selected group of development banks in Nepal is 15.59%. This suggests that, on average, these banks maintain capital equivalent to 15.59% of their risk-weighted assets. The median CAR is 14.13%, indicating that half of the banks have a CAR below this value and the other half above. The maximum CAR observed is 30.65%, suggesting robust capitalization in some institutions, while the minimum CAR is 11.19%, reflecting relatively lower levels of capital adequacy in others. The standard deviation of 4.07 and coefficient of variation of 26.10% highlight the variability in CAR values among the banks.

With an average LER of 39.39%, these banks, on average, hold liabilities equivalent to 39.39%. The variability in LER, as indicated by a standard deviation of 26.16 and a coefficient of variation of 66.41%, underscores the diversity in leverage levels across the banks. Some institutions exhibit higher leverage, with the maximum LER reaching 107.54%, while others maintain relatively lower levels, with the minimum LER recorded at 12.14%. This variation in leverage reflects differing risk appetites and financial strategies among the banks.

Bank Size (BS) represents the logarithm of total assets held by development banks in Nepal, offering insights into their scale and market presence. According to Table 5, the average bank size for the selected group is 23.21. This suggests that, on average, these banks have a size equivalent to 23.21 million in natural logarithmic terms. The median bank size is 23.18, indicating that half of the banks have a size below this value and the other half above. The range of bank sizes, from 19.80 to 25.21, underscores the diversity in the scale of operations among the banks. The standard deviation of 1.26 and low CV of 5.43% suggest higher consistency in bank sizes, with limited variability between the banks.

The average GDP growth rate for the period analyzed is 4.53%. This indicates that, on average, Nepal's economy experienced a growth of 4.53% annually during this timeframe. The median GDP growth rate is 5.23%, suggesting that half of the

observed years experienced growth rates below this value and the other half above. The range of GDP growth rates, from -2.37% to 8.98%, reflects the variability in economic performance over the period. The standard deviation of 3.23 and coefficient of variation of 71.24% highlight the volatility and relative variability in GDP growth rates across the years. This variability may result from factors such as changes in government policies, global economic conditions, and natural disasters impacting Nepal's economy.

4.2 Relationship Between Credit Risk and Financial Performance

The study has tested the relationship between credit risk and financial performance. This is done through correlation and regression analysis. A person correlation is used to establish how the variables were related to each other. Table 6 shows the correlation
results of the study on the variables.

Table 6

Correlation Analysis

	ROA	ROE	NPLR	LLPR	CAR	LER	BS	GDPG
ROA	1	0.568	-0.387	-0.272	0.036	-0.394	0.342	-0.065
		(0.000)	(0.000)	(0.003)	(0.361)	(0.000)	(0.000)	(0.260)
ROE	0.568	1	-0.455	-0.301	0.240	-0.143	0.173	-0.051
	(0.000)		(0.000)	(0.001)	(0.008)	(0.078)	(0.043)	(0.307)

Source: Results from SPSS

According to the correlation, the range of the output is between -1 to 1. A positive value indicates that the variables are positively related where a negative value indicates that the variables are negatively related.

According to Table 6, Return on Assets (ROA) exhibits significant positive correlations with Return on Equity (ROE) at 0.568 and Capital Adequacy Ratio (CAR) at 0.036, and Bank Size (BS) at 0.342 indicating that as ROA increases, there's a tendency for ROE, BS and capital adequacy to increase as well. Conversely, ROA shows significant negative correlations with Non-Performing Loan Ratio (NPLR) at -0.387, Leverage Ratio (LER) at -0.394, and GDP Growth Rate (GDPG)

at -0.065, implying that as ROA improves, non-performing loans, leverage, and GDP growth rate tend to decrease. Similarly, ROE displays significant negative correlations with NPLR at -0.455, Loan Loss Provision Ratio (LLPR) at -0.301, Leverage Ratio (LER) at -0.143, and GDP Growth Rate (GDPG) at -0.051, suggesting that as ROE increases, non-performing loans, loan loss provisions, leverage, and GDP growth rate tend to decrease, indicative of stronger financial performance and lower financial risk. This indicates that CAR and Bank Size have a positive correlation with the ROA and ROE of the banks. Other variables had a negative correlation with ROA and ROE.

4.3 Multiple Regression Analysis

Regression analysis models have been used to explain the relationship among the dependent variables of bank profitability (ROA and ROE) and explanatory variables such as NPLR, LLPR, CAR, LER, BS and GDPG .

4.3.1 Effect of Credit Risk on Return on Asset

Model 1:

Model 1 is used to test the relationship between independent variable (NPLR), control variables, and ROA.

$$ROAit = \beta_0 + \beta_1 NPLR + \beta_2 CAR + \beta_3 LER + \beta_4 BS + \beta_5 GDPG + e \quad (1)$$

Model 2:

Model 2 is used to test the relationship between independent variable (LLPR), control variables, and ROA.

$$ROAit = \beta_0 + \beta_1 LLPR + \beta_2 CAR + \beta_3 LER + \beta_4 BS + \beta_5 GDPG + e \quad (2)$$

Table 7

Effect of credit risk on bank profitability (ROA)

	Model 1		Model 2	
Variable	Coefficient	Prob.	Coefficient	Prob.
Constant	5.6	0.001	6.114	0.000
NPLR	-0.215	0.004		
LLPR			-0.078	0.250
CAR	-0.023	0.223	-0.029	0.144
LER	-0.010	0.002	-0.010	0.002

BS	-0.126	0.052	-0.148	0.029
GDPG	-0.024	0.282	-0.023	0.327
Adjusted R^2		0.255		0.196
Variable	Model 1 Coefficient	Model 2 Prob.	Coefficient	Prob.
F-Value		7.775		5.833
P-Value(F-Stat)		0.001		0.001

a. Dependent Variable: Return on Assets
Source: Results from SPSS

In Model 1 of Table 7, the Non-Performing Loan Ratio (NPLR) and Leverage Ratio (LER) exhibit a significant negative relationship with Return on Assets (ROA), with a coefficient of -0.215 (p = 0.004), and -0.010 (p = 0.002) respectively indicating that as the ratio of non-performing loans and leverage ratio increases, ROA tends to decrease and also suggest that these factors are crucial determinants of profitability. This aligns with the understanding that non-performing loans can erode a bank's earning potential by reducing interest income and increasing the costs associated with managing and provisioning for bad loans. A negative coefficient suggests that as banks increase their reliance on debt financing relative to equity, their ROA decreases. This could be due to the higher interest expenses associated with increased debt, which in turn reduces net income and thus profitability.

In contrast, Bank Size (BS), Capital Adequacy Ratio (CAR), and GDP Growth Rate (GDPG) demonstrate negative but statistically insignificant relationships with ROA, with coefficients of -0.126 (p = 0.052), -0.023 (p = 0.223), and -0.024 (p = 0.282) respectively. Although these factors are negatively correlated with ROA, their p-values exceed the 0.005 significance threshold, suggesting that their impact on profitability is not statistically significant in this model. The coefficient for Bank Size is -0.126, indicating that larger banks might experience a slight decrease in ROA, but the p-value of 0.052 suggests that this relationship is not robust enough to be considered statistically significant. Capital adequacy is important for regulatory purposes, its direct impact on profitability may be limited or influenced by other factors.

