

**IMPACT OF CREDIT RISK MANAGEMENT IN
PERFORMANCE OF DEVELOPMENT BANKS IN NEPAL**

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DECLARATION

I hereby declare that the work reported in this thesis entitled **IMPACT OF CREDITRISK MANAGEMENTIN PERFORMANCE OF DEVELOPMENT BANKS IN NEPAL "** submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies (MBS) under the supervision of Arun Neupane of Shanker Dev Campus, T.U.

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ABBREVIATIONS

CAR	:	Capital Adequacy Ratio
CD	:	Credit to Deposit Ratio
COGS	:	Cost of Goods Sold
DW	:	Durbin Watson
IS	:	Interest Spread
LLP/NPL	:	Loan Loss Provision to Non-Performing Loan
NII/TOI	:	Net Interest Income to Total Operating Income
NRB	:	Nepal Rastra Bank
ROA	:	Return on Assets
ROE	:	Return on Equity
SPSS	:	Statistical Package for Social Science
VIF	:	Variance Influence Factor

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Banks play a crucial role in economic development by offering essential financial services. The consistent and proficient operation of the banking sector serves as a measure of financial stability within a country. A key aspect of this stability lies in the extent to which banks provide credit to the public for productive purposes, thereby boosting the nation's economic growth and ensuring its long-term sustainability. While facilitating investments in profitable ventures, the credit function of banks also subjects them to credit risk. A higher exposure to credit risk increases the likelihood of financial crises for banks, whereas lower exposure reduces this risk and promotes stability. Effective management of credit risk is vital for the survival and expansion of financial institutions, including development banks. The performance of these banks hinges on various factors that predict how credit risk is handled. Key predictors include the capital adequacy ratio, which ensures sufficient capital relative to risk-weighted assets, the credit deposit ratio indicating lending versus deposits, the ratio of non-performing loans to total advances reflecting loan quality, net interest income as a percentage of total income, and provisions for loan losses relative to non-performing loans. These factors collectively influence a bank's performance and its ability to sustain operations and growth.

In the context of Nepal, effective credit management has become a significant concern within the banking and financial sector. This concern is underscored by the observation that net interest income contributes inadequately to total income based on the balance sheets of financial institutions. Therefore, implementing robust credit management practices is crucial for ensuring the long-term sustainability of banks and financial institutions. The design of a credit management system depends on various factors including the institution's size, capital structure, operational complexity, technical expertise, and the quality of its Management Information System (MIS). Development banks primarily invest in credit exposures, and the returns from these investments constitute a major income source. The theoretical motivation for undertaking the study on the Impact of Credit Risk Management in Performance of Development Banks in Nepal can be described as follows. The essential functions of Development banks may be the

best summarized as the borrowing and lending of money. So, the net interest income is the major source of income for banks. And the net interest income can be maximized only through effective credit management. The relations between effective credit management and bank performance are based on management abilities in the identification, measurement and assessment of credit risk and such abilities of management are reflected quantitatively by the predictors of credit risk management. Proper recognition of loan loss provision on timely, management of assets and liabilities, which is reflected by credit deposit ratio, maintaining sufficient capital as it acts as a cushion for absorbing credit risks. Minimizing Non-Performing Loans through proper analysis and monitoring plays significant role in maximizing bank's performance. Hence, the effect of credit management in bank's performance has been a theoretical and practical issue for many years.

1.2 Statement of the problem

The current structure of the banking sector has evolved due to economic liberalization, economic needs, and globalization. Despite these factors driving growth, the expansion and improvement of development banks have been unsatisfactory.. The number of development bank and other financial institutions are increasing in recent time. None of development banks, in long run can survive without implementing effective lending policy and practices. Development banks in Nepal have been facing various challenges and problem. Some of them arising due to the economic condition of the country, some of them arising due to policy of government and many of them arising due default of borrowers. After liberalization in economy and financial sector reforms in 1980s there are various opportunities in banking sector. In banking sector volume of deposit and loan are increased. Increasing market competition is placing significant pressure on banks to decrease their interest margins. Non-performing assets have become a large problem to the development banks. Due to NRB rules development banks have to keep certain percent of profit for provision on bad loan and Non-Performing Assets. Due to high provision and economic situation of the country, banks are not able to get high profit. Lending in industries and productive sector is risky project. Banks are investing in house loan, hire purchasing loan, education loan for safety purpose. Lack of good lending opportunities banks are facing problem of over liquidity. Increasing in deposits in fixed and saving accounts and downward trend in lending is one of the problems in development banks.

Credit management has effect on the decision to explore new sectors for credit is crucial for development banks as it directly impacts their profitability and liquidity. In Nepal it has been found that loan approval and credit decisions are made flexible to favor to individuals network also. A new customer finds that credit providing process being very complicated and sometimes the documents submitted for loan sanctioning being fraudulent and for formality purpose only.

NRB issued directives to development banks to increase their paid up capital to Rs. 2.5 billion by mid July 2017A.D. It became the most challenging task for development banks; risk associated with credit is clearly pointed out by the following issues which is faced commercial banks.

The main research questions that this study aspires to address are listed as below:

1. What are the most influencing factors that affect credit risk in development bank?
2. Is there any relationship that exists between the credit management predictors viz. Capital Adequacy Ratio, Credit Deposit Ratio, Interest Spread, Non-Performing Loan to Total Loan, Loan Loss Provision to on the Total Non-Performing Loan and Net Interest Income to Total Income and the bank performance measured by profitability in Nepalese development Bank?
3. Is there any relationship that exist between Credit Management and Return on Assets (ROA) and Return on Equity (ROE)?

1.3 Objectives of the Study

The major objective of this study is to assess the relationship between the predictors of credit management i.e. capital adequacy ratio, credit deposit ratio, interest spread, Non-Performing the primary aim of this study is to evaluate the impact of various credit management indicators on the performance of development banks. These indicators include capital adequacy ratio, credit deposit ratio, interest spread, non-performing loan to total loan ratio, loan loss provision to total non-performing loan ratio, and net interest income to total income ratio. The performance of the banks will be measured using return on assets (ROA) and return on equity (ROE). The specific research objectives of this study are as follows: loan to Total Loan, Loan Loss Provision to Total Non-Performing Loan and Net Interest Income to Total Income on the Development bank's performance

which is measured by Return on Assets (ROA) and Return on Equity (ROE). The research objectives in this study are as follows:

- To evaluate the factors affecting the credit risk in development bank.
- To analyze the relation between Credit Risk Management Variables (CMV) on Bank's Performance (ROA, ROE)
- To analyze the extent to which bank's performance is affected by credit risk management predictors.

1.4 Research hypothesis

H₀₁: There is no significant relationship between the volume of total loan occupied by Non-Performing Assets (NPA) and Return on Equity (ROE) of Nepalese development Banks

H₀₂: There is no significant relationship between the total loan loss provision to total non-performing loan (LLP/NPL) and Return on Assets (ROA) of Nepalese development Banks.

H₀₃: There is no significant relationship between the Capital Adequacy Ratio (CAR) and Return on Assets (ROA) of Nepalese development Banks.

H₀₄: There is no significant relationship between the Credit to Deposit Ratio (CD) and Return on Assets (ROA) of Nepalese development Banks.

H₀₅: There is no significant relationship between the interest spread (IS) and Return on Assets (ROA) of Nepalese development Banks.

H₀₆: There is no significant relationship between the Net Interest Income to Total Operating Income (NII/TOI) and Return on Assets (ROA) of Nepalese development Banks.

H₀₇: There is no significant relationship between the volume of Total Loan occupied by Non-Performing Assets (NPA) and Return on Assets (ROA) of Nepalese development Banks.

H0₈: There is no significant relationship between the total Loan Loss Provision to Total Non-Performing Loan (LLP/NPL) and Return on Equity (ROE) of Nepalese development Banks.

H0₉: There is no significant relationship between the Capital Adequacy Ratio (CAR) and Return on Equity (ROE) of Nepalese development Banks.

H0₁₀: There is no significant relationship between the Credit to Deposit Ratio (CD) and Return on Equity (ROE) of Nepalese development Banks.

H0₁₁: There is no significant relationship between the interest spread (IS) and Return on Equity (ROE) of Nepalese development Banks.

H0₁₂: There is no significant relationship between the net interest income to total operating income (NI/TOI) and Return on Equity (ROE) of Nepalese development Banks

1.5 Significance of the Study

Loans and advances represent the most profitable assets for banks, serving as the primary source of income. The interest earned from these loans and advances significantly contributes to the bank's income statement. As profit-driven entities, banks aim to maximize profits by lending as much of their available funds as possible. However, they must exercise caution to ensure the safety of these loans and advances, as many bank failures worldwide are attributed to the devaluation of these assets. Consequently, loans are considered risky assets, with the risk of non-payment known as credit risk or default risk. Effective credit management practices lead to lower non-performing assets and higher capital adequacy ratios, thereby enhancing bank performance. Therefore, studying the impact of credit management on bank performance is crucial for various stakeholders. The primary stakeholders are the banks themselves, which can use this study to understand the impact of credit management on their performance. This research will also benefit other stakeholders, such as shareholders, creditors, and depositors, by providing a basis for evaluating bank performance. For the management of development banks, this study will highlight areas for improvement and offer a foundation for developing plans and policies to enhance profitability through improved credit management systems. Clients will also benefit by making informed decisions regarding loans, choosing banks based on their performance and creditworthiness. Additionally, the government will benefit from increased tax revenue resulting from better-performing banks with robust

credit management practices. This study will also assist banking regulators, such as the Nepal Rastra Bank (NRB), in developing frameworks and policies for assessing and managing risks. Lastly, future researchers will find this study valuable as it highlights areas not covered or left out in the current research, providing a guideline for further studies on the same topic.

1.6 Limitations of the Study

As it is an academic report, limited time could be the major constraint for the study. Other than time; some other limitation could be as follows:

- Due to unavailability of latest five years data, out of 17 existing banks only 14 banks are taken as sample.
- The study covered the data of five fiscal year from 2018/19 to 2022/23
- Only limited variables were used for the analysis of the data due to time and financial constraints.

1.7 Operational Definitions

Credit Risk Management Strategies

Credit risk management strategies are the measures banks employ to mitigate or avoid the adverse effects of credit risk. A robust credit risk management framework is essential for banks to enhance profitability and ensure survival. According to Lindergren (1987), the key principles in the credit risk management process include establishing a clear structure, allocating responsibility, prioritizing and disciplining processes, clearly communicating responsibilities, and assigning accountability. The strategies for managing credit risk include, but are not limited to, the following:

Credit Derivatives: These allow banks to manage credit risk without adjusting their loan portfolios. Credit derivatives provide a new source of fee income and help reduce regulatory capital requirements. The most common type of credit derivative is the credit default swap, where a seller transfers the credit risk of a loan to a protection buyer. Credit derivatives enable banks to lend more at lower rates to riskier borrowers while maintaining relationships with borrowers. Recent developments in credit derivatives markets have enhanced lenders' ability to transfer credit risk to other institutions.

Credit Securitization: This involves transferring credit risk to a factoring or insurance firm, relieving the bank of the need to monitor borrowers and manage classified assets.

This strategy insures the bank's lending activities. The increasing popularity of credit risk securitization can be attributed to its use in diversifying concentrated credit risk exposures and providing alternative funding sources. This is achieved through regulatory arbitrage and liquidity improvements when selling securitization transactions. A cash collateralized loan obligation is a form of securitization where assets are removed from a bank's balance sheet and packaged into marketable securities sold to investors via a special purpose vehicle.

Compliance with the Basel II Accord: The Basel Accord comprises international principles and regulations ensuring the soundness and stability of banks, introduced in 1988 in Switzerland. Compliance involves identifying, generating, tracking, and reporting risk-related data in an integrated, accountable, and transparent manner, thereby improving banks' risk management processes. The New Basel Capital Accord emphasizes the need for banks to adopt sound internal credit risk management practices to assess their capital adequacy.

Adoption of a Sound Internal Lending Policy: A lending policy guides banks in loan disbursement to customers. Strict adherence to this policy is a cost-effective and straightforward method of managing credit risk. The lending policy should align with the bank's overall strategy and consider factors such as the existing credit policy, industry norms, general economic conditions, and the prevailing economic climate.

Credit Bureau: This is an institution which compiles information and provides this information to banks as regards the lending profile of a borrower. The bureau awards credit score called statistical odd to the borrower which makes it easy for banks to make instantaneous lending decision.

1.8 Organization of the Study

Organization of the study is the examination of how individuals construct structures, processes, and practices and how these, in turn, shape whole research project. It comprises different areas that deal with the different aspects of the research report. The overall report is mainly divided into five chapters. Chapter one contains background of the study, statements of problems, objectives of study, Also includes hypothesis used for the research, significance of the study and limitation of the study. The second chapter supports the research with the theoretical framework. It then presents the summary of the similar researches done in the past. This part also consists research gap which shows that how studies had been carried out during the research and what is missed in those studies

and how this present study is going to address those topics. Additionally, model used in the research is also explained in this section. The third section explains the methodology used in the research. It explains the research plan and design carried out during the research. It also clarifies how sampling and data collections are performed for this research. The tools used and analysis plan is also mentioned in this section. Fourth section deals with data analysis and their interpretation. The presentation of final output is accompanied by the graphs and tables. The last chapter provides the summary, conclusion and the recommendation which is drawn from the analysis of the data collected.

CHAPTER TWO

REVIEW OF LITERATURE

In this chapter, we review key literature on the impact of credit risk management on the performance of development banks, including empirical evidence from previous studies. A literature review involves examining research studies and other relevant works in the study area to understand past and current findings, identify gaps, and guide future research. It is an essential and mandatory part of the research process. The primary purpose of a literature review is to gain knowledge and help researchers discover what studies have been conducted in their chosen field, as well as gather suggestions or recommendations for future research..

This chapter provides conceptual framework of the study and deals with review of empirical studies associated with credit management and bank performance. In the first section, it consists of an in-depth review of related studies around the world. Second section consists of research gap. And, finally in the third section, the conceptual framework is presented.

