

**CREDIT RISK MANAGEMENT AND PROFITABILITY OF
COMMERCIAL BANKS IN NEPAL**

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fulfillment of the requirements for the Master of Business Studies (MBS)

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “**Credit Risk Management and Profitability of Commercial Banks in Nepal**”. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of this dissertation.

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REPORT OF RESEARCH COMMITTEE

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TABLE OF CONTENTS

| | Page No. |
|---|-----------------|
| <i>Title Page</i> | <i>i</i> |
| <i>Certification of Authorship</i> | <i>ii</i> |
| <i>Report of Research Committee</i> | <i>iii</i> |
| <i>Approval Sheet</i> | <i>iv</i> |
| <i>Acknowledgement</i> | <i>v</i> |
| <i>Table of Contents</i> | <i>vi</i> |
| <i>List of Tables</i> | <i>viii</i> |
| <i>List of Figures</i> | <i>ix</i> |
| <i>Abbreviations</i> | <i>x</i> |
| <i>Abstract</i> | <i>xi</i> |

CHAPTER-I INTRODUCTION

| | |
|------------------------------|---|
| 1.1 Background of the Study | 1 |
| 1.2 Problem Statement | 4 |
| 1.3 Objectives of the Study | 5 |
| 1.4 Rationale of the Study | 5 |
| 1.5 Limitations of the Study | 7 |

CHAPTER II REVIEW OF LITERATURE

| | |
|---|----|
| 2.1 Theoretical Review | 9 |
| 2.1.1 Commercial loan theory | 9 |
| 2.1.2 The anticipated income theory | 10 |
| 2.1.3 The Credit Risk Theory | 10 |
| 2.1.4 The liability management theory | 11 |
| 2.1.5 Frictional Theory of Profitability | 11 |
| 2.1.6 Monopoly Theory of Profitability | 12 |
| 2.1.7 Innovations Theory of Profitability | 12 |
| 2.1.8 Risk and Uncertainty Bearing Theory of Profit | 13 |
| 2.2 Empirical Review | 13 |
| 2.2.2 Review Literature in Nepalese Context | 29 |

| | |
|------------------|----|
| 2.3 Research Gap | 44 |
|------------------|----|

CHAPTER III RESEARCH METHODOLOGY

| | |
|---------------------------|----|
| 3.1 Research Design | 46 |
| 3.2 Population and Sample | 46 |
| 3.3 Sources of Data | 47 |
| 3.4 Data Analysis Tools | 47 |
| 3.4.1 Financial Tools | 47 |
| 3.4.2 Statistical Tools | 47 |
| 3.5 Research Framework | 49 |
| 3.6 model Specification | 56 |

CHAPTER IV RESULTS AND DISCUSSIONS

| | |
|--|----|
| 4.1 Results | 57 |
| 4.1.1 Descriptive Statistics | 58 |
| 4.1.2 Correlation Analysis | 49 |
| 4.1.3 Regression Analysis of Variables | 59 |
| 4.2 Discussions | 67 |

CHAPTER V SUMMARY AND CONCLUSSION

| | |
|------------------|----|
| 5.1 Summary | 71 |
| 5.2 Conclusion | 72 |
| 5.3 Implications | 73 |

REFERENCES

LIST OF TABLES

| | |
|---|----|
| Table 1 Summary of Empirical Review | 19 |
| Table 2 Summary of Review of Literature in Nepalese Context | 35 |
| Table 3 Descriptive Statistics | 58 |
| Table 4 Correlation Analysis | 60 |
| Table 5 Model Summary | 62 |
| Table 6 ANOVA | 62 |
| Table 7 Regression Coefficients | 63 |
| Table 8 Model Summary | 65 |
| Table 9 ANOVA | 65 |
| Table 10 Regression Coefficients | 66 |

LIST OF FIGURE

Figure : 1 Research Framework

49

ABBREVIATIONS

| | |
|-------|------------------------------------|
| ATM | Automated Tailor Machine |
| BS | Bikram Sambat |
| CAR | Capital Adequacy Ratio |
| CDR | Credit Deposit Ratio |
| CRR | Cash Reserve Ratio |
| CZBIL | Citizen Bank International Limited |
| EBL | Everest Bank Limited |
| F/Y | Fiscal Year |
| i.e. | That is |
| JVBs | Joint Venture Banks |
| L & A | Loan and Advance |
| LLP | Loan Loss Provision |
| Ltd | Limited |
| N.P.L | Non – Performing Loan |
| NABIL | Nabil Bank Limited |
| NBL | Nepal Bank Limited |
| NIMBL | Nepal Investment Mega Bank Limited |
| NRB | Nepal Rastra Bank |
| ROA | Return on Assets |
| ROE | Return on Equity |
| S.D | Standard Deviation |
| SBL | Sanima Bank Limited |
| TU | Tribhuvan University |

ABSTRACT

On studying the credit risk management and profitability of commercial banks in Nepal for a period of ten years from 2012/13 to 2021/22, the study reveals that individually each of the variables contribute meaningful information in prediction of credit risk and profitability. The major conclusion of this study is that, the model used is very significant statistically. Different independent variables CDR, ISR, NPL, LLP, CAR and CRR can contribute on prediction of ROA and ROE. From the normality test, it can be concluded that, data related to dependent variables are normally distributed.