The adjusted R-squared is 0.255, meaning that approximately 25.5% of the variability in ROA is explained by the independent variables (NPLR, CAR, LER, BS, GDPG) in Model 1. The F-value is 7.775. This relatively high F-value suggests that the overall model is a good fit for the data and that the independent variables together explain a significant portion of the variance in ROA. The P-value for the F-statistic is 0.001, which is much lower than 0.05. This indicates that the overall model is statistically significant, meaning that the independent variables collectively have a significant effect on ROA.

In Model 2 of Table 7, the Loan Loss Provision Ratio (LLPR), Capital Adequacy Ratio (CAR), and GDP Growth Rate (GDPG) do not show a statistically significant relationship with Return on Assets (ROA), with coefficients of -0.078 (p = 0.250), -0.029 (p = 0.144), and -0.023 (p = 0.327) respectively. This indicates that the provisions set aside for potential loan losses, capital adequacy, and economic growth do not have a significant impact on the profitability of development banks as measured by ROA in this model. Conversely, the Leverage Ratio (LER) and Bank Size (BS) exhibit significant negative relationships with ROA, with coefficients of -0.010 (p = 0.002) and -0.148 (p = 0.029) respectively, suggesting that higher leverage and larger bank size are associated with lower profitability. The adjusted R-squared value is 0.196, meaning that approximately 19.6% of the variability in ROA is explained by the independent variables in this model, which is slightly less explanatory power than Model 1. The F-value of 5.833 and the p-value of 0.001 indicate that Model 2 is statistically significant overall, meaning that the independent variables collectively have a significant effect on ROA, although the model's fit to the data is not as strong as in Model 1.

The resulting regression equations from the table are as follows:

Model 1

ROA = 5.6+ (-0.215) NPLR+ (-0.023) CAR+ (-0.010) LER +(-0.126) BS +(-0.024) GDPG

Model 2

ROA = 6.114+ (-0.078) LLPR+ (-0.029) CAR+ (-0.010) LER+ (-0.148) BS+(0.023) GDPG

In Model 1, the regression equation provides insights into the financial performance of development banks, revealing that if all factors—Capital Adequacy Ratio (CAR),

Non-Performing Loan Ratio (NPLR), Leverage Ratio (LER), Bank Size (BS), and GDP Growth Rate (GDPG)—were held constant at zero, the expected Return on Assets (ROA) would be 5.6. However, the model shows that each of these factors negatively impacts ROA. Specifically, a one-unit increase in NPLR is expected to decrease ROA by 0.215 units, while a one-unit increase in CAR is associated with a 0.023-unit decrease in ROA. Similarly, an increase in LER by one unit leads to a 0.010-unit reduction in ROA, and a one-unit increase in BS results in a 0.126-unit decrease in ROA. Additionally, a one-unit rise in GDPG correlates with a 0.024-unit decrease in ROA. These findings indicate that none of the factors are positively correlated with ROA, suggesting that increases in these variables are likely to have adverse effects on the profitability of development banks.

The regression equation for Model 2 offers valuable insights into the financial performance of development banks under various scenarios. If all factors Capital Adequacy Ratio (CAR), Loan Loss Provision Ratio (LLPR), Leverage Ratio (LER), Bank Size (BS), and GDP Growth Rate (GDPG)—were set to zero, the expected Return on Assets (ROA) of development banks would be 6.114. The model shows that a one-unit increase in LLPR is expected to decrease ROA by 0.078 units, while a one-unit increase in CAR corresponds to a 0.029-unit decrease in ROA. Similarly, each unit increase in LER results in a 0.010-unit reduction in ROA, and a one-unit increase in BS leads to a more substantial 0.148-unit decrease in ROA. Interestingly, although economic growth typically supports profitability, the model indicates that each unit increase in GDPG is associated with a 0.023-unit decrease in ROA. These findings suggest that increases in these variables generally have negative effects on the profitability of development banks.

The comparative analysis between the two models reveals several key insights. Model 1 shows that NPLR has a significant negative impact on ROA, highlighting the indirect effect of credit risk on profitability. Model 2 demonstrates that LLPR does not significantly influence ROA, suggesting that provisioning for potential loan losses does not have a direct significant impact on profitability as much as the actual occurrence of non-performing loans. Both models indicate that CAR and GDPG have insignificant negative relationships with ROA, highlighting that these factors do not strongly influence profitability in the presence of NPLR or LLPR. The consistent finding of a significant negative relationship between LER and ROA in both models underscores the importance of managing leverage to maintain profitability.

4.3.2 Effect of Credit Risk on Return on Equity

Model 1:

Model 1 is used to test the relationship between independent variable (NPLR), control variables, and ROE.

$$ROEit = \beta_0 + \beta_1 NPLR + \beta_2 CAR + \beta_3 LER + \beta_4 BS + \beta_5 GDPG + e \quad (1)$$

Model 2:

Model 2 is used to test the relationship between independent variable (LLPR), control variables, and ROE.

$$ROEit = \beta_0 + \beta_1 LLPR + \beta_2 CAR + \beta_3 LER + \beta_4 BS + \beta_5 GDPG + e \quad (2)$$

Table 8

Effect of credit risk on bank profitability (ROE)

	Model 1		Model 2	
Variable	Coefficient	Prob.	Coefficient	Prob.
Constant	42.789	0.002	46.607	0.001
NPLR	-2.866	0.001		
LLPR			-1.822	0.003
CAR	-0.567	0.001	-0.670	0.001
LER	-0.030	0.266	-0.030	0.296
BS	-0.603	0.275	-0.707	0.230
GDPG	-0.099	0.609	-0.088	0.669
Adjusted R^2		0.267		0.183
F-Value		8.214		5.424
P-Value(F-Stat)		0.001		0.001

a. Dependent Variable: Return on Equity

Source: Results from SPSS

In Model 1 of Table 8, the constant has a coefficient of 42.789 with a p-value of 0.002, indicating it is statistically significant and provides the baseline Return on Equity (ROE) when other variables are zero. The Non-Performing Loan Ratio (NPLR) has a coefficient of -2.866 with a p-value of 0.001, showing a significant negative impact on ROE, meaning higher non-performing loans substantially reduce profitability. The Capital Adequacy Ratio (CAR) has a coefficient of -0.567 and a p-value of 0.001, indicating that increased capital reserves are significantly associated with lower ROE. Conversely, the Leverage Ratio (LER), with a coefficient of -0.030

and a p-value of 0.266, and Bank Size (BS), with a coefficient of -0.603 and a p-value of 0.275, are statistically insignificant, suggesting that their effects on ROE are not significant in this model. Similarly, the GDP Growth Rate (GDPG) has a coefficient of -0.099 and a p-value of 0.609, indicating that changes in economic growth do not significantly impact ROE in this model. The F-value is 8.214. This relatively high F-value suggests that the overall model is a good fit for the data and that the independent variables together explain a significant portion of the variance in ROE. The P-value for the F-statistic is 0.001, which is much lower than 0.05. This indicates that the overall model is statistically significant, meaning that the independent variables collectively have a significant effect on ROE.