2.1 Literature Review

Hamza (2020) carried out a study titled “Impact of Credit Risk Management on Banks Performance: A Case Study in Pakistan Banks” to study the impact of credit risk management on performance of development banks in Pakistan. The secondary data which was taken from the banking sector survey, official websites and KSE. The pooled regression method has been adopted to determine the impact of Credit Risk Management on two performance methods. The findings revealed the fact that Credit Risk Management is inversely associated with bank performance. For Return On Asset (ROA) analysis revealed that Capital Adequacy Ratio (CAR), Loan Loss Provision Ratio (LLPR), Liquidity Ratio (LR) and Non-Performing Loan Ratio (NPLR) variables have significant impact on Return On Assets (ROA). The Loan Loss Provision Ratio (LLPR), Liquidity Ratio (LR) and Non-Performing Loan Ratio (NPLR) have negative while the Capital Adequacy Ratio (CAR), loan and advances, and size have positive impact on the Return On Assets. In relation to Return On Equity, the CAR, LAR and LLPR variables have significant impact on ROE. In this model the LLPR, NPLR and LR variables have

negative and CAR, LAR and SIZE variables have positive impact on the dependent variable

Konovalova, Kristovska & Kudinska (2020) in a study of Credit Risk Management Banks proposes a model of credit risk assessment on the basis of factor analysis of retail clients / borrowers in order to ensure predictive control of the level of risk posed by potential clients in banks engaged in consumer lending. The aim of the study is to determine the level of risk represented by different groups (classes) of retail clients (borrowers) in order to reduce and prevent credit risk in the future as well as to improve the management of banking risks. The main results of the study are the creation of a model of borrowers' internal credit ratings and the growth of the methods of improving credit risk management in commercial banks.

Sharifi & Akhter, (2021) has conducted study titled "Performance of Banking through Credit Deposit Ratio in Public Sector Banks in India." Banks play an important role in the mobilization and allocation of resources in an economy. Deposits and Credits are inflow and outflow, respectively, of funds of the banks. The credit deposit ratio is a barometer of growth of a financial institution like development banks. It indicates the level credit deployment of banks in relation to deposits mobilized by them. A high credit deposit ratio indicates that banks are generating more credit from its deposits and vice-versa. The outcome of this ratio reflects the ability of the bank to make optimal use of the available resources. The study has carried out with a purpose to present the performance of public sector banks through the Credit Deposit Ratio. The data were collected from annual reports of respective banks and Reserve Bank of India. The data were analyzed using a descriptive statics and panel data regression model. The findings and analysis reveal that the CDR impact positively on public sector bank's financial performance in the period under study .

Cao (2020) argues that recent blooming economic globalization, and great changes in financial theory and practice bring about opportunities as well as challenges for banking industry, result in the rising severe credit risk for banking industry. The study starts to illustrate from the concept and features of credit risk, analyzing various issues exist in credit risk management of commercial banks in China, and proposes concrete improvement measures, such as improving the credit risk management system,

establishing an effective incentive mechanism, strengthening the peoples' credit awareness etc., which aim to mitigate the credit risk of commercial banks .

Waemustafa & Sukri, (2022) had conducted research on topic entitled “Bank specific and macroeconomics dynamic determinants of credit risk in Islamic banks and conventional banks”. The study analyzes the macroeconomic and bank specific determinants of credit risk in Islamic and Conventional Banks. Multivariate Regression analysis is applied on the sample of 15 conventional banks and 13 Islamic Banks in Malaysia over the period between 2000 A.D. to 2010 A.D. The finding shows that the banks specific determinants of credit risk are uniquely influenced the credit risk formation of Islamic and Conventional banks. The study found that risky sector financing; regulatory capital and Islamic Contract are significant to credit risk of Islamic banks. For Conventional Banks, loan loss provision, debt-to-total asset ratio, regulatory capital, size, earning management and Liquidity are significant factors influencing credit risk. As for macroeconomic factors only Inflation and M3 are significant to credit risk for both Islamic and Conventional banks.

Uwuigbe, Uwuigbe&Oyewo, (2023) had conducted the research on topic entitled “Credit Management and Bank Performance of Listed Banks in Nigeria”. The study critically assessed the effects of credit management on banks' performance in Nigeria. In achieving the objectives identified in this study, the audited corporate annual financial statement of listed banks covering the period between 2013 A.D. to 2017 A.D. were analyzed. Total of 10 listed banks were selected and analyzed for the study using the purposive sampling method. However, in assessing the research postulations, the study adopted the use of both descriptive statistics and econometric analysis using the panel linear regression methodology consisting of periodic and cross sectional data in the estimation of the regression equation. Findings from the study revealed that while ratio of Non-Performing Loans and bad debt do have a significant negative effect on the performance of banks in Nigeria, on the other hand, the relationship between secured and unsecured loan ratio and bank's performance was not significant. Hence, the study recommends that banks management should put in place or institute sound lending framework, adequate credit administration procedure and an effective and efficient machinery to monitor lending function with established rules.

Sujeewa (2020) conducted a study titled “Impact of Credit Risk Management on the Performance of Commercial Banks in Sri Lanka.” The objective of this study was to determine how credit risk management affects the performance of commercial banks in Sri Lanka. The research utilized both primary and secondary data. Primary data collection involved eight commercial banks out of the 24 in Sri Lanka, selected based on superior financial performance and consistent data availability over the review period. Data were gathered through interviews and direct contact with relevant authorities to capture their insights on problems and solutions.

Secondary data were sourced from annual reports of the selected banks, articles, books, and magazines. The study examined panel data over a five-year period from 2009 to 2013 to explore the relationship between credit risk and bank performance. Performance was measured using the Return on Assets (ROA), while credit risk indicators included Loan Provision to Total Loans (LP/TL), Loan Provision to Non-Performing Loans (LP/NPL), Loan Provision to Total Assets (LP/TA), and Non-Performing Loans to Total Loans (NPL/TL). A regression model, utilizing E-views software, was employed to establish the relationship between loan amounts, non-performing loans, and profitability during the study period.

The results indicated that non-performing loans and provisions negatively impact profitability. Consequently, the study recommended that banks implement effective tools and techniques to reduce credit risk.

Tehulu and Olana (2020) conducted research titled “Bank-Specific Determinants of Credit Risk: Empirical Evidence from Ethiopian Banks.” Despite credit risk being a significant risk for banks and affecting the financial system's development, there has been limited research on its determinants. This study investigated the bank-specific determinants of credit risk in Ethiopian commercial banks using a quantitative research approach. The analysis included balanced panel data from 10 commercial banks, both state-owned and private, over the period from 2013 to 2017, utilizing random effects GLS regression.

The regression results revealed that credit growth and bank size have a negative and statistically significant impact on credit risk. Conversely, operating inefficiency and ownership have a positive and statistically significant impact on credit risk. Additionally,

the study found that profitability, capital adequacy, and bank liquidity have an adverse but statistically insignificant relationship with credit risk.

Abiola and Olausi (2014) conducted research titled “The Impact of Credit Risk Management on Commercial Banks' Performance in Nigeria.” The study utilized financial reports spanning seven years (2005-2011) from seven commercial banking firms in Nigeria. Return on Equity (ROE) and Return on Assets (ROA) were employed as performance indicators, while Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) served as indicators of credit risk management. A panel regression model was employed to analyze the data.

The findings indicated a positive and significant relationship between non-performing loans and bank performance, suggesting that banks with poor credit risk management practices experienced higher levels of non-performing loans in their portfolios. Additionally, the study revealed that commercial banks with higher capital adequacy ratios were better able to extend more loans and absorb credit losses when they occurred, thereby achieving better profitability.

Based on these findings, the study recommended that commercial banks establish robust and effective credit risk management units, implementing best practices such as clear loan policies and strict adherence to underwriting authority and limits. These measures are crucial for enhancing credit risk management practices and ultimately improving bank performance in Nigeria.

Marshal and Onyekachi (2020) conducted research titled “Credit Risk and Performance of Selected Deposit Money Banks in Nigeria: An Empirical Investigation.” The study aimed to establish the relationship between credit management predictors and bank performance. It involved an empirical investigation into the effect of credit risk on bank performance over a 15-year period (1997-2011) in Nigeria. Five banking firms were selected from the existing 20 deposit money banks in Nigeria using judgmental sampling techniques. Data were sourced from the annual reports, accounts statements, and balance sheets of the selected banks, comprising both time-series and cross-sectional data pooled into a panel dataset. Panel data regression techniques were used for estimation.

The study found that the ratio of non-performing loans to loans and advances, as well as the ratio of loans and advances to total deposits, were statistically significant at the 1% level and positively related to the return on assets (ROA) of the banks under study. This suggests that the selected banks had minimal non-performing loans in their portfolios. The findings concluded that banks with sound credit risk policies tend to have lower loan default ratios and higher interest income, leading to better profitability. Banks with higher profit potential can effectively absorb credit losses, thereby achieving better overall performance, as observed in the study.

Based on these findings, the study recommended that management of deposit money banks in Nigeria enhance their skills in credit analysis and loan administration. Furthermore, regulatory bodies such as the Central Bank of Nigeria (CBN) should intensify efforts to ensure banks' compliance with relevant provisions and prudential guidelines, thereby promoting financial stability and performance within the banking sector.

Bateni, Vakilifard & Asghari (2021) had conducted research on topic entitled "The Influential Factors on Capital Adequacy Ratio in Iranian Banks". This study focuses on influential factors (precisely seven financial factors i.e. Bank's size, Loan Assets Ratio (LAR), Equity Ratio(EQR), Return on Equity(ROE), Deposit Assets Ratio(DAR), Return on Assets(ROA) and Risk Assets Ratio(RAR)) over capital adequacy in Iranian private banks for the period 2014–2020. The results obtained indicate adverse relationship between bank size and capital adequacy ratio of banks and positive relationship between LAR, ROE, and ROA, EQR and Capital Adequacy Ratio (CAR). RAR and DAR do not have any impact on Capital Adequacy Ratio.

Rufai (2022) conducted research titled "Efficacy of Credit Risk Management on the Performance of Banks in Nigeria: A Study of Union Bank PLC (2015-2020)." The study aimed to assess the effectiveness of credit risk management on bank performance, specifically focusing on Union Bank PLC. It sought to determine the impact of credit risk on profitability and examine the relationship between interest income and bad debt within the bank. Effective credit risk management is crucial for the survival and growth of financial institutions.

The study utilized secondary sources of data, employing time series and trend analysis for the study period. Hypotheses were tested using correlation coefficient and regression analysis. The findings concluded that credit risk significantly affects the performance of Union Bank PLC. The study highlighted the importance of maintaining high interest income through effective credit risk management, particularly in relation to Union Bank's lending philosophy.

Based on these findings, the study recommended that Union Bank PLC and similar financial institutions prioritize robust credit risk management practices to enhance performance and profitability. This includes refining lending strategies to mitigate credit risk effectively, thereby ensuring sustained financial health and growth.

Ogboi & Unuafe, (2020) had conducted research on topic entitled “Impact of Credit Risk Management and Capital Adequacy on the Financial Performance of Commercial Banks in Nigeria”. This study examined the impact of credit risk management and capital adequacy on banks financial performance in Nigeria. This is with a view to providing further empirical evidence on how Credit Risk management strategies and Capital Requirement variables affect banks’ profitability in Nigeria. Nigerian banks have continued to invest huge sums of scarce financial resources on risk management modeling, with a view to maximizing returns and minimizing bank’s risk exposure through provision for loan losses. However, empirical evidence on the magnitude of the relationships between credit risk and bank’s profitability in Nigeria is rather scarce. Using a time series and cross sectional data from 2014-2019 obtained from selected banks annual reports and accounts in Nigeria, Panel data model was used to estimate the relationship that exists among loan loss provisions (LLP), loans and advances (LA), non-performing loans (NPL), capital adequacy (CA) and return on asset (ROA). Results showed that sound credit risk management and capital adequacy impacted positively on bank’s financial performance with the exception of loans and advances which was found to have a adverse impact on banks’ profitability in the period under study. Based on the findings, it is therefore, recommended that Nigerian banks institute appropriate credit risk management strategies by conducting rigorous credit appraisal before loan disbursement and drawdown. It is also recommended that adequate attention be paid to enhance Tier-One capital of Nigerian banks.

Kaaya & Pastory,(2023) conducted a research on “Credit Risk and Commercial Banks Performance in Tanzania: a Panel Data Analysis” whose main objective was to find the relationship between the credit risk and the bank performance as measured by return on asset. The study employed the panel data of the Eleven (11) banks in Tanzania from the period of 2015 to 2021.The dependent variable for the research was Return on Assets(ROA) and independent variable was loan loss to gross loan, Non-performing Loan, Loan Loss to Net Loan, Impaired Loan to Gross Loan, while, the control variable was deposit and bank size. Casual research design and descriptive research design was employed to establish the relationship between the variables. The econometrics test such as VIF (Variance Inflation Factor) and DW (Durbin Watson) was adopted. Regression analysis was adopted to identify the causality of the sample.

The research findings illustrated that loan losses to gross loan, loan loss to net income and Non-performing loan have been significance at 5% level. The analysis entailed significance of variables in influencing the bank performance as measured by profitability because their P values were less than 5%. Loan loss to gross loan, loan loss to net income and Non-Performing loan adversely affect the profitability of the banks because of the adverse coefficients, for every 1% increase in loan loss to Gross Loan, Loan Loss to Net Income and Non-Performing Loan tends to lower the profitability level by 27.1%, 42.7% and 13.1% respectively.

The study observed that an increase in credit risk tends to decrease firm performance. According to empirical theory, higher risk can lead to higher bank returns as banks may expand their portfolios, but this must be balanced with risk management strategies to ensure sustainable returns. Banks are advised to maintain substantial capital reserves to absorb credit risk in the event of failures. Moreover, enhancing lending criteria, portfolio grading, and credit mitigation techniques can reduce the likelihood of defaults. Additionally, adopting sound management practices and robust corporate governance structures are recommended to effectively mitigate credit risk. These measures are crucial for maintaining financial stability and enhancing overall performance in banking institutions.