The regression results indicate that, the coefficient of ISR is positive and rest of the independent variables have negative coefficient for estimation of ROA under model I, where NPL and CRR are significantly negatively associated and remaining variables are associated non-significantly. Under the model II, coefficient of LLP and ISR are positively associated with ROE determination whereas rest of the variables are negatively associated with CDR and CAR are found to be significant with p-value less than 0.05. Under two regression models, data are best fitted with F-significance having less than 0.01 and also the adjusted R^2 explaining almost 85 percent of the information in ROE model.

Keywords: CDR, ISR, NPL, LLP, CAR, CRR

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

A credit is a more flexible form of finance that allows to access the amount of money loaned, according to the needs at any given time. The credit sets a maximum limit of money, which the customer can use in part or in full. The customer may use all the money provided, part of it or none at all. The term bank credit refers to the amount of credit available to a business or individual from a banking institution in the form of loans. Bank credit, therefore, is the total amount of money a person or business can borrow from a bank or other financial institution. A borrower's bank credit depends on their ability to repay any loans and the total amount of credit available to lend by the banking institution. Types of bank credit include car loans, personal loans, and mortgages.

Banks and financial institutions make money from the funds they lend out to their clients. These funds come from the money clients deposit in their checking and savings accounts or invest in certain investment vehicles such as certificates of deposit (CDs). In return for using their services, banks pay clients a small amount of interest on their deposits. As noted, this money is then lent out to others and is known as bank credit.

Bank credit consists of the total amount of combined funds that financial institutions advance to individuals or businesses. It is an agreement between banks and borrowers where banks make loans to borrowers. By extending credit, a bank essentially trusts borrowers to repay the principal balance as well as interest at a later date. Whether someone is approved for credit and how much they receive is based on the assessment of their creditworthiness.

The possibility of suffering a loss as a result of a borrower's inability to make payments on any kind of loan is known as credit risk. The process of reducing losses by determining whether a bank has sufficient capital and loan loss reserves at any

particular time is known as credit risk management, and it has historically presented difficulties for financial organizations. The likelihood that a borrower won't pay back a loan is known as credit risk. In essence, credit risk is the possibility that a lender won't get paid the principal and interest due, which would cause cash flow problems and higher collection expenses. By examining details regarding a borrower's creditworthiness, such as their income and present debt burden, lenders can reduce credit risk. Even if it's impossible to predict who will miss payments, credit risk can be effectively assessed and managed to decrease the impact of a loss. Lenders and investors receive interest payments from the borrower or issuer of a debt obligation as recompense for taking on credit risk.

The chance of a lender losing money when they give money to a borrower is known as credit risk. The five Cs of consumer credit risk assessment are credit history, repayment capacity, capital, terms of the loan, and collateral. Loan interest rates are higher for borrowers with greater credit risk. One tool used by lenders to determine the likelihood of default is the credit score. Lenders take a risk when they grant mortgages, credit cards, or other loans since the borrowers might not be able to pay them back. Comparably, if a business grants a customer credit, there's a chance the client won't pay their bills.

The borrower's overall capacity to repay a loan in accordance with its original terms is the basis for calculating credit risks. Lenders frequently consider the five Cs of credit when evaluating credit risk on consumer loans: collateral, loan terms, credit history, ability to repay, and capital. Credit risk is the possibility that a bond issuer won't pay when it's supposed to or that an insurance provider won't be able to cover a claim.

Understanding the sufficiency of a bank's capital and loan loss reserves at any one time is the practice of credit risk management, which has historically presented difficulties for financial organizations. Risk management is crucial to the long-term viability of banks since it helps reduce risk and prevents monetary and economic problems. In addition to increasing banks' profitability and sustainability, efficient credit risk management promotes systemic stability and the effective use of capital in

the economy. Since it is a crucial step in the bank's loan application process, this is very significant to banks.

Credit risk management is the process of identifying, quantifying, tracking, and managing the credit risk associated with the potential for loan payment default. Although the banks are unable to predict with confidence what percentage of borrowers will likely default, this uncertainty also contributes to the differences in bank profitability. Optimizing the bank's return while adjusting for risk and maintaining a manageable level of exposure is the primary goal of credit risk management. Policies and procedures for loan administration are typically developed by top management, who also obtain board approval before putting them into effect.

Credit risk management has come under increased regulatory scrutiny as a result of the global financial crisis and the subsequent credit crunch. Regulators consequently started to call for greater transparency. They were interested in seeing how well-versed a bank is on its clientele and the credit risk that goes along with them. Additionally, banks will have an even greater regulatory burden due to the new Basel III standards.

Senior management should ideally see to it that all employees involved in the loan approval process in the hierarchy receive clear communication of the rules and procedures connected to their implementation (Ndoka & Islami, 2016). Furthermore, an internal risk control and audit that keeps an eye on credit discipline, loan policies, approval procedures, portfolio level risk, and facility risk exposure verifies that effective credit risk management is being implemented. Therefore, for effective management of credit risks to enhance profitability and its survival, a strong framework for credit risk management is essential.