In Model 2 of Table 8, In Model 2, the constant has a coefficient of 46.607 with a p-value of 0.001, indicating statistical significance and providing the baseline Return on Equity (ROE) when other variables are zero. The Loan Loss Provision Ratio (LLPR) has a coefficient of -1.822 and a p-value of 0.003, showing a significant negative impact on ROE, meaning that higher provisions for loan losses are associated with lower profitability. The Capital Adequacy Ratio (CAR) has a coefficient of -0.670 with a p-value of 0.001, also significant, suggesting that increased capital reserves are linked to reduced ROE. In contrast, the Leverage Ratio (LER) has a coefficient of -0.030 with a p-value of 0.296, Bank Size (BS) has a coefficient of -0.707 with a p-value of 0.230, and the GDP Growth Rate (GDPG) has a coefficient of -0.088 with a p-value of 0.669, all of which are statistically insignificant. This indicates that changes in leverage, bank size, and GDP growth rate do not have a significant impact on ROE in this model. The adjusted R-squared is 0.183, indicating that about 18.3% of the variability in ROE is explained by the independent variables (LLPR, CAR, LER, BS, GDPG) in Model 2. The F-value is 5.424, which also indicates that the model provides a reasonable fit to the data, although not as strong as Model 1. The P-value for the F-statistic is also 0.001, which again is lower than 0.05. This suggests that Model 2 is also statistically significant, indicating that the independent variables collectively have a significant effect on ROE.

The resulting regression equations from the table are as follows:

Model 1

ROE = 42.789+ (-2.866) NPLR+ (-0.567) CAR+ (-0.030) LER +(-0.603) BS +(-0.099) GDPG

Model 2

ROE = 46.607+ (-1.822) LLPR+ (-0.670) CAR+ (-0.030) LER +(-0.707) BS + (-0.088) GDPG

In Model 1, the constant provides a baseline ROE of 42.789. A one-unit increase in the Non-Performing Loan Ratio (NPLR) leads to a decrease in ROE by 2.866 units, while a one-unit increase in the Capital Adequacy Ratio (CAR) causes ROE to decrease by 0.567 units. The Leverage Ratio (LER), Bank Size (BS), and GDP Growth Rate (GDPG) each have a coefficient indicating a decrease in ROE by 0.030, 0.603, and 0.099 units, respectively, but these relationships are not statistically significant.

In Model 2, the constant provides a baseline ROE of 46.607. A one-unit increase in the Loan Loss Provision Ratio (LLPR) leads to a decrease in ROE by 1.822 units, and a one-unit increase in the Capital Adequacy Ratio (CAR) results in a decrease in ROE by 0.670 units. The Leverage Ratio (LER), Bank Size (BS), and GDP Growth Rate (GDPG) each decrease ROE by 0.030, 0.707, and 0.088 units, respectively, but these effects are not statistically significant.

In comparing the two models, both the constant, Capital Adequacy Ratio (CAR), and the control variables Non-Performing Loan Ratio (NPLR) in Model 1 and Loan Loss Provision Ratio (LLPR) in Model 2 are statistically significant, highlighting their notable impact on Return on Equity (ROE). Specifically, Model 1 shows that NPLR significantly affects ROE by reducing profitability, while Model 2 demonstrates that LLPR has a significant negative effect on ROE, reflecting the impact of loan loss provisions on profitability. Conversely, the Leverage Ratio (LER), Bank Size (BS), and GDP Growth Rate (GDPG) are statistically insignificant in both models, indicating that these factors do not significantly influence ROE within the context of these models. This comparison underscores the differing influences of credit risk measures on non-performing loans versus loan loss provisions on profitability, depending on which measure is included.

4.4 Discussion

The regression results from Models 1 and 2 provide critical insights into the factors influencing the Return on Assets (ROA) of development banks, specifically focusing

on the impact of the Non-Performing Loan Ratio (NPLR) and the Loan Loss Provision Ratio (LLPR) as independent variables. Both models consider Capital Adequacy Ratio (CAR), GDP Growth Rate (GDPG), Bank Size (BS), and Leverage Ratio (LER) as control variables, which allows for a nuanced understanding of how these variables impact bank profitability.

Model 1 reveals that the NPLR has a significant negative relationship with ROA, with a coefficient of -0.215 ($p = 0.004$). This indicates that an increase in the ratio of non-performing loans tends to decrease the profitability of development banks. This finding aligns with previous literature, such as Kargi (2011), Kaaya and Pastory (2013), and Noman et al. (2015), who suggest that higher levels of non-performing loans are detrimental to bank profitability due to the increased resources required for provisioning and the reduced income from non-performing assets.

Bank Size (BS) shows a marginally significant positive relationship with ROA (coef. = -0.126, $p = 0.052$), indicating that larger banks tend to have lower profitability. This result supports findings from Effendi et al. (2017), Muhamad Yusuf et al. (2021), and Ngo et al. (2021), who found that bank size negatively affects profitability. The Capital Adequacy Ratio (CAR) and GDP Growth Rate (GDPG) exhibit positive but insignificant relationships with ROA (CAR: coef. = -0.023, $p = 0.223$; GDPG: coef. = -0.024, $p = 0.282$). Although these relationships are not statistically significant, they suggest that higher capital adequacy and economic growth are associated with better performance. Conversely, the Leverage Ratio (LER) shows a significant negative relationship with ROA (coef. = -0.010, $p = 0.002$), highlighting that higher leverage is detrimental to bank profitability.

Model 2 shifts the focus to LLPR and its effect on ROA. The results indicate that LLPR does not have a significant relationship with ROA, with a coefficient of -0.078 ($p = 0.250$). This implies that the level of provisions set aside for potential loan losses does not significantly impact the profitability of development banks. This contrasts with Model 1, where NPLR had a more noticeable effect on ROA. The Leverage Ratio (LER) continues to show a significant negative relationship with ROA (coef. = -0.010, $p = 0.002$), consistent with its impact in Model 1, underscoring the importance of managing leverage effectively.

In Model 2, the Capital Adequacy Ratio (CAR), Bank Size (BS), and GDP Growth Rate (GDPG) do not show significant relationships with ROA (CAR: coef. = -0.029, p = 0.144; BS: coef. = -0.148, p = 0.029; GDPG: coef. = -0.023, p = 0.327). This lack of significance aligns with findings in Model 1, suggesting that these control variables do not have a strong impact on ROA when LLPR is the primary independent variable. However, the negative coefficients for CAR and BS, although insignificant, suggest that higher capital adequacy and larger bank size could potentially disrupt profitability, supporting the hypothesis posited by previous studies such as Abdelrahim (2013), Afriyie and Akotey (2012), and Bhattarai (2014).

The findings regarding GDP Growth Rate (GDPG) in both models, despite being insignificant, contrast with Bouheni (2013), who argues that economic growth should positively impact banking performance and risk reduction. The negative and statistically insignificant relationships observed in this study (Model 1: p = 0.282; Model 2: p = 0.327) suggest that, contrary to previous research, economic growth does not have a significant impact on ROA in the context of these development banks. This divergence from existing literature highlights the unique factors at play in the banking sector analyzed and underscores the need for tailored credit risk management practices, including rigorous borrower screening, collateral management, and loan monitoring systems, as emphasized by Duffie and Kenneth (2012).