Abdel Rahim (2022) conducted a study titled “Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: A Qualitative Study.” The research aimed to investigate the determinants, challenges, and strategies for developing

effective credit risk management in Saudi banks. The methodology employed was descriptive and analytical, utilizing the "CAMEL" model to assess the performance of credit risk management.

The study concluded that liquidity had a significantly strong positive impact on the effectiveness of credit risk management, while bank size had a significantly strong adverse impact. Other variables such as capital adequacy, asset quality, management soundness, and earnings showed insignificant impacts on the effectiveness of credit risk management.

Key challenges identified in achieving effective credit risk management included weak corporate governance, low asset quality, limited credit diversification, inadequate financial analysis, failure to charge risk premiums on risky loans, corruption among credit officers, prioritization of profitability over safety, and emphasis on loan guarantees at the expense of repayment capacity.

To enhance the effectiveness of credit risk management, the study recommended several strategies in order of importance: training of credit officers, improving asset quality, strengthening corporate governance, conducting professional financial analysis of customers, and accessing information from Credit Bureaus. Furthermore, the study proposed an overarching strategy for Saudi banks to enhance credit risk management, including measures such as enhancing capital adequacy, upgrading asset quality, strengthening management practices, increasing earnings, ensuring adequate liquidity, reducing market risk sensitivity, hedging credit risk, provisioning adequately for doubtful credits, renegotiating loan terms, transferring credit risk to third parties, extending credit maturity, and lowering interest rates on non-performing loans. These recommendations aim to bolster the resilience and stability of Saudi banks amidst challenging economic conditions.

Kaaya & Pastory (2013) has examined the "Credit risk and commercial banks performance in Tanzania: a Panel data analysis" The study was meant to find the relationship between the credit risk and bank performance as measured by return on asset. Regression model was used to develop the relationship between the indicators of credit risk and bank performance, the credit risk indicators have produced negative correlation

which indicate the higher the credit risk the lower the bank performance. Regression model was statistically fit producing R square and adjusted R square of 70% and 64% respectively. The study recommends the bank understudy to increase the capital reserve to protect the bank for the future losses and to increase bank credit risk management techniques.

Ongore & Kusa (2013) conducted study on “Determinants of Financial Performance of Commercial Banks in Kenya” The study focuses on identifying the significant factors that are related with financial performance of the banks in Kenya. The authors used linear multiple regression model and Generalized Least Square on panel data to estimate the parameters. The findings showed that bank specific factors significantly affect the performance of commercial banks in Kenya, except for liquidity variable. But the overall effect of macroeconomic variables was inconclusive at 5% significance level. The moderating role of ownership identity on the financial performance of commercial banks was insignificant. Thus, it can be concluded that the financial performance of commercial banks in Kenya is driven mainly by board and management decisions, while macroeconomic factors have insignificant contribution Fredrick (2019) has analyzed the impact of credit risk management on the financial performance of development banks in Kenya. The study has used CAMEL model as a proxy for credit risk management. The author found that the strong impact of CAMEL (credit risk components) on the financial performance of commercial banks.

Funso, Kolade & Ojo (2012) conducted a study titled “Credit Risk and Development Banks Performance in Nigeria: A Panel Model Approach.” The research aimed to empirically investigate the quantitative impact of credit risk on the performance of development banks in Nigeria over an 11-year period (2000-2010). Five development banking firms were selected on a cross-sectional basis for analysis.

The study employed the traditional profit theory to formulate profitability, measured by Return on Assets (ROA), as a function of credit risk indicators: the ratio of Non-performing Loans to Loans & Advances (NPL/LA), the ratio of Total Loans & Advances to Total Deposits (LA/TD), and the ratio of Loan Loss Provision to Classified Loans (LLP/CL).

Panel model analysis was used to estimate the determinants of the profit function. The findings indicated that the impact of credit risk on bank performance, as measured by

ROA, was consistent across different banks in Nigeria. Specifically, a 100% increase in non-performing loans reduced profitability (ROA) by approximately 6.2%, while a similar increase in loan loss provisions decreased profitability by about 0.65%. Conversely, a 100% increase in total loans and advances increased profitability by approximately 9.6%.

Based on these results, the study recommended that banks in Nigeria enhance their capabilities in credit analysis and loan administration. Furthermore, regulatory authorities were advised to increase scrutiny of banks' compliance with relevant provisions of the Bank and other Financial Institutions Act (1999) and prudential guidelines. These measures are crucial for improving credit risk management practices and enhancing the overall performance and stability of development banks in Nigeria.

Foglia, (2019) conducted research on "Stress testing credit risk: A survey of authorities' approaches" This paper reviews the quantitative methods developed at selected authorities for stress testing credit risk, focusing in particular on the methods used to link macroeconomic drivers of stress with bank specific measures of credit risk (macro stress test). Authorities with a mandate for financial stability are particularly interested in quantifying the macro-to-micro linkages and have developed specific modeling expertise in this field. Stress testing credit risk is also an essential element of the Basel II framework, and some stress-testing requirements of Basel II are formulated by making explicit reference to the economic cycle. The paper highlights recent developments in macro stress testing and details a number of methodological challenges that may be useful for supervisors in their review process of banks' models as required by Basel II. It also contributes to the ongoing macro prudential research efforts to integrate macroeconomic oversight and prudential supervision, for early detection of key vulnerabilities and assessment of macro-financial linkages

Njanike (2021) conducted research titled "The Impact of Effective Credit Risk Management on Bank Survival." The study aimed to evaluate how inadequate credit risk management contributed to the demise of Zimbabwean banks during the 2003/2004 banking crisis. It also aimed to identify other factors that precipitated the crisis and outline components necessary for an effective credit risk management system.

The study concluded that ineffective credit risk management played a significant role in causing the banking crisis. It highlighted additional factors such as poor corporate

governance, inadequate risk management systems, poorly planned expansions, chronic liquidity challenges, foreign currency shortages, and diversion from core banking activities to speculative non-banking ventures as contributing to the crisis.

Furthermore, the research recommended several measures to improve credit risk management in banks. These included the development and implementation of credit scoring and assessment methodologies, revision and updating of insider lending policies, and adoption of prudent corporate governance practices. These recommendations aim to enhance the resilience and stability of banks, thereby improving their ability to navigate financial challenges and ensure long-term survival.

Bhattarai (2021), carried out study titled "Effect of credit risk on the performance of Nepalese development Banks" This study has examined the effect of credit risk on performance of Nepalese development banks. The descriptive and causal comparative research designs have been adopted for the study. The pooled data of 14 development banks for the period 2010 to 2015 have been analyzed using regression model. The regression results revealed that 'non-performing loan ratio' has negative effect on bank performance whereas 'cost per loan assets' has positive effect on bank performance. In addition to credit risk indicators, bank size has positive effect on bank performance. Capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance. This study concludes that there is significant relationship between bank performance and credit risk indicators.

Paudel (2020) has examined the impact of credit risk management on the financial performance of commercial banks in Nepal using the financial report of 31 banks for eleven years (2011-2021). The methods of data analysis in the study were descriptive ,correlation and multiple regressions. The financial performance indicator used in the study was Return On Assets (ROA). The predictors of the banks' financial performance used in the study were: default rate, cost per loan assets and capital adequacy ratio. The author asserts that all these parameters have an inverse impact on banks' financial performance. However, among the risk management indicators, default rate (NPLR) is the single most influencing predictor of bank financial performance in Nepal whereas cost per loan assets is not significant predictors of bank performance. The author concludes that credit risk management is crucial on the bank performance since it have a significant relationship with bank performance.

2.2 Research Gap

Upon having rigorous review on all the possible research documents available in various sources (i.e. e-library, journals and articles), it has been found that studies have focused on the countries like China, Tanzania, Nigeria, Pakistan. Though there have been scarce researches on the Nepalese development Bank, empirical evidence on the impact of credit management has been missing on these lines. In addition, studies emphasize on a variable that affects the banks performance. Moreover, bank performance is measured only by Return on Assets and sample size taken in previous studies is very limited and small. Mostly, studies are done to compare the credit management between banks.

The objective of this study is to bridge the gap by focusing at five Credit Management predictors that has an impact on the bank's performance measured by Return on Assets and return on Equity. This study will enrich knowledge on knowing the present status of credit management of Nepalese development bank and how credit management has affected the bank's performance. This study will contribute in adding the empirical studies conducted on the impact of credit management on bank's performance and help in policy making and formulating strategies to enhance the quality of credit management in the financial institution.

2.3 Theoretical Framework

From the theoretical review and the results of various empirical studies, we know that bank performance is affected by multiple predictors of credit management and to reduce a perfect relationship is a rare possibility. This research is mainly based on the conceptual framework that relates the predictors of Credit Management viz. CAR, CDR, Interest Spread, NPL to Total Loan, Loan Loss Provision to on the total NPL and NII to Total Income on the bank performance measured by ROA and ROE.

Marshal & Onyekachi, (2014) in their research paper on "Credit Risk and Performance of Selected Deposit Money Banks in Nigeria: An Empirical Investigation" attempted to establish the relationship between the predictors of credit management and bank performance. The study carried out an empirical investigation into the effect of credit risk and performance of banks in Nigeria over the period of 15 year (1997-2011). Five banking firms were selected from the twenty existing deposit money banks in Nigeria using judgmental sampling techniques. Data were sourced from the financial statement ,

annual reports and accounts statements/sheets of the banks in the sample. The data comprises of time- series and cross sectional data which were pooled into a panel data set and estimated using panel data regression techniques.

The fundamental estimating equation that the study used was in log- functional form, which is as follows:

$$\text{LogROA} = F(\text{Log NPL/LA}, \text{Log LA/TD})$$

Where,

ROA= Return on Assets

NPL= Non-Performing Loan

LA= Loan and advances

TD= Total Deposit

Abiola & Olausi (2014) conducted research titled “The Impact of Credit Risk Management on Development Banks Performance in Nigeria.” The study analyzed financial reports of seven development banking firms over a seven-year period (2005-2011). Return on Equity (ROE) and Return on Assets (ROA) were used as performance indicators, while Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) served as indicators of credit risk management.

The study employed a panel regression model to estimate the relationship between credit risk management indicators and bank performance. The findings revealed a positive and significant relationship between Non-Performing Loans and bank performance, suggesting that development banks with higher levels of Non-Performing Loans had poorer credit risk management practices.

Moreover, the study highlighted that development banks with higher Capital Adequacy Ratios were better equipped to extend more loans and absorb credit losses, thereby achieving better profitability. Based on these findings, the study recommended that development banks establish robust credit risk management units. These units should adhere to best practices in risk management, including the implementation of clear loan policies and strict adherence to underwriting authority and limits. These measures are essential for enhancing the financial stability and performance of development banks in Nigeria.

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2.3.1 Conceptual Framework

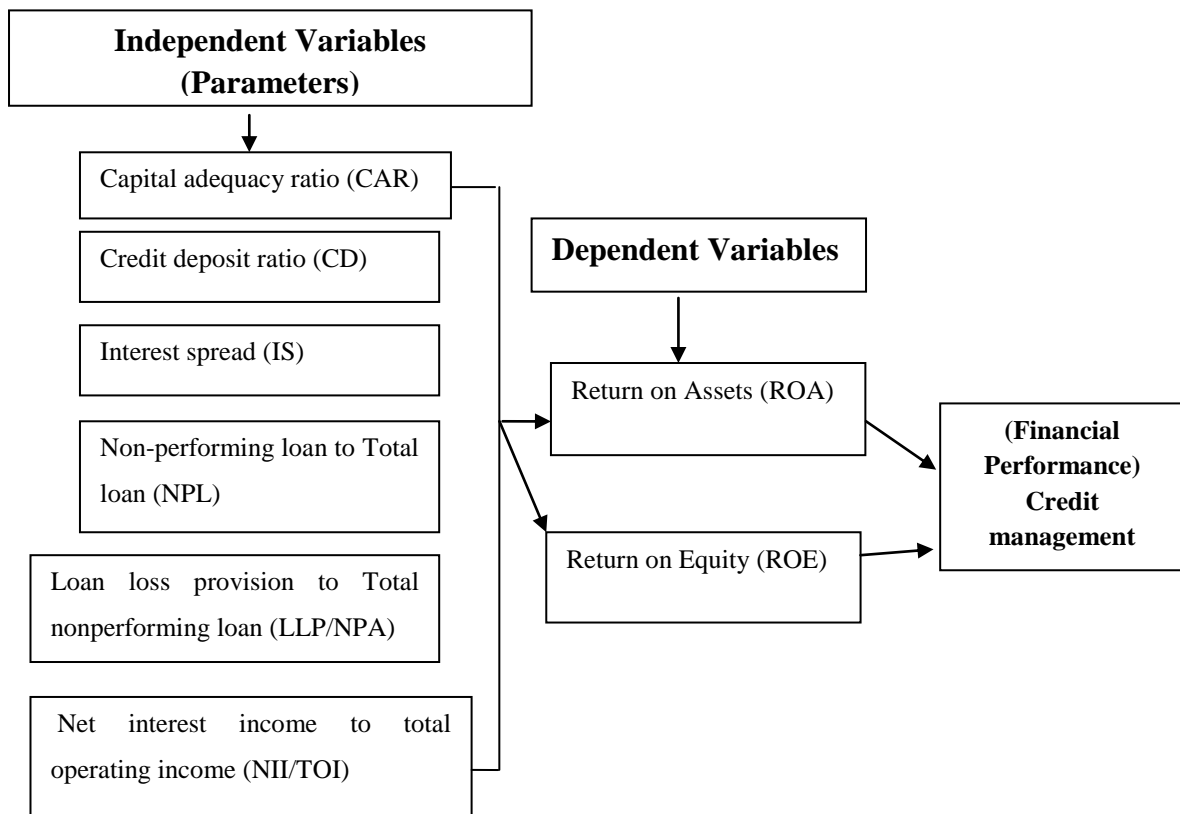


Figure 2.1 Proposed Conceptual Frameworks

Figure 2.1 presented above summarize the theoretical framework of this research. The framework exhibits a relationship where six independent variables, namely, capital adequacy ratio, credit deposit ratio, interest spread, non-performing loan to total loan, loan loss provision to on the total nonperforming loan and net interest income to total income have an impact on the bank performance measured by return on assets and return on equity, which ultimately reflects the credit management of the development bank. In addition the research will not take consideration of other macroeconomic variables that have an impact on the credit management and hence affect the bank's performance. Due to the academic nature of this research and constraints on the time, it will only study the above mentioned variables relationship and will disregard the effects of various macroeconomic variables that are outside the scope of this research project.