Understanding a bank's total credit risk by looking at risk at the individual, customer, and portfolio levels is the first step in successful credit risk management. Despite their best efforts, banks frequently lack a cohesive knowledge of their risk profiles due to the dispersion of information among several business units. Banks cannot determine if loan loss reserves sufficiently cover potential short-term credit losses or whether capital reserves appropriately reflect risks without conducting a thorough risk

assessment. In addition to crippling losses, investors and regulators closely monitor banks that are deemed vulnerable.

The implementation of an integrated, quantitative credit risk solution is essential to lowering loan losses and guaranteeing that capital buffers accurately represent the risk profile. With this solution, banks should be up and running with basic portfolio metrics in no time. As needs change, it should also allow for an upgrade to more advanced credit risk management techniques.

1.2 Problem Statement

In accordance with the guidelines provided by the Nepal Rastra Bank in the prescribed format, banks and other financial institutions maintain provisions for and manage non-performing assets, while other organizations prepare in accordance with the Nepal Financial Reporting Standard. Government and NRB instructions, along with rules and regulations, present opportunities and risks for the nation's commercial banks. The banking industry is now dealing with a number of issues. One of them, the banking industry, has been negatively impacted by an increase in non-performing loans. According to Manandhar (2023), one of the major issues facing commercial banks is non-performing loans. Nepal's industries are closing down because of the country's unstable political situation, increased security, and other issues. Credit risk is associated with lending and arises when borrowers default on their agreements over the course of the transaction. It is commonly recognized that banks and other financial institutions in Nepal are dealing with an increasing amount of non-performing assets, which is becoming an increasingly difficult-to-manage situation.

The profitability of banks is determined by a number of macroeconomic, industry-specific, and firm-specific factors. It is the ability to produce steady revenue growth and ensure the banks' significant expansion. The primary way that banks make money is through lending. Since credit risk and credit function are related, credit risk has a large impact on profit performance (Shahid et al., 2019). However, macroeconomic variables are also important in influencing how profitable banks are (Jeris, 2021). In this regard, examining the relationship between macroeconomic variables and credit

risk and banking profitability has been a top priority for scholars for a number of decades.

The research questions created for the investigation of Nepal's commercial banks' profitability and credit risk management are as follows:

- What is the current status as credit risk of Nepalese commercial banks?
- Is there any relationship between credit risk management and profitability of commercial banks in Nepal?
- What is the impact of credit risk management on the profitability of commercial banks in Nepal?

1.3 Objectives of the Study

The main goal of this study is to find out how credit risk management affects Nepal's commercial banks' bottom lines. Therefore, this study's main goal is to evaluate how risk management affects Nepal's commercial banks' financial performance. Using financial data from seven sample banks, the study's primary goal is to learn more about credit risk management and profitability analysis in Nepali commercial banks.

The following are the study's specific objectives:

- To examine the current status of credit risk and profitability of commercial banks in Nepal.
- To analyze the relationship between credit risk management and profitability of commercial banks in Nepal.
- To analyze the impact of credit risk management on profitability of commercial banks in Nepal.

1.4 Rationale of the Study

The significance of credit risk management in the banking industry stems not only from the recent Global Financial Crisis (GFC) but also from its increased influence on the survival, expansion, and financial performance of banks. Since credit loans are one of the main sources of revenue for commercial banks, controlling credit risk has a significant impact on the profitability of the bank.

The aspect of banking activity that is utilized to conduct regular commercial operations is credit risk management. Credit risk is, to put it simply, the risk that banks take on when they lend out their available funds to people and businesses. Every bank and financial institution uses credit risk management as its central control system. It is the lifeblood of the banking industry.

The issues that come up while trying to manage loans and advances to borrowers are the focus of credit risk management. This aims to determine the appropriate amount of money to put into each loan category as well as the ratio of long-term loans to short-term investments and cash reserve.

The research would furnish practical data to the commercial bank executives, enabling them to make informed decisions regarding lending operations. It might benefit more researchers. The research will assist the students in learning about the profitability and credit risk management practices of Nepalese commercial banks. The study's researchers expect that it will be helpful to a range of individuals, parties, and others with an interest in commercial banking. The study will be useful to delve extensively into a variety of topics or to understand why the performance of the commercial bank in question is superior to or inferior to that of other competitors in the same industry.

Any interested parties, including debtors, investors, rival banks, employees, market makers, stock brokers, merchant banks, investment bankers, etc., are referred to as outsiders. By learning more about the profitability and credit risk management of Nepalese commercial banks, the study will benefit those organizations and individuals. They are able to choose whether or not to finance, invest, deposit, etc.

An authority who determines rules, regulations, and policies pertaining to the operation of commercial banks is referred to as a policy maker. It benefits shareholders by raising awareness of the credit risk associated with their commercial bank and letting them know how and to what degree their funds are being mobilized. Because an investor's money comes from either the owners or the depositors, it will ultimately become the bank's responsibility.