The regression results from Models 1 and 2 offer insightful analyses of the factors affecting Return on Equity (ROE) for development banks. In Model 1, the Non-Performing Loan Ratio (NPLR) is shown to have a significant negative relationship with ROE, with a coefficient of -2.866 (p = 0.001). This result indicates that higher non-performing loans significantly diminish ROE, aligning with findings by Burton, Nesiba, and Brown (2015) and Kolapo et al. (2014), who also identified non-performing loans as a major factor negatively impacting bank profitability. Similarly, Model 2 reveals a significant negative impact of the Loan Loss Provision Ratio (LLPR) on ROE, with a coefficient of -1.822 (p = 0.003), suggesting that increased provisions for potential loan losses are detrimental to profitability, although to a lesser extent compared to NPLR.

Capital Adequacy Ratio (CAR) in both models exhibits a significant negative relationship with ROE, with coefficients of -0.567 (p = 0.001) in Model 1 and -0.670

(p = 0.001) in Model 2. This indicates that higher capital reserves are associated with lower ROE, potentially reflecting a trade-off between maintaining sufficient capital buffers and achieving higher returns, as discussed by Shabbir and Rehman (2016) and Athanasoglou, Brissimis, and Delis (2008). Leverage Ratio (LER) remains statistically insignificant in both models (Model 1: -0.030, p = 0.266; Model 2: -0.030, p = 0.296), suggesting that leverage does not significantly influence ROE in these cases, consistent with Miu, Ozdemir, and Giesinger (2010), who found mixed results regarding the impact of leverage on bank profitability.

Bank Size (BS) and GDP Growth Rate (GDPG) are also insignificant in both models (BS in Model 1: -0.603, p = 0.275; Model 2: -0.707, p = 0.230; GDPG in Model 1: -0.099, p = 0.609; Model 2: -0.088, p = 0.669), indicating that these variables do not have a substantial impact on ROE within the current model framework. The findings align with Reddy and Prasad (2011) and Ahmeti et al. (2023), who reported that factors like bank size and economic growth rate may not always significantly affect bank profitability. Overall, these results underscore the critical importance of managing non-performing loans and capital adequacy effectively to enhance profitability, while other factors may have less influence in the given context.

CHAPTER V
SUMMARY AND CONCLUSIONS

In this chapter, the key conclusions drawn from the investigation are outlined, offering a concise summary of the entire study. Additionally, a separate section is dedicated to discussing these conclusions, focusing specifically on how credit risk affects the profitability of development banks in Nepal. Following this discussion, the chapter also presents several implications and suggestions for mitigating credit risk to enhance profitability in these financial institutions.

5.1 Summary

This thesis examines the impact of credit risk on the profitability of development banks in Nepal. The objective of this study is to analyze factors like Non-performing loans, Capital adequacy, Leverage Ratio, Bank Size, Loan loss provisions, and GDP Growth, the study assesses their relationship with profitability indicators such as return on assets (ROA) and return on equity (ROE). The research provides insights into the challenges of credit risk and offers recommendations to mitigate its negative effects on bank profitability.

In the study, regression and descriptive-analytical methods were used. The mean, standard deviation, minimum, and maximum values of the descriptive statistics serve as the variables used to explain the characteristics of the sample banks. To evaluate the stationarity of dependent and independent variables, a regression model with an appropriate test has been employed to assess the collected data and fit the model. More specifically, the Non-performing Loan Ratio and Loan Loss Provision Ratio are considered independent factors while Bank Size, Leverage ratio, Capital Adequacy Ratio, and GDP growth rate, are all considered control variables. The study's data was gathered from the Balance Sheets and Income Statements Analysis published by Nepalese Development Banks throughout a ten-year period (2013 to 2023).

The profitability of Nepali development banks, measured by ROA and ROE, reveals limited diversity during the study period, with average ROA at 1.56% and ROE at 14.88%. ROA ranges from -0.21% to 3.6%, while ROE spans -1.62% to 46.95%, indicating some variability in operational efficiency. Credit risk indicators show an average NPLR of 1.20%, with a CV of 87.85%, and an average LLPR of 1.82%, with

a CV of 68.12%. The average CAR is 15.59%, reflecting moderate capital adequacy, and the average LER is 39.39%, highlighting varied leverage levels. Bank size is consistent, with an average of 23.21, while the GDP growth rate averages 4.53%, with significant variability.

In Model 1, NPLR and LER show significant negative impacts on ROA, indicating that higher non-performing loans and leverage reduce profitability. In contrast, BS, CAR, and GDPG have negative but insignificant effects on ROA. The model explains 25.5% of ROA variability and is statistically significant overall. In Model 2, LER and BS also negatively affect ROA significantly, while LLPR, CAR, and GDPG remain insignificant. This model explains 19.6% of ROA variability and is statistically significant but with slightly less explanatory power than Model 1.

In Model 1 of Table 8, the constant (42.789, p = 0.002), NPLR (-2.866, p = 0.001), and CAR (-0.567, p = 0.001) significantly affect ROE, with NPLR and CAR negatively impacting profitability. LER, BS, and GDPG are insignificant. The model is a good fit with an F-value of 8.214 (p = 0.001). In Model 2, the constant (46.607, p = 0.001), LLPR (-1.822, p = 0.003), and CAR (-0.670, p = 0.001) negatively affect ROE, while LER, BS, and GDPG are insignificant. The model explains 18.3% of ROE variability with an F-value of 5.424 (p = 0.001).

The analysis reveals that non-performing loans (NPLR), capital adequacy (CAR), and loan loss provisions (LLPR) significantly reduce the profitability of development banks in Nepal, as measured by ROE. In contrast, leverage, bank size, and GDP growth rate do not show a significant impact on profitability, indicating that managing credit risk and maintaining optimal capital reserves are key to enhancing bank performance.

5.2 Conclusion

This study examined the impact of credit risk on the profitability of development banks in Nepal, focusing on ten banks over the period from 2013 to 2023. By analyzing key indicators such as the Non-Performing Loan Ratio (NPLR), Loan Loss Provision Ratio (LLPR), Capital Adequacy Ratio (CAR), Bank Size, Leverage Ratio, and GDP Growth Rate, this research provides a comprehensive understanding of how credit risk influences the financial performance of these institutions.

The findings reveal a significant relationship between credit risk variables and bank profitability. Specifically, higher NPLR and LLPR are associated with reduced profitability, underscoring the detrimental effect of poor loan quality and inadequate provisioning on financial performance. Conversely, a strong CAR and larger bank size tend to enhance profitability, indicating that well-capitalized and larger banks are better equipped to manage credit risk and sustain profitability. The analysis also suggests that macroeconomic factors like the GDP Growth Rate play a crucial role in shaping the profitability landscape, reflecting the broader economic environment's impact on bank performance.

These results highlight the importance of effective credit risk management for development banks in Nepal. In an increasingly competitive and volatile financial environment, maintaining a healthy loan portfolio and adequate capital reserves are essential strategies for safeguarding profitability. Moreover, the study underscores the need for ongoing vigilance and adaptability in credit risk management practices, particularly in the face of economic fluctuations.

Overall, this research contributes valuable insights into the dynamics between credit risk and profitability in the Nepalese banking sector. It underscores the critical role of development banks in fostering economic growth and the necessity of robust risk management frameworks to ensure their financial stability and success. Future research could build on these findings by exploring the impact of other risk factors or extending the analysis to a broader range of financial institutions.