2.3.2 Specification of Variables

Capital Adequacy Ratio (CAR): It is a measure of the amount of a bank's capital in relation to the amount of its credit risk exposures. This is the index regulatory authorities use to determine the maximum amount of fund (i.e. equity, retained earnings, and other reserves) that a bank must have to be able to take certain levels of risk endangering deposit funds, or its existence.

$$\text{CAR} = (\text{Tier one capital} + \text{Tier two capital}) / \text{Total risk weighted assets} .$$

Credit to Deposit Ratio (CD): The credit deposit ratio reflects how much a bank lends compared to the deposits it has collected. Loans, being less liquid assets, are financed primarily by deposits, the main source of funds. A high ratio indicates less liquidity, as the bank has lent out most of its stable funding. This often implies that new loans require additional funding through significant liabilities. Conversely, a low ratio suggests greater liquidity, meaning the bank can issue new loans using its stable deposit base. The composition of loans within the loan to deposit ratio requires detailed analysis. Factors such as loan maturity and standardization of loan agreements significantly influence the liquidity of the loan portfolio. Therefore, the credit deposit ratio serves as a crucial indicator of credit management levels within financial institutions.

$$\text{CD} = \text{Total Loans and Advances} / \text{Total deposits}$$

Net interest income to total operating income (NI/TOI): The difference between the income that is generated from a bank's assets and the expenses associated with paying out its liabilities. A typical bank's assets consist of all forms of personal and commercial loans, mortgages and securities. The liabilities are, of course, the customer deposits. The excess revenue that is generated from the spread between interest earned on assets and interest paid out on deposits is the net interest income. Banks with higher non-performing loan have lower net interest income that reflects poor credit management of the financial system. Operating income is an accounting figure that measures the amount of profit realized from a business's operations, after deducting operating expenses such as cost of goods sold (COGS), wages and depreciation.

$NII/TOI = \text{Net interest income} / \text{Total operating income}$

Interest spread (IS): It refers to the weighted average interest rate spread a bank and other financial institution.

$IS = \text{Weighted average interest rate on assets} - \text{Weighted average interest rate on liabilities}$

Non-Performing Loan (NPL): A non-performing loan is a loan that is in default or close to being in default. Many loans become non-performing loan after being default for 90 days or more. In other words, a loan is nonperforming when payments of interest and principal are due by 90 days or more. Bank nonperforming loans to total loans are the value of nonperforming loans divided by total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions).

$NPL = \text{Total Non-Performing Loans} / \text{Total Loans}$

Total Loan Loss Provision to Total Non-Performing Loan (LLP/NPL): A loan loss provision is an expense that is reserved for defaulted loans or credits. It is an amount set aside in the event that the loan defaults. The loan loss reserve acts as an internal insurance fund.

$LLP/NPL = \text{Total Loan Loss Provision} / \text{Total Non-Performing Loan}$

Return on Assets (ROA): It is an indicator of how profitable a company is relative to its assets. ROA gives an idea as to how efficient management is at using its assets to generate returns. It is calculated by dividing a company's annual earnings by its total assets. It is usually expressed in percentage. Sometimes, this is referred to as "Return On Investment". Return on assets is a common figure used for comparing performance of financial institutions because the majority of their assets will have a carrying value that is close to their actual market value. Return on assets is not useful for comparisons between industries because of factors of scale and peculiar capital requirements (such as reserve requirements in the insurance and banking industries). It is calculated as follows:

$ROA = \text{Net income} / \text{Total Assets}$

Return on Equity (ROE): One of the most important profitability metrics is return on equity. Return on equity shows how much profit a company earned on the total amount of shareholder equity. It is a measure of profitability of stockholder's investments. It shows net income as percentage of shareholder equity. ROE is routine analysis tool that shows the returns a firm has generated using the equity of its owners. A business that has high return on equity is more likely to be one that is capable of generating cash internally.

$ROE = \text{Net Income (Annual)} / \text{Shareholder's Equity}$

CHAPTER THREE

RESEARCH METHODOLOGY

Research methodology provides researchers with a structured approach to achieving the study's objectives. It outlines the activities, procedures, tools, and steps necessary to systematically investigate the subject matter. This chapter details the research plan, design, sample description, instrumentation, data collection procedures, validity and reliability measures, and data analysis methods employed in the study.

3.1 Research Design

Research design refers to the conceptual framework guiding the study's conduct, encompassing its plan, structure, and investigative strategy. This study utilizes both primary and secondary data to examine the impact of credit management on the performance of commercial banks. It adopts a historical research approach, employing descriptive and analytical methods to present the study's findings.

The research is characterized as qualitative, quantitative, and exploratory, aiming to explore the predictors of credit management that influence bank performance. It is applied research, utilizing existing theories and models without generating new ones. Data administration involves gathering and analyzing data from primary and secondary sources, with tools from SPSS 16.0 software used to examine relationships between dependent and multiple independent variables.

3.2 Description of the Sample

Population and Sample

Population consists of everything or everyone being studied in an inference procedure. Currently, there are 17 development banks operating in the country. The population of this research is each and every Class “B” development banks operating in Nepal.

Out of 17 banks, the researcher has taken, 14 private development banks as sample based on the age whose latest five years are available. Remaining banks are not considered due to the process of merger in banks.

3.3 Nature and Sources of Data

3.3.1 Primary Data

For primary data analysis, a structured questionnaire has been prepared with the proper discussion and supervision of the guide and supervision, 100 questionnaires was provided to the credit officers and relationship manager relating to the credit management and its impact on bank's performance.

3.3.2 Secondary data

The major objective of the study is to assess the impact of credit management on development bank's performance. In order to realize this, this study intends to employ time series data covering from fiscal year 2018/19 to 2022/23. The empirical analysis will be carried out by using annual data. The study is carried out by using five year annual data of 14 development banks. Various sources will be explored for the collection of data and information of the variables. Some of the sources which have contributed to the collection of data are as follows:

- Website of different Private development Banks
- Periodical magazines, newspapers and websites
- Research Report, Course books and materials

3.4 Instrumentation of Data

The study will focus on both qualitative and quantitative aspects of the research. In order to collect primary data, structured questionnaire will be used while as for secondary data, the annual reports of the sample commercial banks and reports published by NRB will be referred. For primary data analysis, questionnaires will be distributed to respondents from various banks. Single choice response scale, Likert scale and Ranking scale questions will be used in the questionnaire in order to meet the objectives of the study.

3.5 Validity and Reliability of Data

In case of primary data, validity of the data will be ensured by designing the questionnaire with the help of expert opinions from the guide and supervisors. Further to maintain the quality of data and minimize the errors, cross check will be done and the respondents will be given a clear instruction to fill the questionnaire in a correct manner. To check the reliability of the data collected Cronbach's alpha test will be performed. If the value of Cronbach's alpha is greater than 0.6 then the data is reliable.

For secondary data, reliability will be high because the data will be collected from various published sources. For validity of data, autocorrelation test will be carried out which will show that the model is statistically fit. Similarly, VIF test will be performed on the explanatory variables to test whether the data can be used in regression model. If the VIF value is less than 10, it will be acceptable for multivariate regression model. Also DW test will show that there will be no problem of autocorrelation in the proposed model. Thus, the data considered for the model will be considered valid.

3.6 Data Analysis and Methods

Various Statistical and Analytical software's like SPSS and Microsoft Excel will be used for the analysis of primary and secondary data. The secondary data used in this study is obtained from the statements of the commercial banks, databases of NRB, journals and websites of the banks. Frequency analysis, Ranking of data and one sample t-test will be carried out on primary data. Trend analysis, correlation statistics, multivariate regression statistics and Multicollinearity will be used for the descriptive and inferential analysis of secondary data.

Descriptive Statistics are used to present quantitative descriptions in a manageable form. It helps to simplify large amounts of data in a sensible way. Each descriptive statistic reduces lots of data into a simpler summary and interpretation. It is the numerical, graphical and tabular technique for organizing, analyzing and presenting data. Under descriptive statistics, percentage, mean, standard deviation, minimum and maximum results are computed and analyzed.

Inferential statistics makes inferences about populations using data drawn from the population. Instead of using the entire population to gather the data, it collects the samples from the population and makes inferences about the entire population using the sample. Probability distributions, hypothesis testing, correlation testing and regression analysis fall under the category of inferential statistics which is used in the study.

3.7 Model Specification

In this study, we will use a regression model to investigate relationship between the variable. Usually the investigator seeks to ascertain the casual effect of one variable upon

another. It is a flexible method of data analysis that may be appropriate whenever a quantitative variable (the dependent or criterion variable) is to be examined in relationship to any other multiple factors (expressed as independent or predictor variables).

The underlying model is:

$$Y1 = \beta_0 + \beta_1X1 + \beta_2X2 + \beta_3X3 + \beta_4X4 + \beta_5X5 + \beta_6X6 + e$$

$$Y2 = \beta_0 + \beta_1X1 + \beta_2X2 + \beta_3X3 + \beta_4X4 + \beta_5X5 + \beta_6X6 + e$$

Where,

Y1 = Return on Assets (ROA)

Y2 = Return on Equity (ROE)

β_0 = Intercept

β_i = Coefficient of the i^{th} independent variable

e = Random error

X1 = Interest spread (IS)

X2 = Non-performing loan to Total loan (NPL)

X3 = Credit deposit ratio (CD)

X4 = Total operating income divided by net interest income (NII/TOI)

X5 = Provision for loan loss on the total amount of nonperforming loans (LLP/NP)

X6 = Capital adequacy ratio (CAR)

3.8 Expected Outcome of the Study

The expected outcome of the study is having positive and significant impact of capital adequacy ratio, credit deposit ratio, interest spread and net interest income to total income on the commercial bank's financial performance which is measured by Return on Assets (ROA) and Return on Equity (ROE). It is also expected that Loan Loss Provision to Total Non-Performing Loan will have positive and insignificant impact on the financial performance of commercial banks. And lastly, it is expected that Non-Performing Loan to Total Loan will have negative and significant impact over the financial performance of commercial bank.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

This chapter includes the presentation and analysis of the primary and secondary data for the achievement of the objectives of the research. The study used the stepwise linear regression model to estimate the relationship between the dependent variables and independent variables over the period of five years from 2018/19 to 2022/23. The results from the statistical test of significance has presented and analyzed in this chapter. Mainly, this Chapter has been divided into two sections. The first section covers descriptive analysis of the primary data and the second section covers the inferential analysis of the secondary data.

4.1 Secondary Data Analysis

Secondary data analysis is divided into three sections. The first section provides the general descriptive analysis of the variables under consideration. The next section provides correlation analysis of dependent and independent variables followed by the test of multicollinearity. Finally, the third section lays down the results of multiple regression analysis.

4.1.1 Descriptive statistics

This section presents the results and analysis of the descriptive statistics of the variables under investigation. The table 4.1 presents the results of the descriptive statistics for the data on ROA, ROE, NPL, IS, NII/TOI, CAR, LLP/NPL and CD. It comprises of the minimum, maximum, mean and standard deviation.

Table 4.1:

Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
ROE (%)	4.03	32.78	18.66	6.89
ROA (%)	0.52	4.01	1.77	0.66
IS	2.70	7.09	4.26	0.79
NPL	0.02	4.94	1.54	1.13
CD	48.92	93.58	75.81	9.93
NII/TOI	60.88	88.53	74.16	6.08
LLP/NPL	87.24	6948.57	441.27	1132.53
CAR	10.81	20.74	12.53	1.91

From the descriptive analysis of the dependent variables ROA and ROE and independent variables- NPL, CD, IS, CAR, NII/TOI, LLP/NPL, we can observe that Return on Equity (ROE) as Profitability Ratio, has an average value 18.66%, with the ratio going as high as 32.78% and as low as 4.03%. The standard deviation as evident in the descriptive analysis is 6.89%. Similarly, the average value for return on assets (ROA) is 1.77% with highest value 4.01% and lowest value 0.52%. The standard deviation is 0.66%.

Likewise, Interest Spread (IS) lies between 2.70% to 7.09% with an average of 4.26% and Standard deviation is 0.79%. The mean value for Non-Performing Loan (NPL) within study period is 1.54%, where it has reached highest of 4.94% and lowest of 0.02% and, the Standard deviation is 1.13%. Similarly, the percentage of Credit Default (CD) lies between 48.92% to 93.58%, with an average of 75.81% and its Standard deviation is 9.93%, likewise, between the period of 2015/16 to 2019/20, Net Interest income to Total Operating Income (NII/TOI) has fluctuated from 60.88% to 88.53%. An average of 74.16% has been observed and standard deviation is 6.08. In the same way, the percentage of Loan Loss Provision to Non-Performing Loans lies between 87.24% to 6948.57%, with a mean value of 441.27% and standard deviation of 1132.53%, Capital Adequacy Ratio has fluctuated from 10.81% to 20.74%, which have an average value 12.53% and 1.91% standard deviation.