1.5 Limitations of the Study

Though best possible efforts have been made to prepare this field dissertation, this report is still not free of some limitations. The limitations inherent in this dissertation are:

- The whole study is depending on secondary data collected from the annual reports of the sample banks. Research based on secondary data is not free from limitations due to inherent character.
- Limited variables are used for analysis of data. So it is very difficult to write about the detail information of the banks.
- Simple statistical tools are used for analysis of data. Research result shall be different if advanced statistical and economic tools are used for analysis of data.
- The Research is based on only ten years fiscal year analysis on 2012-13 to 2021-22 and only seven organization, RBBL, NBL, NABIL, EBL, SBL, CZBIL and NIMBL.

CHAPTER II

REVIEW OF LITERATURE

The review of the literature includes the theories and earlier research on the subject conducted by scholars and researchers both domestically and abroad. This literature review's primary goal is to evaluate the research and provide a logical justification for the study. Numerous studies have been carried out in the relevant field both domestically and abroad. A literature review is a type of academic writing that, when presented in context, demonstrates the author's knowledge and comprehension of the academic literature on a particular subject. A critical assessment of the content is another aspect of a literature review.

An summary of the previously published works on a certain topic is what a literature review is. The phrase can be used to describe an entire academic document or a specific portion of a book, essay, or other scholarly work. In any case, the goal of a literature review is to give the audience and the researcher/author a broad overview of the body of information that already exists on the subject at hand. A thorough literature assessment can guarantee that the right theoretical framework, research methodology, and/or research question have been selected. More specifically, a literature review gives the reader context by placing the current work within the corpus of pertinent literature. In these situations, the technique and results sections of the paper are typically followed by the review. Graduate and post-graduate students frequently have to produce literature reviews as part of their job, whether they are writing a thesis, dissertation, or journal article. A research proposal or prospectus, which is the paper that is authorized before a student actually starts a dissertation, frequently includes literature evaluations.

The review has been broadly classified and organized into three sections as follows:

- Theoretical Review
- Empirical Study
- Research Gap

2.1 Theoretical Review

Notwithstanding the fact that different banks may use different specific ways, a better understanding of how banks manage credit risk and how it affects profitability may be obtained by going over the broad theories of credit risk management and profitability in this section. The following are the theories of credit risk management and profitability:

Theories of Credit Risk Management

2.1.1 Commercial loan theory

The commercial loan hypothesis, sometimes known as the real bills concept, is the oldest theory of banking. According to the commercial loan idea, banks ought to limit their lending to short-term, self-liquidating commercial paper. The commercial loan theory, according to Hosna and Manzura (2009), is designed to persuade bank lending as well as other economic activity. If this theory is strictly applied, it will become clear that changes in overall economic activity are predicted to be financed by it. It is clear that Nigerian Deposit-Money Banks (DMBs) firmly believe in this ideology. Nigerian bankers feel that depositors' funds should be used appropriately in short-term loans because their resources were repayable quickly. According to Kargi (2011), the strong ties to this idea seem quite conventional when one considers that there were little or no secondary reserve assets available at the time the theory was dominant, which may have provided the bank with a buffer against liquidity. Furthermore, this hypothesis ignores the credit requirements of Nigeria's emerging economy. It hasn't inspired banks to provide financing for the acquisition of real estate, machinery, plants, and homes.

A theory's inability to acknowledge the relative stability of bank deposits is demonstrated by its insistence that all loans must be repaid in the regular course of business. Demand deposits are on demand, although it's unlikely that every depositor will ask for payment at once. Despite its shortcomings, the real bills doctrine, often known as the commercial loan theory, has been a widely accepted banking theory. There are still traces of it in the way many bankers think, the way bank regulatory bodies are structured, and the way banks examine themselves. Without knowledge of

our financial past, one cannot comprehend modern banking, and one cannot comprehend banking past without knowledge of commercial loan theory.

2.1.2 The Credit Risk Theory

Salas and Saurina (2002) define credit risk as the possibility that a borrower may default on any kind of debt by neglecting to make the necessary payments. The primary risk is that of the lender, and it involves lost principal and interest. Complete or partial disruption of loss can occur for a variety of reasons, including an insolvent bank's inability to reimburse a depositor for their money. In order to lower the lender's risk, the lender may run a credit check on the potential borrower, demand that the borrower obtain the necessary insurance, like mortgage insurance, or look for third-party security or guarantees. The interest rate that borrowers will be required to pay on their debt will often increase with the level of risk (Owojori, Akintoye, and Adidu, 2011).

2.1.3 The anticipated income theory

Prochnow developed a novel lending theory in 1949 that he dubbed "the Anticipated Income Theory" after conducting an extensive investigation. Afriyie and Akotey (2011) report that their research revealed that the bank always planned to liquidate term loans from the borrower's projected earnings, irrespective of the type and size of the borrower's business. Instead of selling the borrower's assets as in the commercial or traditional theory of liquidity or transferring the debt to another lender as in the shiftability theory of liquidity, liquidity is achieved by projecting the borrower's income. This theory essentially holds that banks should lend money based on the borrower's expected income rather than his present value.