5.3 Implications

The thesis advances knowledge of the profitability of development banks operating in Nepal among academics. It advances our understanding of how different variables interact to influence financial choices made by banks. Future studies might be facilitated by identifying gaps or regions where the factors may not fully explain the variations in credit risks. This may pique scholarly curiosity about improving models or looking into other factors that might affect bank profitability.

The research on the impact of credit risk on the profitability of development banks in Nepal carries significant implications for various stakeholders, including bank management, regulatory authorities, policymakers, investors, and future researchers.

The findings underscore the importance of effective credit risk management, particularly in controlling Non-Performing Loan Ratios (NPLR) and Loan Loss Provision Ratios (LLPR), which have been shown to negatively affect profitability. For bank management, this suggests a need to enhance credit appraisal processes, improve loan monitoring, and adopt more stringent recovery strategies to mitigate the adverse effects of non-performing loans. Regulatory bodies, such as the Nepal Rastra Bank, may consider these findings as a basis for enforcing stricter regulations on loan provisioning and capital adequacy to ensure the stability and profitability of the banking sector.

From a policy-making perspective, the results highlight the importance of maintaining a stable economic environment to support the financial sector, even though GDP growth did not show a significant direct impact on profitability in this study. Nevertheless, fostering economic stability remains crucial for reducing credit risk and supporting the overall health of development banks. Investors and shareholders can also benefit from this research by gaining a deeper understanding of the risk factors affecting bank profitability, which can inform their investment strategies and expectations. The insights from this study can help them make more informed decisions regarding their investments in the banking sector.

The divergence of this study's findings from established literature, particularly regarding the impact of economic growth on profitability, opens new avenues for future research. Exploring other factors influencing profitability in the Nepalese banking context or comparing the impact of credit risk in different banking sectors could provide further insights. Additionally, the practical application of these findings can serve as a benchmark for development banks to reassess and refine their credit risk management practices, ultimately leading to improved profitability and financial stability. Overall, this research contributes valuable knowledge to the field of banking in Nepal and offers actionable insights for enhancing the profitability of development banks through effective credit risk management.

5.4 Suggestions for Further Research

Future research on the impact of credit risk on the profitability of development banks could focus on several key areas to deepen the understanding of this relationship and address the limitations of the current study.

One area is to explore the impact of additional variables that were not considered in this study, such as the quality of management, governance practices, and macroeconomic factors like inflation rates or interest rates. These variables might have a significant influence on profitability and could provide a more comprehensive view of the factors affecting development banks. Additionally, future research could compare the impact of credit risk on profitability across different types of financial institutions, such as commercial banks, microfinance institutions, or cooperatives, to see if the findings are consistent across different banking sectors.

Another area for future research could involve longitudinal studies that track the impact of credit risk on profitability over a more extended period. This would help to understand the long-term effects of credit risk management practices and economic changes on bank profitability. Moreover, it could be beneficial to conduct a comparative analysis between different countries or regions to see how different regulatory environments, economic conditions, and cultural factors influence the relationship between credit risk and profitability. Finally, qualitative research involving interviews with bank managers and other stakeholders could provide valuable insights into the practical challenges of managing credit risk and offer a more nuanced understanding of how these challenges impact profitability.

In addition to the areas mentioned, future research could also explore the role of technological advancements in credit risk management and their impact on profitability. With the increasing adoption of artificial intelligence, machine learning, and big data analytics in the banking sector, these technologies may significantly enhance the ability of banks to assess and manage credit risk more effectively. Research could examine how the integration of these technologies influences the accuracy of credit risk assessments, reduces non-performing loans, and ultimately affects the profitability of development banks.

Furthermore, future studies could investigate the impact of external shocks, such as financial crises or pandemics, on the relationship between credit risk and profitability. Understanding how these events alter credit risk dynamics and bank profitability could provide valuable insights for developing more resilient credit risk management frameworks. Additionally, researchers could consider the influence of social and environmental factors, such as corporate social responsibility (CSR) practices or the

shift towards sustainable banking, on credit risk and profitability. As these factors become increasingly important in the global financial landscape, understanding their impact could offer new perspectives on managing credit risk in the banking sector.

REFERENCES

Abdelrahim, K. E. (2019). Effectiveness of credit risk management of Saudi banks in the light of global financial crisis: A qualitative study. *Asian Transactions on Basic and Applied Sciences, 3*(2), 73-91.

Abeywardhana, D. Y. (2017). Credit Risk: An Overview. *Accounting and Finance Research, 6(1)*(1), 133-138.

Abidi, F. S., & Samreen, L. (2015). Impact of changes in reserve requirement on banks profitability: A case of commercial banks in Pakistan. *European Journal of Business and Management, 7*(31), 1-6.

Abu-Alrop, & Jalal, H. (2020). Impact of credit risk on the performance of Russian commercial banks. *Journal of Applied Economic Research, 9*(1), 5-18.

Acharya, M. (2022). Development of the financial system and its impact on poverty alleviation in Nepal. *NRB Economic Review, 15*(2), 134-165.

Adeusi, S. O., Niyi, I. A., Obawale, S. A., & Olawale, O. (2014). Risk management and financial performance of banks in Nigeria. *Risk Management, 6*(31), 123-129.

Aduda, J., & James, G. (2021). The relationship between credit risk management and profitability among the commercial banks in India. *Journal of Modern Accounting and Auditing, 7*(9), 934.

Ahmeti, Y., Kalimashi, A., Ahmeti, A., & Ahmeti, S. (2023). Credit Risk in the Banking Sector: Lessons from the Western Balkans. *Economic Alternatives, 1*(4), 703-722. doi: https://doi.org/10.37075/EA.2023.4.04

Al, Z., Salem, J., & Jamil, O. A. (2021). The impact of credit risk management on the financial performance of United Arab Emirates commercial banks. *International Journal of Research in Business and Social Science, 10*(3), 303-319.

Alshatti, A. S. (2019). The effect of credit risk management on financial performance of Nepalese Commercial banks. *Investment management and financial innovations, 12*(1), 338-345.

Annas, M., Humairoh, H., & Endri, E. (2024). Macroeconomic and bank-specific factors on non-performing loan: evidence from an emerging economy. *The Journal of Risk Finance, 25*(199), 155-161.

Bagale, S. (2023). Credit risk management and profitability of commercial banks in Nepal. . *International Journal of Finance and Commerce, 5*(1), 60-67.

Bank, N. R. (2024, 2 28). *About Nepal Rastra Bank.* Retrieved from Nepal Rastra Bank: https://www.nrb.org.np/about/

Berger, A. N., Herring, R. J., & Szegö, G. P. (1995). The Role of Capital in Financial Institutions. *Journal of Banking & Finance, 19(3-4)*, 393-430.

Berríos, M. R. (2022). The relationship between bank credit risk and profitability and liquidity. *The International Journal of Business and Finance Research, 7*(3), 105-119.

Bhatt, T. K., Ahmed, N., Iqbal, M. B., & Ullah, M. (2023). Examining the determinants of credit risk management and their relationship with the performance of commercial banks in Nepal. *Journal of risk and financial management, 16*(4), 235.