4.1.2 Correlation test results and analysis

The purpose of a correlation analysis is to determine whether there is a relationship between dependent variable and independent variable on bilateral basis. Here, the correlation analysis has been done where past data of the variables under study are subjected to an initial assessment in order to find the connection between the variables and their extent of connection. The effect of one variable on another can be diagnosed with high certainty if we can establish that the variables under consideration are correlated

Table 4.2

Correlation matrix

	ROA	ROE
IS	r=0.571** P=0.000	r=0.550** P=0.000
NPL	r=-0.085 P=0.482	r=-0.165 P=0.172
CD	r=-0.393** P=0.001	r=-0.435** P=0.000
NII/TOI	r=-0.373** P=0.001	r=-0.246* P=0.04
LLP/NPL	r=-0.068 P=0.576	r=-0.027 P=0.826
CAR	r=-0.260* P=0.03	r=-0.401** P=0.001

Note: **Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Table 4.2 presents the correlations between the dependent variables, i.e. Return on Assets (ROA) and Return on Equity (ROE) and six independent variables, i.e. Interest Spread (IS), Non-Performing Loan (NPL), Credit to Deposit Ratio (CD), Total Operating Income / Net Interest Income (NII/TOI), Provision for Loan Losses on Non-Performing Loans (LLP/NPL), and Capital Adequacy Ratio (CAR) in order to quantify the direction and magnitude of the relationship between each pairs of the variables. We know the closer the correlation coefficient is to 1; the stronger the variables are related. A positive sign signifies a direct relationship between the variables under study and negative sign signifies an inverse relationship among the variables under consideration.

From the Table 4.2, we can see that, there is positive relationship between return on assets (ROA) and interest spread (IS) with coefficient of correlation of 0.571 and statistically significant at 0.01 significance level. Magnitudes of the relationship are less than 1 and close to 0.5, this signifies that explanatory variable, i.e. interest spread moderately explain the changes in Return on Assets. (The correlation measures the linear relationships between two variables but not the explanatory power of the variables) While, there is significant negative correlations of Return on Assets (ROA) with Loan Loss Provision to

Non-Performing Loan (LLP/NPL) and Capital Adequacy Ratio (CAR) with coefficient of correlation of -0.068 and -0.260 respectively.

Similarly, there is negative relationship between Return on Equity (ROE) and Non-Performing Loan (NPL) and Credit to Deposit Ratio (CD) with coefficient of correlation of -0.165 and -0.435 respectively. There is negative relationship between Return on Equity (ROE) and Net Interest Income to Total Operating Income (NII/TOI) and Capital Adequacy Ratio (CAR), with coefficient of correlation of -0.246 and -0.401 respectively. Likewise, there is negative but not statistically significant correlation between Return on Assets (ROA) and Non-Performing Loan (NPL) with coefficient of correlation of -0.085. From the above results, it shows that the lower the Non-Performing Assets or Loan, the higher the ROA. Positive correlation exists between Return on Equity (ROE) and Interest Spread at 1% significant level, with coefficient of correlation of 0.571. Since, magnitude of relationship is close to 0.5.

4.1.3 Multivariate regression analysis

This section of data analysis presents the main results of regression analysis using yearly data for the period from 2015/16 to 2020/21. The impact of credit risk on profitability measured by ROA and ROE are estimated using six credit risk management variables by employing a multiple regression model.

The objective is to make assessment of how independent variables explain or impact on the movement of profitability. In order to draw a valid conclusion regarding the statistical significance of the findings, the model is tested for fitness by conducting F-statics in order to achieve the stated objective of the study, stepwise linear regression at 95% confidence level and a significant level of 5% is run.

4.1.3.1 Regression analysis with Return on Assets (ROA) as dependent variable and six independent variables

Table 4.3

Coefficient of multiple regressions between ROA and Independent Variables

	B	Std. Error	Beta	T	Sig.	VIF
(Constant)	2.841	0.837		3.393	0.001	
IS	0.461	0.079	0.553	5.815	0.000	1.099
NPL	-0.105	0.064	-0.180	-1.653	0.103	1.437
CD	-0.005	0.008	-0.071	-0.577	0.566	1.833
NII/TOI	-0.029	0.013	-0.267	-2.157	0.035	1.867
LLP/NPL	-2.743E-5	0.000	-0.047	-0.460	0.647	1.266
CAR	-0.028	0.037	-0.081	-0.754	0.454	1.398
R	0.695					
R Square	0.482					
Adjusted R square	0.433					
Standard error of the estimate	0.49805					
F value	9.788				0.00	

Table 4.3 contains the beta coefficients of the six independent variables. The beta coefficients are predictive powers of the individual variables. The entire beta coefficient that is negative implies an inverse relationship between the dependent variable and the independent variables and vice-versa. Thus, a unit change in explanatory variables leads to β_i change in dependent variable. Also, Variance Influence Factor (VIF) is less than 5, i.e. there is low multicollinearity between ROA and other independent variables. By using the result obtained from the regression analysis, the regression model becomes

$$\text{ROA} = 2.841^{***} + 0.461\text{IS}^{***} - 0.105\text{NPL} - 0.005\text{CD} - 0.029\text{NII/TOI}^{**} - 2.743\text{E-5LLP/NPL} - 0.028\text{CAR} + 0.49805$$

Interest Spread (IS) and Return on Assets (ROA)

The expected impact of IS and ROA was positive association and significant and the result of the analysis also showed the same expected result. At 5% significance level, the coefficient value of the variable was 0.461 and is significant, since P-value is 0.00 which

is less than 0.05. One percent increase in the ROA by 0.461%. Thus, we reject null hypothesis i.e. (H_{05}), i.e. there is significant relationship between IS and ROA of the commercial bank. The coefficient of IS entered the regression model with the positive sign and is statically significant at 5% significance level. An increase in interest spread results and increase in net interest income, and thus ultimately increase the net income of a commercial banks of Nepal with higher interest spread tend to exhibit lower credit risk and hence, results in higher ROA.

Non-performing Loan (NPL) and Return on Assets (ROA)

Non-Performing Loan (NPL) has negative and insignificant association with the ROA. At 5% significance level, the coefficient value of the variable is -0.105 and is insignificant. In the total loan portfolio of the bank, 1% increases in NPL decreases the ROA of the bank by 0.105%. Thus, we accept null hypothesis (H_{01}) i.e. there is no significant relationship between NPL and ROA of Nepalese commercial banks. An increase in NPL results an increase in provision for loan losses, this implies a higher cost of bad debt write-offs. Thus, increase in provision reduces the profitability of the bank. Hence, result suggests that commercial bank of Nepal with higher credit risk tend to exhibit lower profitability level.

Credit to Deposit ratio (CD) and Return on Assets (ROA)

The impact of CD ratio and ROA was negative association and is insignificant. Since, there is insignificant association with the coefficient value of the variable -0.005, thus we accept null hypothesis i.e. (H_{04}). Hence, there is negative and insignificant association between CD and ROA, the financial performance of the bank. The results showed that the credit portfolio that the bank has is not of good quality, so, increase in CD ratio decrease ROA of a bank. This indicates the poor credit management status of a Nepalese commercial bank.

Net Interest Income to Total Operating Income (NII/TOI) and Return on Assets (ROA)

The expected impact of NII/TOI on ROA was positive and significant, but the result of the analysis showed that there is negative and significant association between NII/TOI and ROA. Since, there is significant association with the coefficient value of the variable was -0.029, so, we reject null hypothesis (H_{06}) i.e. there is significant relationship

between NII/TOI and ROA of Nepalese development banks. The result indicates that the bank, so, though, increases in NII/TOI results a decrease in ROA.

Loan Loss Provision to Non-Performing Loan (LLP/NPL) and Return on Assets (ROA)

Loan Loss Provision to Non-Performing Loan describes the proportion of provision to Non-Performing Loss of the bank. Increase in Loan loss provision decreases the net profit of the bank. The ratio measures up to what extent of risk inherent in non-performing assets is covered by the total loan provision. Higher ratio signifies that the banks are safeguard against future contingencies that may create due to non-performing assets. Loan Loss Provision to Non-Performing Loan has no and insignificant association with the financial performance of the bank, i.e. ROA. At 5% significance level, the coefficient value of the variables was $-2.743E^{-5}$ and is insignificant. Thus, we accept null hypothesis (H_{02}).

Capital Adequacy Ratio (CAR) and Return on Assets (ROA)

It was determined that CAR has a negative and negligible effect on ROA.. The coefficient value of the variable is -0.028 and at 5% significance level is insignificant. So, we accept null hypothesis (H_{03}), i.e. there is no significant relationship between CAR and ROA. The output of the analysis contradicts with the output of Hamza (2017) where CAR and ROA has positive and significant relationship. The output of the analysis is opposite and the result suggests that development banks of Nepal with higher CAR means lower credit risk which tends to exhibit lower profitability levels, i.e. ROA.

The result indicates that 43% of the variation in the ROA of Nepalese development banks is explained by the six explanatory variables. The F-test reveals that goodness of fit of the model. Here the F value 9.788 with a significance off less than 0.05 i.e. 0.000. This reveals that the model is a good fit.

4.1.2.2 Regression analysis with Return on Equity (ROE) as dependent and six Independent Variables

Table 4.4

Coefficient of multiple regressions between ROE and Independent Variable

	B	Std. Error	Beta	T	Sig.	VIF
(Constant)	26.319	8.117		3.242	0.002	
IS	4.154	0.769	0.477	5.404	0.000	1.099
NPL	-1.770	0.616	-0.290	-2.875	0.006	1.437
CD	-0.176	0.079	-0.254	-2.223	0.030	1.833
NII/TOI	0.112	0.131	0.098	0.854	0.396	1.867
LLP/NPL	0.000	0.001	-0.048	-0.509	0.612	1.266
CAR	-1.390	0.360	-0.385	-3.866	0.000	1.398
R	0.743					
R-square	0.552					
R square adjusted	0.510					
standard error of the estimate	4.82807					
F value	12.960				0.000	

Table 4.4 shows data about regression coefficient (B) and significant value of explanatory variables at 95% level of confidence. Data observe from table signifies a unit increased in IS and NII/TOI tend to increase ROE by 4.154 and 0.112 respectively. Similarly, a unit increased in CAR, NPL and CD tends to decrease ROE by 1.390, 1.770 and 0.176 respectively. And as per the output in above table, there is no effect in ROE due to increase and decrease in LLP/NPL. From the significant value of explanatory variables, we conclude that IS, NPL, CD and CAR have significant relationship with ROE.

The regression model derived from the above table is thus stated as:

$$\text{ROE} = 26.319^{***} + 4.154\text{IS}^{***} - 1.770\text{NPL}^{**} - 0.176\text{CD}^{**} + 0.112\text{NII/TOI} + 0.000\text{LLP/NPL} - 1.390\text{CAR}^{**} + 4.82807$$

Interest Spread (IS) and Return on Equity (ROE)

The expected impact of IS and ROE was positive association and significant and the result of the analysis also showed the same expected result. At 5% significance level, the coefficient value of the variable was 4.154 and is significant, since P-value is 0.00 which

is less than 0.05. One percentage increase in interest spread increases the ROE by 4.154%. Thus, we reject null hypothesis i.e. (H_{11}) i.e. there is significant relationship between IS and ROE of the commercial bank. The coefficient of IS entered the regression model with the positive sign and is statistically significant at 5% significance level. An increase in interest spread results an increase in net interest income, and thus ultimately increase the net income of a commercial bank and hence, results a higher ROE. The result suggests that development banks of Nepal with higher interest spread tend to exhibit lower credit risk and hence, results in the higher ROE.

Non-Performing Loan (NPL) and Return on Equity (ROE)

Non-performing Loan (NPL) has negative and significant association with the ROE. At 5% significance level, the coefficient value of the variable is -1.770 and is significant. In the total loan portfolio of the bank, 1% increases in NPL decreases the ROE of the bank by 1.770%. Thus, we reject null hypothesis (H_{07}). Hence, there is significant relationship between NPL and ROA of Nepalese development banks. As increase in NPL results an increase in provision for loan losses, this implies a higher cost of bad debt write-offs. Thus, increase in provision reduces the profitability of the bank. Hence, result suggests that development bank of Nepal with higher credit risk tend to exhibit lower profitability level measured by ROE.

Credit to Deposit ratio (CD) and Return on Equity (ROE)

The expected impact of CD ratio and ROE was positive and significant, but the result of the analysis showed that there is negative association and is significant. Since, there is significant association with the coefficient value of the variable of -0.176, thus we reject null hypothesis i.e. (H_{10}). Hence, there is negative and significant association between CD decreases net profit of a bank and hence lowers ROE. This indicates the poor credit management status of a Nepalese development Bank.

Net Interest Income to Total Operating Income (NII/TOI) and Return on Equity (ROE)

The expected impact of NII/TOI on ROE was positive and significant, but the result of the analysis showed that there is positive and insignificant association between NII/TOI and ROE. Since, there is insignificant association with the coefficient value of the variable was 0.112 so, we accept null hypothesis (H_{12}) i.e. there is no significant relationship between NII/TOI and ROE of Nepalese development banks. Further tests are

carried out to determine how well the above model fits the data gathered from the past period. An overall fitness is checked by using the F-statistics. The purpose of this test is to check the statistical significance of the regression equation above. At 95% confidence level, we can conclude that the model is adequate in explaining the interaction between the explained and explanatory variables.

Loan Loss Provision to Non-performing Loan (LLP/NPL) and Return on Equity (ROE)

Loan Loss Provision to Non-Performing Loan describes the proportion of provision to Non-performing Loan of the bank. This ratio measures up to what extent of risk inherent in Non-performing Loan is covered by the total loan provision. Higher ratio signifies that the banks are safeguard against future contingencies that may create due to Non-Performing Loan. So, higher the ratio better is the financial strength of the bank. Loan Loss Provision to Non-Performing Loan has no relationship and insignificant association with the financial performance of the bank, i.e. ROE at 5% significance level, the coefficient value of the variable was 0.000, i.e. 1% increase in LLP/NPL does not changes ROE % and is insignificant. Thus, accept null hypothesis (H_{08}).