One noteworthy aspect of this theory, according to Kolapo, Ayeni, and Oke (2012), is its "future-oriented approach" to bank loans and advances. It's also commonly referred to as the "cash flow approach" to lending. When interpreted correctly, the sole theory this theory challenged was the commercial loan theory—not the shift ability hypothesis. It does not challenge the shiftability theory, which holds that a bank's secondary reserves are its primary source of liquidity. Instead, it refocused emphasis on the kinds of loans that are appropriate for banks to make, but it arrived at a quite

different result from Moti, Masinde, and Mugenda (2012), who are the proponents of the commercial loan theory.

2.1.4 Frictional Theory of Profitability

This theory states that there is a normal rate of profit, which is a return on capital that capital owners must receive in exchange for investing and preserving their money as opposed to hoarding or consuming it all. In a static economy with no unforeseen shifts in cost or demand, the firms would only realize a regular rate of return on their capital and entrepreneurial skill in the long run. Economic profits would not flow to the firms in these circumstances. According to the frictional theory of profit, unexpected changes in product demand or cost circumstances can occasionally generate shocks or disturbances in an economy, leading to conditions of disequilibrium. For some businesses, these disequilibrium circumstances are what create positive or negative economic profits.

So, in accordance with frictional theory, economic profits persist for a while due to frictional forces that hinder the system's instantaneous adaptation to the new circumstances. For example, some petroleum-refining companies made good financial gains during the 1990s spike in oil prices brought on by the US-Iraq war. Similar to this, many Indian export-oriented businesses lost money during the 1999–2001 global trade slowdown as a result of a decline in demand for their goods in the United States and other nations. In the long run, more businesses will enter the market when short-term economic profits are generated, until all short-term economic profits are eliminated (i.e., businesses will only realize normal return on their capital investment). Conversely, when businesses are losing money, or when profits are negative, some of them will exit the market. As a result, the product's price will increase, eliminating losses and generating only typical profits for the remaining businesses.

2.1.5 The liability management theory

According to this idea, if a bank has a reserve shortfall, reserve money can be borrowed or acquired on the money market using short-term loan instruments, negating the need to adhere to conventional criteria. Shafiq and Nasr (2010) clarify

that this does not imply that the bank handles its assets in a passive manner and solely handles its liabilities. Instead, the theory still holds that the bank's asset structure is a major factor in supplying liquidity to the bank. However, the theory only considers one aspect of liquidity, contending that the bank might utilize its obligations to create liquidity as well. A bank needs liquidity to fulfill its clients' legitimate lending demands as well as to allow deposit withdrawals. Bank loans are not only lucrative, but a bank that cannot or will not lend money to its depositors in times of need is unlikely to retain those depositors for very long.

2.1.6 Monopoly Theory of Profitability

Profits that are higher than average can also be explained by the monopoly power that businesses possess. In an ideal market, firms that had monopoly power would limit their output and set higher prices. As a result, the monopolistic corporations make profits that are above typical. A few corporations' monopoly power was linked by Joan Robinson, E.H. Chamberlin, and M. Kalecki to super-normal earnings. Over time, monopoly enterprises can maintain their economic profits due to significant obstacles preventing the entry of new competitors. The establishment of monopoly power can result from a number of factors, including economies of scale, regulatory limits on the import of goods, ownership of patents, and exclusive control over a necessary raw material used in the creation of a good.

2.1.7 Innovations Theory of Profitability

This theory of profits describes how successful innovations introduced by entrepreneurs lead to economic profits. Joseph Schumpeter espoused the belief that an entrepreneur's primary role is to introduce innovations into the economy, with earnings serving as a reward for fulfilling this purpose. What exactly is innovation now? Schumpeter gave innovation a fairly broad definition. An innovation is any new strategy or policy that a business owner implements to lower his production costs or boost consumer demand. As a result, innovations fall into two groups. The first kind of inventions are those that lower production costs. This first category of innovations includes things like the purchase of new equipment, the development of more affordable production techniques or processes, the discovery of new raw material sources, the adoption of improved business organization techniques, etc.

2.1.8 Risk and Uncertainty Bearing Theory of Profit

According to this theory, an entrepreneur must receive earnings in exchange for taking on risk and uncertainty in a dynamic market. Thus, the theory of profits is functional. Future uncertainty gives rise to profits. Entrepreneurs are forced to labor in uncertain environments when producing goods. They have to project future conditions pertaining to product demand as well as other elements that influence costs and prices in advance. They enter into contracts in advance with suppliers of production factors at predetermined rates of compensation based on their estimates and anticipations. After the output is created and sold in the market, they come to understand its value, which is produced by the hired factors. However, the process of making and marketing the product takes a significant amount of time. However, a lot can happen between the signing of contracts and the sale of the product, upsetting expectations both positively and negatively and creating both positive and negative profits in the process.