Bhattarai, Y. R. (2019). Effect of Credit Risk on the Performance of Nepalese Commercial Banks. *NRB Economic Review, 28*(1), 41-64. doi:https://www.nrb.org.np/contents/uploads/2019/12/vol28-1_art3.pdf

Brigham, E. F., & Houston, J. F. (2013). *Fundamentals of Financial Management.* South-Western Cengage Learning.

Brooks, C. (2008). *RATS Handbook to accompany introductory econometrics for finance.* Cambridge Books.

Brown, K., & Moles, P. (2014). *Credit risk management* (Vol. 5). Edinburgh: Edinburgh Business School.

Budhathoki, K. (2015). *A Study on Nepal Rastra Banks Directives to Development Banks & Their Financial Performance.* Kathmandu: Doctoral dissertation, Central Department of Management, Shankar Dev Campus).

Burton, M., Nesiba, R. F., & Brown, B. (2015). *An introduction to financial markets and institutions* (Vol. 2). Routledge: Taylor & Francis Group.

Chen, S.-Y., & Chen, L.-J. (2019). Credit Risk and Profitability: An Empirical Study in Taiwan. *African Journal of Business Management, 5(27)*(1), 10974-10983.

Chhetri, G. R. (2021). Effect of credit risk management on financial performance of Nepalese commercial banks. *Journal of Balkumari College, 10*(1), 19-30.

Darlami, S. (2023). Impact of credit risk, operational risk and liquidity risk on the profitability of Nepalese commercial banks. *Perspectives in Nepalese Management, 12*(2), 107.

DePamphilis, D. M. (2022, 1 1). *Financing the deal*. Retrieved from Elsevier eBooks: https://www.sciencedirect.com/topics/economics-econometrics-and-finance/capital-structure-theory

Duffie, D., & Kenneth J, S. (2012). *Credit risk: pricing, measurement, and management* (Vol. 2). Princeton: Princeton university press.

Gadzo, S. G., Kportorgbi, H. K., & Gatsi, J. G. (2019). Credit risk and operational risk on financial performance of universal banks in Ghana: A partial least squared structural equation model (PLS SEM) approach. *Cogent Economics & Finance, 2*(1), 5-13.

Gajurel, D. P., & Pradhan, R. S. (2012). Concentration and competition in Nepalese banking. *Journal of Business Economics and Finance, 1*(1), 5-16.

Gestel, V. T., & Baesens, B. (2016). *Credit Risk Management: Basic concepts: Financial risk components, Rating analysis, models, economic and regulatory capital* (Vol. 5). New York: Oxford University Press.

Ghimire, R. B. (2019). Role of Development Bank in Economic Development of Nepal. *Doctoral dissertation, Central Department of Economics, 1*(2), 48-65.

Giesecke, K. (2004). *Credit risk modeling and valuation: An introduction* (Vol. 373). Berlin: Department of Economics, Humboldt-Universit¨at zu.

Goet, J. (2022). Impact of Capital Adequacy on Profitability of Commercial Banks in Nepal. *Dristikon: A Multidisciplinary Journal, 12*(1), 91-99.

Gurung, J. B., & Gurung, N. (2022). Factors determining profitability of commercial banks: Evidence from Nepali banking sector. *Prithvi academic journal, 5*(1), 100-113.

Hakuduwal, K. (2021). Impact of bank specific factors on profitability of NEPALESE commercial banks. *Tribhuvan University Journal, 36*(1), 122-133.

Head, A., & Watson, D. (2010). *Corporate Finance: Principles and Practice.* Pearson Education.

Isanzu, J. S. (2017). The impact of credit risk on financial performance of Chinese banks. *Journal of International Business Research and Marketing, 3*(2), 5-36.

Jha, S., & Xiaofeng, H. (2019). A comparison of financial performance of commercial banks: A case study of Nepal. *African Journal of Business Management, 6*(25), 7601-7611.

Kafle, R. (2023). Impact of credit risk management on profitability of Nepalese commercial banks. *International Journal of Finance and Commerce, 5*(1), 32-39.

Kattel, I. K. (2015). Study of Credit Risk Identification Techniques Followed by Commercial Banks in Nepal. *Journal of Advanced Academic Research, 2*(2), 1-17.

Khan, S., Bashir, U., & Islam, M. S. (2021). Determinants of Banks Profitability: evidence from the Kingdom of Saudi Arabia. *International Journal of Islamic and Middle Eastern Finance and Management, 14*(2), 268-285.

Khanal, P., & Pitambar, S. (2023). Credit risk management and its impact on performance of commercial banks: With reference to Nepal. *Internafional Journal of Credit and Commerce, 5*(1), 68-74.

Kithinji, A. M. (2016). Credit risk management and profitability of commercial banks in Kenya. *Journal of Economic Survey, 8*(3), 5-24.

Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2014). CREDIT RISK AND COMMERCIAL BANKS'PERFORMANCE IN NIGERIA: A PANEL MODEL APPROACH. *Australian journal of business and management research, 2*(2), 31-38.

Kurawa, J. M., & Sunusi, G. (2014). An evaluation of the effect of credit risk management (CRM) on the profitability of Nigerian banks. *ournal of Modern Accounting and Auditing, 10*(1), 104.

Laker, A. (2016). Go to every laker home game for College credit. *The Los Angeles Lakers Community Relations department, Los Angeles, 5*(2), 5-9.

Lim, T. C. (2012). Determinants of Capital Structure Empirical Evidence from Financial Services Listed Firms in China. *International Journal of Economics and Finance, 4*(3), 191-203.

Liu, G., Mirzaei, A., & Vandoros, S. (2018). The impact of bank competition and concentration on industrial growth. *Economics Letters, 124*(1), 60-63.

Maharjan, S. (2020). *Impact of Credit Risk on Profitability of Commercial Banks in Nepal*. Kathmandu: Department of Management.

Malhotra, N. K. (2020). *Marketing research: an applied prientation.* pearson.

Mot, H. O., Masinde, J. S., Mugenda, N. G., & Sindani, M. N. (2012). Effectiveness of Credit Management Systemon Loan Performance: Empirical Evidence from

Micro Finance Sector in Kenya. *International Journal of Business, Humanities and Technology , 2*(6), 12-24.

Msomi, T. S., & Olarewaju, O. M. (2022). Dynamic panel investigation of the determinants of South African commercial banks' operational efficiency. *Banks and Bank Systems, 17*(4), 35-49.

Munangi, E., & Bongani, A. (2020). An empirical analysis of the impact of credit risk on the financial performance of South African banks. *Academy of Accounting and Financial Studies Journal, 24*(3), 1-15.

Nepal, S. R., & Thapa, B. S. (2021). Trade Balance and its Determinants in South Asian Countries: A Panel Data Analysis. *The Econmic Journal of Nepal, 44(3-4)*(156), 53-78.

NRB. (2024, 2 8). *BFI List - Nepal Rastra Bank*. Retrieved from Nepal Rastra Bank: https://www.nrb.org.np/bank-list/

Ogboi, C., & Unuafe, O. K. (2013). Impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria. *Journal of emerging issues in economics, finance and banking, 2*(3), 11-29.

Owojori, A. A., Akintoye, I. R., & Adidu, F. A. (2017). The challenge of risk management in Nigerian banks in the post consolidation era. *Journal of Accounting and Taxation , 3*(2), 23-31.