Capital Adequacy Ratio (CAR) and Return on Equity (ROE)

The expected impact of CAR and ROE were positive and significant association with the financial performance of the bank. The coefficient value of the variable is -1.390, and is significant. So, we reject null hypothesis (H_{09}), i.e. there is significant relationship between CAR and ROE. The negative relationship between CAR and ROE implies that, as more capital is set aside as a buffer for banks safely; it affects the performance of the bank measured by ROE. The implication of the study, lies in the fact that the negative relationship between capital adequacy and performance emphasize the fact that various efforts by the regulators to review often times the capital base of the banking sector is not borne out of the aim to improve the profitability of the banks, rather to maintain stability, protection against depositors and confidence in the banking industry.

Here, the value of adjusted R^2 is 0.510, this means that 51% variation in ROE can be explained by explanatory variables (IS, NII/TOI, CAR, LLP/NPL, NPL and CD), P-value from F-test on multiple regressions suggests that there is significant between ROE and all explanatory variables as P-value is 0.000 which is less than 0.05.

4.2 Primary Data Analysis

Primary data analysis provides descriptive analysis of data collected from respondent. This section provides different qualitative aspect of Credit Risk management. Data collected from structured questionnaire presented in table and graph.

4.2.1 Risk having major impact on commercial bank's performance

Bank faces different kinds of risk due to various factors and those risk faced by banks have significant impact on their financial performance. Usually, risks faced by bank are categorized under five main categories which are credit, liquidity, operational, interest rate and foreign exchange risk.

Table 4.5

Risk and its impact on commercial bank's performance

Risk	Frequency	Percent (%)
Credit Risk	80	80
Liquidity Risk	11	11
Operational Risk	9	9
Total	100	100

Table 4.5 shows response of respondents based on their opinion and experience of which risk has great impact on financial performance of bank. Out of 100 respondents, 80% of the respondents said that credit risk has a major impact on development banks performance, 11% of respondents said that liquidity risk and 9% of respondents said that operational risk have a major impact on development bank's performance. From the above result, it shows that credit risk is a major risk of a bank and that should be managed effectively and efficiently.

4.2.2 Problems ever faced through Credit Risk in a bank

Credit risk causes several problems in a bank like erosion of capital, decrease in profitability, impact on reputation of the banks, increase in non-performing loans and so on.

Table 4.6

Problems ever faced through Credit Risk

Credit risk ever faced in your bank	Percent (%)
Yes	86
No	14
Total	100

Table 4.6 shows the response of respondent regarding their experience on problems caused by credit risk in their bank. Out of 100 respondents, 86% of respondent have faced problem of credit risk. Above results reflect the fact that, most of the banks face credit risk and the problems associated with it.

4.2.3 Impact from Credit Risk

Credit risk has impact on different aspects and areas of the bank. Six options were provided as the impacts and the respondents were asked to agree or not on each impact.

Table 4.7

Frequency calculation of impact from Credit Risk

Impact from credit risk	Yes (%)	No (%)
Impact on profitability	82	18
Capital Erosion	15	85
Liquidity Problem	38	63
Reputation of the bank	36	64
Lose competitiveness in the marketplace	24	76
Increase in non-performing assets	76	24

Table 4.7 shows that 82% of the respondents said that credit risk negatively impacts on profitability, 15% reported that credit risk erodes capital, 38% reported that credit risk rings liquidity problems in a bank, 36% credit risk has a negative impact on the reputation of a bank, 24% of the respondents reported that credit risk lose competitiveness of the bank in the market place and 76% reported that credit risk increases non-performing assets and thereby leading to lower profitability. It is also evident from the above result that majority of the banking professionals are found to disagree on capital erosion, liquidity problem, loss reputation and competitiveness of banks due to credit risks. Thus it

can be concluded that credit risk has major impact on profitability and increase in non-performing assets.

4.2.4 Determinants of credit risk

There are various factors affecting credit risk in a bank. Ten options were provided as the factors affecting credit risk in a bank i.e. bank liquidity, non-performing loans, loan loss provision, regulation of capital, loan concentration, loan growth, interest spread, aggregate economic activity, market interest rate and ownership structure. In this, the respondents were free to choose many options.

Table 4.8

Frequency calculation on determinants of Credit Risk

Determinants of credit risk	Yes (%)	No (%)
Bank Liquidity	52	48
Non-Performing Loans	68	32
Loan Loss Provision	55	45
Regulation of Capital	67	33
Loan Concentration	37	63
Loan Growth	37	63
Interest Spread	41	59
Aggregate economic activity	72	28
Market interest rate	45	55
Ownership structure	21	79

Table 4.8 shows the response of respondents regarding the factors affecting Credit risk in a bank based on their experience. Out of 100 respondents, 72% of them considered aggregate economic activity as the major determinants of Credit risk. Secondly, 68% of the respondent considered Non-Performing Loans as major factors affecting Credit risk in a bank. Thirdly, 67% of the respondents considered Regulation of capital as a major determinant of a Credit risk in a bank. Fourthly, 55% of respondents considered Loan loss provision as the major factors affecting Credit risk in a bank. From the above results, we can conclude that Aggregate economic activity, Non-performing loans, Regulation of capital and Loan loss provision are the major determinants of Credit risk.

4.2.5 Areas important in credit assessment of credit proposal

There are various areas that are important and should be considered while doing assessment of credit proposal. Six areas were provided as the option i.e. business prospect, character of the borrower, ability to pay, financial condition of the borrower, collateral and management capability, where respondents were asked to rate these areas on the scale of 1-6, 1 being the most important and 6 being the least important.

Table 4.9

Mean analysis of areas important in credit assessment

Areas important in credit assessment	Mean	Rank
Business Prospect	1.92	1 st
Character of the borrower	3.11	2 nd
Ability to pay	3.18	3 rd
Financial condition of the borrower	3.60	4 th
Management capability	4.20	5 th
Collateral	4.99	6 th

Table 4.9 shows the mean scores of the areas considered important in credit assessment. From experience of respondent what we can say that business prospect is the most important areas in credit assessment of the credit proposal with a mean of 1.92. In the same way, collateral is ranked to be the least important areas in credit assessment of the credit proposal, having a mean of 4.99. Based on average mean value, character of the borrower, ability to pay, financial condition of the borrower and management capability are ranked as 2nd, 3rd, 4th, and 5th important areas in credit assessment of the credit proposal.

4.2.6 Extent of consideration of 5C's in Loan appraisal and Subsequent approval

Analysis of credit worthiness of customer is one of the contributing factor to credit risk in bank. Usually, banks consider five C's to analyze the creditworthiness of customer in the process of loan disbursement. Respondents were asked to indicate the extent to which each of the following 5C's is considered important in loan appraisal and subsequent approval in the scale of 1-5, i.e. Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).

Table 4.10

Consideration of 5C's in loan appraisal and subsequent approval

Factors (the five C's)	Min	Max	Mean	Standard deviation	At test value=3, t-value	P-value	Result
Borrower's Capacity	3	5	4.22	0.690	17.676	0	Significant
Borrower's Condition	3	5	3.98	0.724	13.527	0	Significant
Borrower's Credit History	2	5	4.21	0.832	14.537	0	Significant
Borrower's Collateral	1	5	3.87	1.002	8.686	0	Significant
Borrower's Character	2	5	4.24	0.818	15.159	0	Significant
Cronbach's Alpha=0.618							

Table 4.10 shows that the extent of consideration of 5C's in loan appraisal and subsequent approval. When the respondents were asked, whether borrower's capacity and condition is considered important in loan appraisal and subsequent approval, their answer came from strongly agree to neutral. Mean value is $4.22 < 5$ and $3.98 < 5$ respectively. So, most of the respondent agreed that borrower's capacity and condition is significant. Similarly, when borrowers were asked, whether borrower's credit history and character is considered important in loan appraisal and subsequent approval, their answer came from strongly agree to disagree. Mean value is $4.21 < 5$ and $4.24 < 5$ respectively. So, most of the respondent agreed that borrower's credit history and character is considered important in loan appraisal and subsequent approval. Since, their P-value is less than 0.05, so, the factor, i.e. borrower's credit history and character is significant. Likewise, when borrowers were asked, whether borrower's collateral is considered important in loan appraisal and subsequent approval, their answer came from strongly agree to strongly disagree that borrower's collateral is considered important in loan appraisal and subsequent approval. Since, its P-value is less than 0.05, so, the factor i.e. borrower's collateral is significant.

Since, Cronbach's alpha is greater than 0.60 i.e 0.618, so, response is reliable. From the above results, we can draw conclusion that 5C's i.e. borrower's capacity, condition, credit

history, collateral and character is important in loan appraisal and subsequent approval. Among 5C's as per the response provided by the respondents, most important factor and least important factors can be ranked as following:

Table 4.11

Mean analysis of 5C's in loan appraisal and subsequent approval

Factors	Mean	Rank
Borrower's Character	4.24	1 st
Borrower's Capacity	4.22	2 nd
Borrower's Credit History	4.21	3 rd
Borrower's Condition	3.98	4 th
Borrower's Collateral	3.87	5 th

As per the Table 4.11, Borrowers Character is considered to be a strongly agreed factor that is important for loan appraisal and subsequent approval. However Borrowers Collateral is considered to be least important factor for loan appraisal and subsequent approval.

4.2.7. Factors posing challenge to the effectiveness of credit risk management

Respondents were asked to rate different statements concerning with a factor that possess challenges to the effectiveness of credit risk management on the scale of 1-5, i.e. strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5).

Table 4.12

Factors posing challenge to the effectiveness of credit risk management

Factors	Min	Max	Mean	Standard deviation	At test value=3, t-value	P-value	Result
Inadequate Capital Adequacy	3	5	4.14	0.697	16.365	0	Significant
Low quality of assets	3	5	3.94	0.633	14.855	0	Significant
Insufficient Liquidity	3	5	3.76	0.668	11.369	0	Significant
Ignoring Market	3	5	4.06	0.649	16.344	0	Significant

risk							
Lack of credit diversification	2	5	3.99	0.732	13.532	0	Significant
Weak economic growth	3	5	3.95	0.557	17.046	0	Significant
Extra provision of doubtful credit debt	2	5	3.67	0.965	6.946	0	Significant
Inadequate training of credit officers	3	5	4.03	0.481	21.411	0	Significant
Absence of serious financial analysis of customer	3	5	4.09	0.698	15.623	0	Significant
Loan growth	2	5	3.63	0.677	9.312	0	Significant
Cronbach's Alpha=0.715							

In the Table 4.12, the response of the respondents regarding the statement “Are inadequate capital adequacy, low quality of assets, insufficient liquidity, ignoring market risk, weak economic growth, inadequate training of credit officers and lack of proper financial analysis of customer is a threat to effectiveness of credit risk management, their response came from strongly agree to neutral Mean values are 4.14, 3.94, 3.76, 4.06, 3.95, 4.03 and 4.09 respectively which is less than 5 so most of the respondent agreed that inadequate capital adequacy, low quality of assets, insufficient liquidity, ignoring market risk, weak economic growth, inadequate training of credit officers and lack of proper financial analysis of customer are challenges to the effectiveness of credit risk management. Since their P value is less than 0.05, so these factors are significant to the challenges to the effectiveness of the credit risk management.

Similarly, when respondents were asked “Are lack of credit diversification, extra provision of doubtful debt and loan increment a threat to the effectiveness of credit risk management, their response came from strongly agree to disagree. Mean values are 3.99, 3.67 and 3.63 respectively which is less than 5 and close to 4. So, most of the respondent agreed that lack of credit diversification, extra provision of credit debt and loan growths are challenge to the effectiveness of credit risk management. Since, their P value is less than 0.05. So, these factors are significant to the challenges to the effectiveness of credit risk management.

Since, cronbach's alpha is greater than 0.60 i.e 0.715, so data is acceptable.

From the above result, it can be concluded that all the factors, pose challenges to the effectiveness of credit risk management. As per the response provided by the respondents, most important factor and least important factors can be ranked as following:

Table 4.13

Mean analysis of factors posing challenge to the effectiveness of credit risk management

Factors	Mean	Rank
Inadequate capital adequacy	4.14	1 st
Absence of serious analysis of customer	4.09	2 nd
Ignoring a market risk	4.06	3 rd
Inadequate training of credit officers	4.03	4 th
Lack of credit diversification	3.99	5 th
Weak economic growth	3.95	6 th
Low quality of assets	3.94	7 th
Insufficient liquidity	3.76	8 th
Extra provision of credit debt	3.67	9 th
Loan growth	3.63	10 th

As per the table 4.13, inadequate capital adequacy is considered to be strongly agreed factors that possess challenge to the effectiveness of credit risk management. And loan growth is considered to be least important factor that possesses challenge to the effectiveness of credit risk management.

4.2.8 Development methods of effectiveness of credit risk management

Respondents were asked to rate different statements concerned with the evolution methods of effectiveness of credit risk management on the scale of 1-5, i.e. strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5).

Table 4.14

Development methods of effectiveness of credit risk management

Methods	Min	Max	Mean	Standard deviation	At test value=3, t-value	P-value	Result
Training of credit officers	2	5	3.86	0.876	9.813	0	Significant
Maintaining diversification in loan portfolio	2	5	3.73	0.763	9.561	0	Significant
Mitigating methods for alleviating credit default	2	5	3.86	0.667	12.894	0	Significant
Adopting Basel committee principles	2	5	3.92	0.787	11.686	0	Significant
Granting incentives for best credit officers	1	5	3.05	0.989	0.506	0.614	Insignificant
Report (Systematic) on credit risk to the Board of Directors	1	5	3.61	0.963	6.335	0	Significant
Sharing credit data with the credit bureau and other bank	1	5	3.66	0.987	6.687	0	Significant
Maintaining an appropriate credit disbursement, administration and documentation	3	5	4.21	0.518	23.348	0	Significant

process as per NRB directives							
Cronbach's Alpha=0.609							

In the Table 4.14, we can see that when respondents were asked “Are training of credit officers, maintaining diversification in loan portfolio, Reducing loan default through mitigation strategies and implementing Based committee guidelines promote the effectiveness of credit risk management, their response came from strongly agree to disagree and their mean values are 3.86, 3.73, 3.86 and 3.92 respectively, which is close to 4 and less than 5. So, most of the respondents agreed that training of credit officers, maintaining diversification in loan portfolio, reducing methods for reducing the likelihood of credit default and taking up Based committee guidelines promote the effectiveness of credit risk management. Since P-value is less than 0.05, so these development methods are significant to promoting effectiveness of credit risk management.