There would have been no uncertainty and no profits if the conditions that existed at the time of the output sale could have been known or forecast when the entrepreneurs entered into contractual relationships with the factors of production regarding their rates of payment. Profits are therefore the result of uncertainty, or the lack of knowledge about the future dynamics of supply and demand. It should be mentioned that entrepreneurs who accurately predict the future or whose expectations come true would benefit financially. Individuals whose predictions turn out to be inaccurate will be required to bear losses.

2.2 Empirical Review

Numerous research projects have been carried out in the areas of bank profitability analysis and credit risk management.

Bhatt et al. (2023) research on market risk analysis has a big impact on credit risk management. The findings demonstrated that the relationship between market risk analysis, credit rating measurement, environmental risk, and commercial bank performance is mediated by credit risk management. In order to lower credit risk and

provide positive financial outcomes, managers should therefore work to implement risk prevention and control procedures.

Mudanya et al. (2023) examined the financial results and credit risk management strategies of Kenyan commercial banks, using the banks in Vihiga County as a case study. Data from the self-administered questionnaire and secondary data from the banks' financial statements from 2016 to 2022 were gathered and examined. The results of their regression study demonstrated a substantial relationship between the financial performance of Kenyan commercial banks as measured by return on asset (ROA) and credit risk management techniques, as represented by loan default monitoring, credit scoring, and credit rules and procedures.

Naili and Lahrichi (2023) reviewed the outcomes Credit risk is still an open topic in research, even after several decades of intensive empirical and theoretical work. More than 60% of respondents think that through enhancing green branding, green banking activities help to win back customers' trust. This qualitative study adds to the body of knowledge and opens the door for further research on green banking for sustainable development, as there is currently little research on the topic in India.

Kwashie et al. (2022) investigated how credit risk affected Ghana's commercial banks' financial results. to look into how credit risk affects Ghanaian commercial banks' bottom lines, specifically with regard to non-performing loans. Financial performance is measured using economic value added and return on asset. Internal bank characteristics including the bank's size and age are also taken into account. The examination includes macroeconomic variables including inflation, monetary policy rate, and gross domestic product. The analysis makes use of panel data on 15 commercial banks in Ghana from 2013 to 2018. Both financial performance metrics are negatively impacted by non-performing loans. Additionally, even though it is negligible for the economic value-added metric, the monetary policy rate has a negative effect on both financial performance measures. Additionally, it is shown that, while return on asset is considerable, bank size, age, and GDP all significantly positively impact both financial performance metrics.

Ahmed et al. (2022) analyzed the credit risk on the financial performance in light of COVID-19: Evidence from conventional and Islamic banks in the Middle East and

Africa. Using a comparison between Islamic banks (IBs) and conventional banks (CBs), investigate the relationship between credit risk (CR) and financial performance (FP). to look into how COVID 19 affects this correlation. The sample comprised the top 200 banks from the Middle East and Africa (MEA) area for a four-year period (2018–2021), spanning 15 countries. Fixed and random effects were incorporated into the panel ordinary least squares (OLS). For IBs and CBs, there was a negative correlation discovered between NPLs and FP. It shows that, in the case of the entire sample and the isolated sample of CBs, COVID 19 partially mediates the connection between NPLs and FP, but not in the case of IBs.

Jackson and Tamuke (2022) an empirical analysis of the financial performance and credit risk management of banks with headquarters in Sierra Leone. In order to evaluate the relationship between credit risks and the performance of Sierra Leone's commercial banks, information on pertinent financial soundness indicators, such as ROA, bank liquidity, PL, and credit, was gathered from the Bank of Sierra Leone (BSL). Evidence from the estimate of (unbalanced) panel data in the fixed effects model. Due to significant non-performing loans (NPLs), the banking system is fragile. High non-performing loans (NPLs) in the banking sector are influenced by a low productive base in the domestic economy. The study showed that cooperation between the financial stability and monetary policy research departments was necessary to monitor systemic risk, which the entire banking system faced between 2015 and 2017. As a result, the BSL adopted strict measures to save the two state-owned commercial banks.

Ali and Dhiman (2019) examined how credit risk management affected Indian public sector commercial banks' profitability. should be aware of the credit risk management indicators' statistical influence on public sector commercial banks' profitability between 2010 and 2017. The top ten public sector commercial banks chosen based on total assets are the subject of the study. Data analysis is the goal of applying panel regression. The financial performance of a few Indian public sector banks is significantly impacted by the credit risk management indicators. The empirical results show that profitability, or ROA, has a negative relationship with AQ and liquidity but a positive relationship with CAR, management quality, and earnings ability.

Okpala et al. (2019) looked into the profitability and liquidity of the credit management techniques. to assess how credit management techniques affect the profitability and liquidity of listed Nigerian chemical and paint manufacturing companies. The study design used was a descriptive survey. A sample population of 500 employees, or 60% of the total workforce, was chosen to receive copies of the questionnaire. After the participants returned 342 valid responses, they were examined. For the descriptive statistics, one-way NOVA was employed, and the developed hypotheses were tested using a straightforward regression analysis technique. The results showed that the level of bad debt, cash inflow, and ability to pay are the three sub-variables of liquidity that are positively and statistically significantly impacted by the credit management strategies sub-variables of credit risk assessment, debt recovery strategy, and receivable collection policy ($R=.654$ $R^2=.632$, $p=.0<.05$; $R=.692$, $R^2=.674$, $p=.0<.05$; $R=.621$, $R^2=.601$, $p=.0<.05$). Liquidity had a favorable and statistically significant impact on profitability ($R=.723$, $R^2=.701$, $p=.0<.05$).