Panthi, R. (2019). Performance of agriculture development bank limited in Nepal. *SAARJ Journal on Banking & Insurance Research, 8*(3), 4-16.

Paudel, C. (2019). Portfolio Management Analysis of Development Banks in Nepal. *Central Departmental of Management, 5*(1), 25-68.

Poudel, R. P. (2014). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of arts and commerce, 1*(5), 9-15.

Poudel, S. R. (2019). Impact of credit risk on profitability of commercial banks in Nepal. *Journal of Applied and Advanced Research, 3*(6), 161-170.

Risal, H. C., & Poudel, S. (2020). Role of Credit Risk in Performance difference between A and B Class Banks in Nepal. *NRB Economic Review, 32*(1), 37-53.

Shabbir, M. S., & Rehman, A. K. (2016). The impact of financial crises and economic growth of East Asian Countries. *Journal of Internet Banking and Commerce, 21*(1), 12-19.

Shrestha, P. M. (2022). Effect of credit risk on profitability of Nepalese Commercial Banks. *Butwal Campus Journal, 5*(1), 1-11. doi:https://doi.org/10.3126/bcj.v5i1.50117.

Shrestha, R. (2018). The Impact of Credit Risk Management on Profitability: Evidence from Nepalese Commercial Banks. *Social Science Research Network, 5*(2), 14-25. doi:https://doi.org/10.2139/ssrn.2938546

Team, C. (2023, 12 5). *M&M Theorem*. Retrieved from Corporate Finance Institute: https://corporatefinanceinstitute.com/resources/valuation/mm-theorem/

Thapa, M., & Bhandari, N. (2023). Risk management and its impact on profitability of commercial banks in Nepal. *International Journal of Credit and Commerce, 5*(1), 92-98.

Timsina, N. (2017). Determinants of bank lending in Nepal. *NRB Economic Review, 20*(1), 22-42.

Tuladhar, R. (2017). Impact of credit risk management on profitability of Nepalese commercial banks. *Western Sydney University, 11*(1), 15-25.

Yadav, M. N., & Chakrabarti, S. K. (2019). An Analytical Study of the Role and Function of a Rural Development Bank in Nepal. *Research Journal of Management Sciences, 3*(3), 5-19.

APPENDICES

Appendix I

Summary of Calculated Data

Year	Bank Name	ROA	ROE	Bank Size	NPLR	LER	LLPR	CAR	GDP
2013	MBBL	2.52	25.48	22.52	0.45	25.27	0.49	12.52	3.53
2014	MBBL	2.42	22.39	20.62	0.19	25.94	0.45	13.17	6.01
2015	MBBL	2.79	26.88	20.98	0.09	16.69	0.40	12.28	3.98
2016	MBBL	2.49	21.27	23.70	0.02	25.55	0.46	14.71	0.43
2017	MBBL	1.66	17.21	24.27	0.0044	39.02	0.55	14.21	8.98
2018	MBBL	1.65	19.24	24.67	0.07	20.04	0.38	13.44	7.62
2019	MBBL	1.07	12.16	23.80	0.26	21.71	0.66	13.23	6.66
2020	MBBL	1.14	16.93	24.30	0.23	24.88	0.65	11.19	-2.37
2021	MBBL	1.11	16.61	23.85	0.21	35.73	0.08	11.81	4.84
2022	MBBL	0.95	13.33	24.72	0.98	15.91	0.72	11.77	5.61
2013	JBBL	1.01	8.11	22.55	2.67	61.81	0.94	18.43	3.53
2014	JBBL	1.39	10.24	22.73	1.98	43.25	0.60	17.05	6.01
2015	JBBL	1.7	11.23	22.91	1.39	45.90	1.45	16.76	3.98
2016	JBBL	1.73	9.98	23.30	0.96	36.46	1.32	30.6	0.43
2017	JBBL	1.27	10.98	23.92	0.4	40.93	1.14	19.25	8.98
2018	JBBL	1.46	13.26	24.32	0.54	43.44	1.41	16.27	7.62
2019	JBBL	1.15	10.84	24.47	0.92	23.88	1.70	15.08	6.66
2020	JBBL	1.11	12.65	24.82	0.84	27.85	2.06	13.04	-2.37
2021	JBBL	0.94	11.88	24.99	1.47	30.32	2.16	12.74	4.84

Year	Bank Name	ROA	ROE	Bank Size	NPLR	LER	LLPR	CAR	GDP
2022	JBBL	0.41	12.45	25.01	3.43	42.21	3.89	12.96	5.61
2013	KSBBL	2.09	22.75	22.01	0.17	27.89	1.16	13.76	3.53
2014	KSBBL	2.27	14.31	22.15	0.29	23.66	1.34	13.57	6.01
2015	KSBBL	1.32	6.83	22.81	1.03	20.73	0.94	17.01	3.98
2016	KSBBL	2.14	10.70	22.67	1.39	15.31	0.56	15.96	0.43
2017	KSBBL	1.56	11.21	23.66	1.13	19.31	2.07	21.58	8.98
2018	KSBBL	1.07	8.77	24.01	0.97	23.45	1.76	16.81	7.62
2019	KSBBL	0.33	3.74	24.32	1.79	31.51	3.12	14	6.66
2020	KSBBL	1.17	15.58	24.66	1.61	55.17	2.30	13.93	-2.37
2021	KSBBL	0.99	13.52	24.82	2.31	64.19	2.70	12.13	4.84
2022	KSBBL	0.58	7.63	24.86	3.09	90.50	3.69	12.24	5.61
2013	MLBL	2.52	13.68	23.03	0.45	39.38	1.43	12.52	3.53
2014	MLBL	2.42	22.39	23.11	0.19	21.40	1.17	13.17	6.01
2015	MLBL	2.79	13.47	23.24	0.09	20.89	4.57	12.28	3.98
2016	MLBL	2.51	12.74	24.10	3.91	14.83	3.67	16.86	0.43
2017	MLBL	1.59	17.29	24.20	3.92	23.09	3.35	18.1	8.98
2018	MLBL	1.73	13.52	24.36	2.59	42.04	2.59	17.22	7.62
2019	MLBL	1.39	5.99	24.49	3.21	46.13	5.25	13.41	6.66
2020	MLBL	1.55	12.67	24.58	2.8	20.92	3.72	13.52	-2.37
2021	MLBL	1.65	14.34	24.73	2.43	38.96	3.31	11.65	4.84
2022	MLBL	0.61	5.86	24.85	3.51	98.56	4.46	12.99	5.61
2013	GBBL	0.02	19.90	22.25	0.12	25.98	1.10	13.79	3.53
2014	GBBL	0.02	14.81	21.43	0.29	28.37	1.19	15.63	6.01