Similarly, when respondents were asked “Does rewarding top credit officers increase credit risk management effectiveness?, their response came from strongly agree to strongly disagree and its mean value is 3.05, which is equivalent to 3. So, most of the respondents are neutral to this statement. Since, its P-value is 0.614 which is greater than 0.05, so granting incentives for best credit officer’s development method is insignificant in promoting effectiveness of credit risk management.

Likewise, when respondents were asked, “are routine credit risk reports to the board of directors and credit information sharing with other banks and credit bureaus that enhance the efficacy of credit risk management, their response came from strongly agree to strongly disagree and their mean values are 3.61 and 3.66 respectively, which is close to 4. So, most of the respondents agree that systematic reposts to the board of directors on credit risk and credit information sharing with credit bureaus, other banks, and other institutions enhance the efficiency of credit risk management. Systematic reports on credit risk to the board of directors and the sharing of credit data with other banks and credit bureaus are warranted since their P-value is less than 0.05. development methods are significant in promoting the effectiveness of credit risk management.

Similarly, when respondents were asked, “Does maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives promote the effectiveness of credit risk management, their response came from strongly agree to neutral and its mean value is 4.21 which is less than 5, so, most of the respondents agreed that maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives promote the effectiveness of credit risk management.

Since, its P-value is less than 0.05, so maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives development method is significant in promoting the effectiveness of credit risk management.

Since, cronbach’s alpha is greater than 0.6 i.e. 0.609, so data is acceptable

From, the results obtained, most significant method and insignificant method can be ranked as following:

Table 4.15

Mean analysis of methods of effectiveness of credit risk management

Factors	Mean	Rank
Maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives	4.21	1 st
Adopting Basel committee principles	3.92	2 nd
Mitigating methods for alleviating credit default	3.86	3 rd
Training of credit officers	3.86	4 th
Maintaining diversification in loan portfolio	3.73	5 th
sharing credit data with the credit bureau and other banks	3.66	6 th
methodical credit risk reporting to the board of directors	3.61	7 th
rewarding the top credit officers with incentives	3.05	8 th

As per the Table 4.15, maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives is considered to be strongly agreed and significant development method of effectiveness of credit risk management. And granting incentives for best credit officers is considered to be most insignificant development method of effectiveness of credit risk management.

Table 4.16

Summary of the test of hypothesis

Hypothesis	Statements	Remarks
H ₀₁	There is no significant relationship between the volume of total loan occupied by Non-Performing Loans (NPL) and Return on Equity (ROA) of Nepalese Development Banks	Accept
H ₀₂	There is no significant relationship between the total loan loss provision to total non-performing loan (LLP/NPL) and Return on Assets (ROA) of Nepalese Development Banks.	Accept
H ₀₃	There is no significant relationship between the Capital Adequacy Ratio (CAR) and Return on Assets (ROA) of Nepalese Development Banks.	Accept
H ₀₄	There is no significant relationship between the Credit to Deposit Ratio (CD) and Return on Assets (ROA) of Nepalese Development Banks.	Accept
H ₀₅	There is no significant relationship between the interest spread (IS) and Return on Assets (ROA) of Nepalese Development Banks.	Reject
H ₀₆	There is no significant relationship between the net interest income to total operating income (NII/TOI) and Return on Assets (ROA) of Nepalese Development Banks.	Reject
H ₀₇	There is no significant relationship between the volume of total loan occupied by Non-Performing Loans (NPL) and Return on Assets (ROE) of Nepalese Development Banks.	Reject
H ₀₈	There is no significant relationship between the total loan loss provision to total non-performing loan (LLP/NPL) and Return on Equity (ROE) of Nepalese Development Banks.	Accept
H ₀₉	There is no significant relationship between the Capital Adequacy Ratio (CAR) and Return on Equity (ROE) of Nepalese Development Banks.	Reject
H ₁₀	There is no significant relationship between the Credit to Deposit Ratio (CD) and Return on Equity (ROE) of Nepalese Development Banks.	Reject
H ₁₁	There is no significant relationship between the interest spread (IS) and Return on Equity (ROE) of Nepalese Development Banks.	Reject
H ₁₂	There is no significant relationship between the net interest income to total operating income (NII/TOI) and Return on Equity (ROE) of Nepalese Development Banks	Accept

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 Summary

Credit risk management is to maximize a banks' risk adjusted rate of return by maintaining credit risk exposure within acceptable parameters. The objective of the study was to assess the impact of credit risk on financial performance of banks. The research design used for the study is a descriptive research in which primary and secondary data collected through structured questionnaire and published financial statement from selected sample banks website respectively. The population of interest for secondary data is the 14 development banks that operate in Nepal, whereas all employees of samples bank are population of interest for the primary data. 14 banks and 100 respondents are taken for sample. The study covered the period from 2018/19 to 2022/23. The ratio was analyzed using regression statistical tool and primary data were analyzed by using SPSS program version 23.0.

Interest Spread (IS), Non-Performing Loans (NPL), Credit to Deposit ratio (CD), Net Interest Income to Total Operating Income (NII/TOI), Loan Loss Provision to Non-Performing Loans (LLP/NPL) and Capital Adequacy Ratio (CAR) were taken as indicators of credit risk and two profitability ratios ROA and ROE are taken in this study. A correlation test was conducted on all the variables that are independent and dependent. The test findings indicated that there is a favorable correlation between IS and ROA, IS and ROE, NII/TOI and ROE, LLP/NPL and ROE. However the test shows that there exist negative relationship between NPL and ROA, CD and ROA, NII/TOI and ROA, LLP/NPL and ROA, CAR and ROA, NPL and ROE, CD and ROE, CAR and ROE.

The data analysis performed in preceding chapter on the data set for five years using SPSS 23.0 showed the following results:

- Average ROE and ROA are 18.66% and 1.77% with standard deviation of 6.89 and 0.66 respectively. The fluctuation in ROE is significantly higher than that of ROA during the study period.
- Average values of IS, NPL, CD, NII/TOI, LLP/NPL and CAR is 4.26, 1.54, 75.81, 74.16, 441.27, 12.53 with standard deviation of 0.79, 1.13, 9.93, 6.08, 1132.53 and 1.91 respectively.

- The variation in the ratio of LLP to NPL during the study period was substantially high (1132.53%) due to very high value of the ratio for Sanima Bank in 2013/14(6948.57).The higher the value of LLP to NPL ratio, the higher the safety of the bank from possible default in NPL. This variation shows that banks have varying levels of NPL and LLP and are insulated from credit risk in varying degrees.
- There is a positive correlation between ROA and IS with coefficient of correlation of 0.571 and statistically significant at 0.01 significance level. This means that if interest spread increases, the return on assets also increases.
- There are negative correlations of ROA with NPL, CD, NII/NPL, LLP/NPL, and CAR. This means that if NPL, CD, NII/NPL, LLP/NPL and CAR increases then return on assets will decrease. The relationship between ROA and CD, NII/TOI is statistically significant at 0.01 significance level and ROA and CAR is statistically significant at 0.05 significance level.
- Similarly, there is positive correlation between ROE and IS, this means that if interest spread increases, the return on equity also increases and there is negative correlation between ROE and NPL, CD, NII/TOI, LLP/NPL, CAR. This means that if NPL, CD, NII/TOI, LLP/NPL and CAR increases then return on equity will decrease. The relationship between ROE and CD, CAR is statistically significant at 0.01 significance level and ROE and NII/TOI is statistically significant at 0.05 significance level.
- The regression analysis shows that ROA has positive and significant relationship with interest spread as P-value is less than 0.05. Increase in IS increases ROA and decrease in IS decreases ROA. Similarly, a change in NII/TOI causes significant change in ROA. ROA has negative and significant relationship with NII/TOI as P-value is less than 0.05. Increase in NII/TOI decreases ROA and decrease in NII/TOI increases ROA.
- ROA has negative but insignificant relationship with NPL, CD, LLP/NPL and CAR. This means that increase in NPL, CD, LLP/NPL and CAR leads to decrease in ROA and decrease in NPL, CD, LLP/NPL and CAR leads to increase ROA but the relationships are not statistically significant.
- The relationship between NPL and ROA contradicts with result of Marshal &Onyekachi (2014) where NPL has positive relationship with ROA with which it

conforms that increase in NPL will decrease ROA of banks' which will ultimately decrease the profit of banks'.

- Adjusted R^2 of 0.433 of the relationship of ROA with selected independent variables indicates that 43.3% of the variation in the ROA of Nepalese commercial banks is explained by the six explanatory variables (IS, NPL, CD, NII/TOI, LLP/NPL, CAR). P-value from F-test on multiple regressions suggests that there is significant relationship between ROA and IS & NII/TOI whereas there is insignificant relationship between ROA and NPL, CD, LLP/NPL & CAR.
- When regressed ROE on selected independent variables, the relationship of ROE with them has been found positive and significant with IS. Therefore, change in IS has a positive role in augmenting ROE.
- And ROE has adverse and significant relationship with NPL, CD and CAR, which means increase in NPL, CD and CAR, will decrease ROE.
- ROE has positive and insignificant relationship with NII/TOI, changes in Net Interest Income to Total Operating Income is has no significance changes in ROE.
- There is no effect on ROE of increase or decrease in percentage of LLP/NPL. However there is insignificant relationship between LLP/NPL and ROE.
- Adjusted R^2 of 0.510 indicates that 51% of the variation in the ROE of Nepalese development banks is explained by the six explanatory variables (IS, NPL, CD, NII/TOI, LLP/NPL, CAR). P-value from F-test on multiple regressions suggests that there is significant relationship between ROE and IS, NPL, CD & CAR whereas there is insignificant relationship between ROE and NII/TOI & LLP/NPL.
- The major impact of credit risk (variables such as IS, NPL, CD, NII/TOI, LLP/NPL and CAR) is directly on the profit of banks Increase in NPL decreases ROA and ROE of Banks. Increase in IS increases ROA and ROE which ultimately increases profit of the banks.
- The respondents identify that aggregate economic activity, Non-Performing Loans, Capital adequacy, Bank Liquidity are the major determinants of credit risk.
- The opinion survey reveals that collateral is the least important area, the bank should give importance to mainly Business Prospects, character to pay, ability to pay prior to credit approval so that the future probable loan loss provision can be reduced. This shall increase in profit of banks

- Furthermore, the bankers, who are the respondents of study has opined that granting incentives for the best credit officers is insignificant method for effectiveness of credit risk management. Whereas maintaining an appropriate credit disbursement, administration and documentation process as per NRB directives is most significant methods for effectiveness of credit risk management
- The study shows that NPL has negative relationship with banks' performance which means increase in NPL will decrease ROA & ROE and decrease in NPL will increase ROA & ROE. The result contradicts with study carried out by Abiola & Olausi(2014) where NPL has strong and positive relationship with the banks' performance.
- The relationship between CAR and bank's performance is negative which contradicts with Abiola & Olausi(2014) where CAR has positive relationship with bank's performance.

5.2 Conclusion

In conclusion, the results of the regression analysis revealed that interest spread has a positive and significant relationship with return on assets and return on equity .Maintaining proper interest spread is core function of banks. The result of financial institutions directly related with interest spread. Increase in interest spread increases profitability of banks and decrease in interest spread decreases profitability of banks. However, Total Non-Performing Loans/Total Loans, Credit deposit ratio and Capital adequacy ratio has negative and insignificant relationship with ROA and Total Non-Performing Loans/Total Loans, Credit Deposit Ratio and Capital Adequacy Ratio has negative and significant relationship with ROE. Increase in Non-Performing loans will decrease performance of banks. Increase in deposit shows that there is no proper utilization of available funds which increases liquidity and increase cost for banks. Capital Adequacy Ratio also has significant relationship with ROE as increase in banks capital will increase cost and will decrease profitability of banks. Further, Net Interest Income/Total Operating Income is inversely related with ROA but is directly related with ROE and loan loss provision/non-performing loan has no influence on ROE but is inversely related with ROA.It is theoretically acceptable that banks with good Capital Adequacy Ratio can be a good cushion for risk and profitability.

It was expected that CD ratio will have positive and significant impact on ROA and ROE. However as per the result, CD ratio has adverse and insignificant relationship with ROA and CD ratio has adverse and significant relationship with ROE.

5.3 Recommendation

The results have implication on various stakeholders such as shareholders, employees, regulators and for probable investors. Shareholder can know average and trend of banks' performance, so that they can make good investing decision. Bankers and employee should be aware of impact of credit risk on performance and make their decision in more effective way. Regulator can have ideas on challenges faced while implementing policies, loan preferences sectors and model employed to analyze credit risk and situation of performance and credit risk in banking industry which could consider while making policy. Probable investors could take investment decision by analyzing the performance and risk associated with bank.

According to the findings of this research, Development banks should properly maintain their interest rate spread according to the demand and supply of loan. They should focus on mobilization of funds and diminish the Non- Performing Loans. As per the regulatory requirement as of CAR Framework of Nepal, Development banks should maintain CAR of 10%. The Development banks in Nepal should maintain capital adequacy ratio guidelines of NRB. Since CAR has negative and significant relationship with ROE it can be concluded that increasing CAR will increase capital but also increases cost which will decrease profitability of banks. So, there should be effective utilization of capital for better performance of banks. Our result indicates, CAR is negative and insignificantly related with ROA & significantly related with ROE. High CD ratio indicates illiquidity but higher profit potential.. It is considered necessary to finance fresh loans with substantial purchases of liabilities. When a bank can make fresh loans that are backed by steady deposits, it is said to have excess liquidity if the ratio is low..With which this evidence contradicts to the study of Sharifi & Akhter (2016) where CD ratio has positive correlation with ROA and ROE. However CD ratio has insignificant relationship with ROA & ROE. Management of banks should vastly focus on weighted average interest rate spread of a bank and other financial institution as it has high significance to performance of bank. Management of banks in Nepal should enhance their skills in credit analysis and loan administration.