Kaitibi et al. (2018) examined the impact of credit management on Sierra Leone's commercial banks' profitability. to evaluate critically the effect that effective credit management has on Sierra Leone's commercial banks' profits. The choice for a case study was the Rokel Commercial Bank. The primary sources of secondary data were the bank's annual reports and its five-year financial statements covering the years 2010 to 2014. Using ratio analysis and charts, the data was analyzed both statistically and qualitatively. Efficiency in credit management has a big impact on how profitable commercial banks are in Sierra Leone. According to the study's conclusions, Sierra Leonean banks must implement sound loan policies if they hope to increase profitability.

Said (2018) analyzed the unproductive sector, there are quite large lags. Bad loans are followed by increased loan loss provisions, liquidity issues, and reputational issues, all of which eventually cause the bank to lose important clients and a significant portion of its profits. Since banks and other financial institutions primarily deal with the lending and borrowing of money belonging to shareholders and depositors, credit risk management is an essential role of these institutions (Treacy & Carey, 2000). In

addition, BFIs contribute significantly to the flow of money through loans and business enterprise investment. When making loans, there is risk involved. Loans and timely loan repayments impact a bank's performance and profit as well as any losses it may incur because the larger the debt, the larger the provision for debt (Bhattarai, 2016). Any financial institution must regulate and uphold credit limitations since BFIs are important sources of capital for the economy and because the losses incurred from improper credit risk management also have an adverse effect on the economy.

Nwanna and Oguezue (2017) investigated the impact of credit management on Nigerian deposit money banks' profitability. The purpose of the study was to investigate the relationship between Deposit Money Banks' (DMBs') profitability (ROA) and credit management in the Nigerian setting from 2006 to 2015. The Central Bank of Nigeria's Statistical Bulletins and the Annual Reports of every DMB that is currently in operation were the sources of secondary data. The data collected for the study were analyzed using the multiple regression technique. The E-View Econometric tool was utilized to perform the analysis, which involved utilizing ordinary least square. The research indicates that whilst non-performing loans have a small and negative impact on profitability, loans, advances, and loan loss provisions have a positive and negligible influence on profitability. The two regressions' combined estimates fit the data well and are statistically sufficient. Models one and two have values of 84% and 79%, respectively, for the R², which gauges the overall goodness of fit of the whole regression. However, the Durbin Waston statistic, which has values of 2.499545 and 2.808450, indicates that there is no autocorrelation among the variables under consideration and that the regression as a whole is statistically significant.

Kishori and Sheeba (2017) examined the impact of credit risk on the bank's profitability in addition to analyzing credit risk. For twenty years (1996–1997 to 2015–2016), the State Bank of India's annual reports provided the secondary data. Multiple regression analysis was used to examine the data. The outcome demonstrated that credit risk significantly and negatively affects profitability. Furthermore, inadequate credit risk management has exposed State Bank of India to credit risk.

Thus, it was suggested that credit risk management procedures be strengthened. By cutting back on nonperforming assets and carefully controlling leverage, State Bank of India can reduce credit risk.

Khan and Ali (2016) investigated the connection between Pakistani commercial banks' profitability and liquidity. Determining the type and degree of the association between the variables was the primary goal of the study. To determine the kind and strength of the link between dependent and independent variables, two methods are used: regression and correlation. Analysis was conducted using secondary data that was taken from Habib Bank Limited's annual statements for the previous five years (2008–2014).

Ndoka and Islami (2016) used a regression model to examine the connection between credit risk management and profitability of sixteen commercial banks in Albania between 2005 and 2015. The capital adequacy ratio and the non-performing loan ratio are the independent variables that are considered. Once more, ROE and ROA are used as dependent variables. The study's overall conclusions demonstrate a relationship between Albanian commercial banks' profitability and their ability to manage credit risk; that is, increased profitability is a direct result of effective credit risk management. The authors advise Albania's commercial banks to concentrate on managing credit risk, particularly on the oversight and monitoring of non-performing loans, in light of these findings.

Alshatti (2015) using thirteen Jordanian commercial banks, the impact of credit risk indicators on banks' financial performance was examined from 2005 to 2013. Using annual reports from sample banks as secondary sources, the author gathered data for a panel regression analysis study. This study employed the following credit risk management metrics: leverage ratio, capital adequacy ratio, credit interest/credit facilities, provision for facilities loss/net facilities, and amount of non-performing loans. ROA and ROE are measures of a bank's financial performance. The results of this study demonstrate that the ratio of gross to nonperforming loans has a beneficial impact on banks' financial performance, whereas the ratio of provision for facilities

loans to net facilities has a negative impact. Nonetheless, he discovered that the ratios of capital adequacy and credit interest/credit facilities have little bearing on the financial performance of banks. Leverage ratio, provision for facilities loss, and gross/non-performing loan ratio are further noteworthy variables identified in this study. The writer suggests that the banks in Jordan create a system that effectively manages credit risk, follow a solid procedure when issuing credit, and keep a proper credit administration system that includes mechanisms for processing, monitoring, and control. In order to increase profitability, the report suggests that banks enhance their credit risk management.