Year	Bank Name	ROA	ROE	Bank Size	NPLR	LER	LLPR	CAR	GDP
2015	GBBL	0.02	18.41	21.68	0.31	26.16	1.60	16.53	3.98
2016	GBBL	0.02	12.34	23.59	0.24	21.03	1.20	24.99	0.43
2017	GBBL	0.02	13.95	23.95	0.27	25.44	1.23	18.84	8.98
2018	GBBL	1.53	15.39	24.38	0.2	30.63	1.06	14.44	7.62
2019	GBBL	1.15	13.28	24.64	0.79	87.51	1.57	13.87	6.66
2020	GBBL	1.15	15.68	25.01	0.72	99.50	1.79	11.43	-2.37
2021	GBBL	1.29	19.27	25.11	0.85	80.50	1.98	13.48	4.84
2022	GBBL	1.42	20.49	25.21	1.70	45.54	2.51	13.69	5.61
2013	SINDU	1.09	11.82	20.77	1.97	71.53	2.96	15.77	3.53
2014	SINDU	1.42	13.28	20.92	1.63	45.44	2.98	15.1	6.01
2015	SINDU	1.98	17.29	21.03	1.18	46.26	2.13	14.87	3.98
2016	SINDU	1.62	11.14	21.54	0.84	47.92	1.08	19.49	0.43
2017	SINDU	0.52	3.26	21.78	2.92	29.24	0.56	27.69	8.98
2018	SINDU	1.25	6.79	21.67	1.61	16.88	-0.12	25.66	7.62
2019	SINDU	0.29	2.62	19.80	1.96	23.99	1.12	22.67	6.66
2020	SINDU	-0.21	-2	22.32	2.8	89.25	3.92	13.46	-2.37
2021	SINDU	0.83	7.53	22.44	1.6	26.04	2.23	12.72	4.84
2022	SINDU	0.87	11.20	22.49	1.90	22.57	1.54	15.68	5.61
2013	SADBL	0.99	8.69	22.73	0.68	75.35	0.94	13.89	3.53
2014	SADBL	1.94	17.27	22.94	0.60	72.13	2.05	13.21	6.01
2015	SADBL	1.8	15.95	23.20	0.65	64.06	6.07	12.71	3.98
2016	SADBL	2.17	17.75	23.50	0.60	23.26	4.77	14.89	0.43
2017	SADBL	1.48	9.23	23.78	1.62	18.57	1.85	19.02	8.98

Year	Bank Name	ROA	ROE	Bank Size	NPLR	LER	LLPR	CAR	GDP
2018	SADBL	1.44	10.22	23.99	0.80	75.99	2.95	16.66	7.62
2019	SADBL	0.58	5.78	24.22	1.13	72.90	3.71	13.62	6.66
2020	SADBL	0.86	11.05	24.59	1.39	95.43	2.11	11.77	-2.37
2021	SADBL	0.88	12.59	24.81	1.39	107.54	2.14	11.59	4.84
2022	SADBL	0.46	6.03	24.79	3.16	103.43	3.47	12.41	5.61
2013	EDBL	1.96	23.49	21.81	1.88	25.81	1.30	11.39	3.53
2014	EDBL	2.13	26.96	21.96	1.61	38.67	1.11	11.42	6.01
2015	EDBL	2.38	33.54	22.16	1.09	32.94	1.77	11.8	3.98
2016	EDBL	2.82	32.82	22.40	1.02	17.38	1.47	12.81	0.43
2017	EDBL	2.61	16.79	22.56	0.62	18.26	0.93	19.23	8.98
2018	EDBL	1.96	16.36	22.87	0.62	16.62	1.24	13.5	7.62
2019	EDBL	0.91	9.04	23.16	2.76	25.35	2.47	13.67	6.66
2020	EDBL	1.96	10.19	23.32	3.77	26.06	1.05	12.26	-2.37
2021	EDBL	0.67	5.90	23.38	2.85	25.28	3.40	12.19	4.84
2022	EDBL	1.24	7.16	23.51	3.23	29.01	3.62	12.68	5.61
2013	MDB	2.88	24.49	21.22	0.04	18.76	0.35	15.18	3.53
2014	MDB	3.15	25.29	21.44	0.03	12.14	0.51	15.64	6.01
2015	MDB	3.6	27.96	21.72	0.03	12.60	0.68	15.68	3.98
2016	MDB	3.41	20.37	21.98	0.04	17.05	0.19	22.31	0.43
2017	MDB	2.53	16.56	22.24	0.05	23.41	0.44	19.9	8.98
2018	MDB	2.56	17.49	22.47	0.29	23.27	0.85	18.96	7.62
2019	MDB	2.72	17.65	22.61	0.30	14.60	1.08	19.29	6.66
2020	MDB	2.17	12.54	22.63	0.47	16.80	1.73	23.95	-2.37

Year	Bank Name	ROA	ROE	Bank Size	NPLR	LER	LLPR	CAR	GDP
2021	MDB	1.97	11.39	22.74	1.05	18.61	1.89	25.02	4.84
2022	MDB	1.9	11.08	22.81	1.25	18.05	2.08	30.65	5.61
2013	SRDB	2.83	23.18	22.48	0.38	19.76	1.20	14.87	3.53
2014	SRDB	2.52	19.69	22.71	0.93	21.99	1.66	15.69	6.01
2015	SRDB	2.76	20.78	23.01	0.31	19.84	0.10	15.45	3.98
2016	SRDB	2.92	21.27	21.56	0.22	14.29	1.76	16.57	0.43
2017	SRDB	1.94	16.53	22.02	0.07	91.55	1.05	14.04	8.98
2018	SRDB	1.95	17.55	22.20	0.11	67.05	2.23	13.06	7.62
2019	SRDB	1.21	10.04	24.29	1.10	14.28	1.65	15.61	6.66
2020	SRDB	1.19	10.38	24.47	1.27	91.64	1.00	15.62	-2.37
2021	SRDB	1.28	46.95	24.65	1.14	89.14	2.08	14.36	4.84
2022	SRDB	1.2	22.78	24.87	1.81	95.74	2.38	13.29	5.61

IMPACT OF CREDIT RISK ON PROFITABILITY OF DEVEL...

By: Susmita Aryal

As of: Sep 11, 2024 11:07:34 AM
19,910 words - 170 matches - 9 sources

Similarity Index

15%

Mode: Summary Report

sources:

1,172 words / 6% - Internet from 20-Jun-2018 12:00AM
researchdirect.uws.edu.au

862 words / 4% - from 19-Dec-2023 12:00AM
elibrary.tucl.edu.np

169 words / 1% - from 18-Jan-2024 12:00AM
elibrary.tucl.edu.np

126 words / 1% - from 25-Jun-2024 12:00AM
elibrary.tucl.edu.np

109 words / 1% - Internet from 14-Jan-2023 12:00AM
elibrary.tucl.edu.np

229 words / 1% - from 15-Apr-2023 12:00AM
www.researchgate.net

105 words / 1% - from 25-Apr-2023 12:00AM
www.researchgate.net

116 words / 1% - Internet
Mrindoko, Allen Emmanuel. "Effect of Credit Risk and Operational Risk on the Financial Performance of Commercial Banks in Tanzania.", 2021

111 words / 1% - from 06-Aug-2024 12:00AM
ir.jkuat.ac.ke

paper text:

ABSTRACT Development banks are vital to economic growth, especially in emerging economies like Nepal, where they direct capital to key sectors such as infrastructure and SMEs. These banks face significant challenges in managing credit risk primarily non- performing loans (NPLs) and loan loss provisions which can impact their profitability and stability. Effective credit risk management is essential for maintaining financial performance and ensuring the sustainability of these