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APPENDICES

Appendix 1: Questionnaire Survey

Dear Sir/Madam,

I am Sandip Raya, a MBS student from Shankar Dev Campus. I am conducting a study for my thesis entitled “**Impact of Credit Risk Management in Performance of Development Banks in Nepal**”. This research is done for the partial fulfillment for the requirement of the course of Graduate Research Project. The information supplied in the questionnaire will be treated in utmost confidentiality and used mainly for the purpose in which study is intended. Your honest and objective answer to the following questions will be highly appreciated.

Respondent Profile:

1. Name of respondent (Optional)
.....
2. Name of the Bank
.....

Survey Questions

Q1. As per your opinion and experiences, which of the following risk has a major impact on commercial banks performance? (Tick only one)

1. Credit Risk
2. Liquidity risk
3. Operational risk
4. Interest rate risk
5. Foreign exchange risk

Q2. Have you ever faced problems through credit risk in your bank?

1. Yes
2. No

Q3. What are the impacts from credit risk in your bank? (Tick as many)

1. Impact on Profitability
2. Capital Erosion
3. Liquidity Problems
4. Reputation of the Bank
5. Loss competitiveness in the marketplace

6. Increase in non-performing assets
7. Others (Specify).....

Q4. What are the major factors affecting the credit risk in your bank? (Tick as many)

1. Bank Liquidity
2. Non-Performing Loans
3. Loan Loss Provisions
4. Regulation of Capital
5. Loan concentration
6. Loan growth
7. Interest spread
8. Aggregate economic activity
9. Market interest rate
10. Ownership structure

Q5. While doing the credit assessment of the credit proposal, the following areas is important? (Based on your experiences, please prioritize the following options on the scale of 1-6, 1 being most important and 6 being least important)

1. Business prospect
2. Character of the borrower
3. Ability to pay
4. Financial condition of the borrower
5. Collateral
6. Management capability

Q6. With respect to your organization, please indicate the extent to which each of the following factors is considered important in loan appraisal and subsequent approval

Factors considered important in loan appraisal and subsequent approval (the five C's)	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. Borrower's Capacity					
2. Borrower's Condition					
3. Borrower's Credit History					
4. Borrower's Collateral					
5. Borrower's Character					

Q7. The following statements are concerned with a factor that poses challenges to the effectiveness of credit risk management. Please rate 1 for strongly disagree and 5 for strongly agree

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1.Is inadequate Capital Adequacy a challenge to the effectiveness of Credit Risk Management?					
2.Is low quality of Assets a challenge to the effectiveness of Credit Risk Management?					
3.Is insufficient Liquidity a challenge to the effectiveness of Credit Risk Management?					
4.Is ignoring a market risk a challenge to the effectiveness of Credit Risk Management?					
5.Is lack of Credit Diversification a challenge to the effectiveness of Credit Risk Management?					
6. Is weak Economic Growth a challenge to the effectiveness of Credit Risk Management?					
7.Is extra Provision of doubtful debt challenge to the effectiveness of Credit Risk Management?					
8. Is inadequate training of Credit officers a challenge to the effectiveness of Credit Risk Management?					
9.Is absence of serious Financial Analysis of Customer a challenge to the effectiveness of Credit Risk Management?					

10. Is Loan growth a challenge to the effectiveness of Credit Risk Management?					
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Q8. The following statements are concerned with development methods of effectiveness of credit risk management. Please rate 1 for strongly disagree and 5 for strongly agree

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. Is training of credit officers promote the effectiveness of credit risk management?					
2. Is maintaining diversification in loan portfolio promotes the effectiveness of credit risk management?					
3. Are mitigating methods for alleviating credit default promotes the effectiveness of credit risk management?					
4. Is adopting Basel Committee Principles help in promoting the effectiveness of credit risk management?					
5. Does granting incentives for best credit officers promote effectiveness of credit risk management?					
6. Are systematic reports to the board of directors on credit risk promoting effectiveness of credit risk management?					
7. Does exchange of credit information with other banks and the credit bureau promote effectiveness of credit risk management?					
8. Does maintaining an appropriate					

credit disbursement, administration and documentation process as per NRB directives promote the effectiveness of credit risk management?					
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Appendix 2: Financial Ratios

Data of Interest Spread (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	4.95	5.48	5.03	3.97	3.74
Karnali Development Bank Ltd	4.50	5.50	4.80	4.60	4.70
Excel Development Bank Ltd	3.92	4.12	7.09	5.27	4.64
Miteri Development Bank ltd	4.25	5.17	4.54	4.35	4.59
Muktinath Bikas Bank Ltd	2.70	3.38	3.45	3.85	4.00
Corporate Development Bank Ltd	5.34	5.01	4.32	4.03	4.54
Sindhu Bikash Bank Ltd	5.32	5.68	5.69	4.76	4.76
Salapa Bikash Bank Ltd	4.27	4.62	3.71	3.17	3.59
Green Development Bank Ltd	3.91	4.20	3.26	3.00	2.91
Shangrila Development Bank Ltd	3.87	4.82	4.99	4.22	3.96
Shine Resunga Development Bank Ltd	3.55	3.50	2.94	3.42	3.34
Jyoti Bikash Bank Ltd	3.54	4.66	4.45	4.30	4.42
Garima Bikash Bank ltd	3.31	4.72	4.32	3.62	4.32
Mahalaxmi Bikash Bank Ltd	3.38	3.39	4.01	3.83	4.63

Data of ROA (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	2.80	3.25	2.65	2.06	2.32
Karnali Development Bank Ltd	1.60	2.60	2.30	1.90	2.00
Excel Development Bank Ltd	2.80	2.67	2.51	1.99	1.98
Miteri Development Bank ltd	1.76	1.54	1.30	1.34	1.94
Muktinath Bikas Bank Ltd	0.83	1.19	1.51	1.80	1.70
Corporate Development Bank	4.01	3.57	2.40	2.06	2.57

Ltd					
Sindhu Bikash Bank Ltd	2.11	2.39	2.25	1.85	1.85
Salapa Bikash Bank Ltd	1.10	1.03	1.10	1.06	1.69
Green Development Bank Ltd	1.50	1.50	1.47	1.04	1.35
Shangrila Development Bank Ltd	1.22	1.79	1.71	1.95	2.24
Shine Resunga Development Bank Ltd	0.99	1.47	1.46	1.63	2.05
Jyoti Bikash Bank Ltd	0.52	1.19	0.83	1.26	1.62
Garima BikashBank ltd	0.66	1.16	1.56	1.38	1.79
Mahalaxmi Bikash Bank Ltd	0.88	1.39	1.46	1.55	1.78

Data of NPL (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	2.33	2.13	2.23	1.82	1.14
Karnali Development Bank Ltd	3.32	1.91	1.77	1.25	0.68
Excel Development Bank Ltd	0.78	0.77	0.48	0.34	0.32
Miteri Development Bank ltd	2.09	2.89	1.96	3.22	1.23
Muktinath Bikas Bank Ltd	0.54	0.37	0.26	0.19	0.14
Corporate Development Bank Ltd	4.29	1.33	1.35	1.33	0.71
Sindhu Bikash Bank Ltd	0.84	0.62	0.97	0.66	0.38
Salapa Bikash Bank Ltd	2.21	2.89	4.03	2.49	1.15
Green Development Bank Ltd	0.62	1.51	1.15	1.30	0.80
Shangrila Development Bank Ltd	2.01	2.01	3.40	1.53	1.38
Shine Resunga Development Bank Ltd	0.76	2.23	2.43	1.83	1.23
Jyoti Bikash Bank Ltd	3.52	3.74	4.94	2.90	1.22
Garima BikashBank ltd	0.49	2.17	2.18	1.75	0.79
Mahalaxmi Bikash Bank Ltd	0.48	0.03	0.02	0.07	0.02

Data of CD (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	77.91	74.90	74.55	64.43	70.49
Karnali Development Bank Ltd	75.30	76.40	72.40	74.70	80.10
Excel Development Bank Ltd	55.13	58.63	56.87	48.92	56.88
Miteri Development Bank ltd	75.36	77.36	71.82	75.37	79.12
Muktinath Bikas Bank Ltd	49.62	49.55	65.54	78.39	72.90
Corporate Development Bank Ltd	58.19	66.31	66.59	69.17	72.91
Sindhu Bikash Bank Ltd	73.22	76.57	78.01	66.63	73.52
Salapa Bikash Bank Ltd	82.33	79.47	82.70	81.00	79.34
Green Development Bank Ltd	73.13	77.43	75.50	78.91	83.81
Shangrila Development Bank Ltd	83.06	78.97	82.87	81.60	85.59
Shine Resunga Development Bank Ltd	80.41	75.56	81.76	81.63	85.00
Jyoti Bikash Bank Ltd	79.01	79.08	81.84	83.92	86.82
Garima BikashBank ltd	87.55	93.58	86.78	85.17	90.50
Mahalaxmi Bikash Bank Ltd	88.25	85.72	82.90	83.97	88.10

Data of NII/TOI (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development Ltd	74.53	76.30	74.54	74.09	75.49
Karnali Development Bank Ltd	74.51	77.60	72.26	70.99	73.68
Excel Development Bank Ltd	70.64	69.29	68.91	65.33	64.38
Miteri Development Bank Ltd	65.56	71.18	66.63	65.88	72.50
Muktinath Bikas Bank Ltd	66.72	73.90	73.00	72.74	72.42
Corporate Development Bank Ltd	60.88	65.09	61.12	62.57	64.34
Sindhu Bikash Bank Ltd	79.96	81.76	82.22	78.68	78.02
Salapa Bikash Bank Ltd	80.07	80.49	71.63	75.63	77.60
Green Development Bank Ltd	67.20	72.98	66.26	67.01	70.72
Shangrila Development Bank Ltd	80.93	81.05	75.89	75.10	71.76
Shine Resunga Development Bank Ltd	78.96	82.53	75.25	76.12	73.17
Jyoti Bikash Bank Ltd	76.76	78.55	78.02	74.07	73.03
Garima Bikash Bank Ltd	83.03	84.50	80.09	78.23	82.81
Mahalaxmi Bikash Bank Ltd	88.53	84.55	75.05	75.81	78.29

Data of LLP/NPL (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development Ltd	126.20	125.66	120.33	135.94	182.32
Karnali Development Bank Ltd	89.08	142.44	151.90	174.25	261.17
Excel Development Bank Ltd	163.47	174.61	276.23	361.41	387.35
Miteri Development Bank Ltd	133.53	112.43	123.86	109.42	159.10
Muktinath Bikas Bank Ltd	223.55	373.31	476.42	657.59	860.00
Corporate Development Bank Ltd	130.62	187.64	159.15	143.92	238.99
Sindhu Bikash Bank Ltd	229.55	291.30	186.71	240.05	362.12
Salapa Bikash Bank Ltd	121.76	96.63	99.14	122.31	178.78
Green Development Bank Ltd	212.56	133.51	140.62	142.80	223.37
Shangrila Development Bank Ltd	98.70	109.82	87.24	160.73	169.57
Shine Resunga Development	266.28	109.95	108.45	112.01	159.42

Bank Ltd					
Jyoti Bikash Bank Ltd	98.64	97.65	100.30	127.44	164.92
Garima BikashBank ltd	290.77	104.61	118.74	143.95	212.87
Mahalaxmi Bikash Bank Ltd	237.94	3750.42	6948.57	1556.98	5809.72

Data of ROE (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	30.25	32.78	27.97	22.73	25.61
Karnali Development Bank Ltd	20.01	31.70	27.60	24.80	26.01
Excel Development Bank Ltd	28.36	26.38	26.27	21.69	17.18
Miteri Development Bank ltd	20.70	17.81	15.77	15.98	21.93
Muktinath Bikas Bank Ltd	15.02	20.31	22.85	21.51	22.16
Corporate Development Bank Ltd	27.40	21.79	18.06	16.17	19.67
Sindhu Bikash Bank Ltd	26.11	30.47	28.40	22.85	20.32
Salapa Bikash Bank Ltd	11.59	10.97	11.52	11.79	17.75
Green Development Bank Ltd	15.49	15.51	14.96	10.60	12.89
Shangrila Development Bank Ltd	9.85	17.37	18.09	19.26	23.92
Shine Resunga Development Bank Ltd	10.42	16.18	15.30	17.21	23.04
Jyoti Bikash Bank Ltd	5.17	12.71	9.15	14.00	15.48
Garima BikashBank ltd	4.03	7.23	11.14	11.26	13.19
Mahalaxmi Bikash Bank Ltd	5.72	12.58	15.09	18.19	22.69

Data of CAR (%) of sampled bank over the last five year

Name of the Bank	2018/19	2019/20	2020/21	2021/22	2022/23
Narayani Development ltd	11.01	11.59	11.18	11.57	11.73
Karnali Development Bank Ltd	11.10	11.49	11.27	11.90	14.92
Excel Development Bank Ltd	13.93	12.54	12.27	13.10	16.38
Miteri Development Bank ltd	11.02	11.55	11.23	11.14	32.45
Muktinath Bikas Bank Ltd	11.21	12.39	13.28	14.03	13.49
Corporate Development Bank Ltd	11.86	11.61	11.44	11.31	44.77
Sindhu Bikash Bank Ltd	11.02	11.59	11.31	13.33	12.90
Salapa Bikash Bank Ltd	12.20	12.10	11.81	10.84	11.69
Green Development Bank Ltd	11.02	12.23	11.91	10.81	16.60
Shangrila Development Bank Ltd	14.47	11.89	12.99	13.27	11.52
Shine Resunga Development Bank Ltd	13.59	12.74	12.40	12.16	12.49
Jyoti Bikash Bank Ltd	11.78	11.80	11.49	11.11	12.76
Garima BikashBank ltd	19.09	18.06	16.06	14.92	14.17
Mahalaxmi Bikash Bank Ltd	20.74	14.87	12.54	11.08	12.77

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