Samuel (2015) examined the impact of credit risk on the commercial banks' performance in Nigeria. The study was necessary because credit risk has a negative impact on a bank's profitability. Its findings served as the foundation for policy recommendations to stakeholders regarding acceptable credit risk management, which increased the value of the bank's assets and reduced bank risk. They measured credit risk using loan-to-advance ratios and non-performing loan ratios, and they measured profitability using return on assets (ROA). The findings demonstrated that the non-performing loan to loan and advance ratios, as well as the loan and advance ratio to total deposit, have a negative impact on profitability.

Noman et al. (2015) examined the impact of credit risk on Bangladesh's banking industry's profitability. The research employed 172 observations from 18 private commercial banks between 2003 and 2013 together with an imbalanced panel data set. Credit risk has a substantial and detrimental impact on profitability, according to the report. Additionally, the investigation revealed that the capital adequacy ratio had a considerable negative impact on profitability.

Table 1

Summary of Empirical Review

| S.N. | Author (Year) | Objective | Methodology | Findings |
|------|------------------|-----------------------|--------------------------------|---------------------------------------|
| 1 | Mudanya et al., | To analyze the credit | Secondary data from the banks' | Their regression analysis showed that |

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| (2023) | management practice and financial performance of banks in Kenya. | financial statements from 2016 to 2022 and data from the self-administered questionnaire were collated and analyzed. Multiple regression used to analyze panel of data. | credit management practices represented by loan default monitoring, credit scoring, and credit policies and procedures significantly affect the financial performance represented by the return on asset (ROA) of commercial banks in Kenya. |
| 2 | Naili and Lahrichi, (2023) To analyze the impact of credit risk on bank's financial performance in commercial banks of India. | Panel of data analysis using sample correlation and least square estimation to analyze the regression. Primary data collection using questionnaires and SPSS package used for data analysis. | More than 60% of respondents believe that green banking initiatives play a positive role in restoring customer trust by improving green branding. Given the lack of research on green banking in India, this qualitative study contributes to knowledge and paves the way for future research on green |

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| | | | | banking | for |
| | | | | sustainable | |
| | | | | development. | |
| 3 | Bhatt et al., (2023) | To analyze the credit risk management of Indonesian commercial banks. | Quantitative risk analysis, using multiple regression and correlation coefficient. | The results showed that credit risk management mediates the relationship between environmental risk, credit rating measurement, market risk analysis, and commercial bank performance. Managers should strive to provide risk prevention and control mechanisms to reduce credit risk and achieve good financial results. | |
| 4 | Kwashie et al., (2022) | To analyzed the impact of credit risk with focus on non-performing loans on the financial performance of commercial banks | Return on asset and economic value-added are used as measures of financial performance. Internal bank factors such as the | Non-performing loans have a negative impact on both measures of financial performance. Also, monetary policy rate has a negative impact on both measures of | |

in Ghana. age and size of the financial bank are also performance, albeit considered. insignificant for Macroeconomic economic value-factors such as added measure. It is gross domestic further revealed that product, inflation, the size of bank, age and monetary of bank, and gross policy rate are domestic product included in the have a significant analysis. Panel positive effect on data spanning the both measures of period 2013 to financial 2018 on 15 performance commercial banks although significant in Ghana is used for return on asset. for the analysis.

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| 5 | Ahmed et al., (2022) | To examine the impact of credit risk (CR) on financial performance (FP) by comparing Islamic banks (IBs) to conventional banks (CBs). To investigate the influence of COVID-19 on this association. | Sample included the largest 200 banks across 15 countries from the Middle East and Africa (MEA) region over a four-year period (2018–2021). Panel ordinary least squares (OLS) with fixed and random effects were used. | There found a negative association between NPLs and FP for IBs and CBs. It reveal that COVID-19 is partially mediated the association between NPLs and FP in case of the whole sample and separated sample of CBs while not in case of IBs. |
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| 6 | Jackson and Tamuke (2022) | To analyzed the nexus between credit risks and performance of commercial banks in Sierra Leone using data collected from the Bank of Sierra Leone (BSL) on relevant Financial Soundness indicators like ROA, Bank Liquidity, PL, and Credit. | Evidence from (unbalanced) panel data estimation within the fixed effects model. | The fragility of the banking system stems from high NPLs. A low productive base in the domestic economy influences the state of high NPLs in the banking system. The study revealed the need for collaboration between the research arm of monetary policy and financial stability departments in a bid to monitor risk in the financial system, which the entire banking system experienced around 2015-2017 that resulted in stringent measures adopted by the BSL to rescue the two state own commercial banks. |
| 7 | Ali and Dhiman (2019) | To examine the statistical impact of credit risk management | The regression applied for the purpose | The credit risk management indicators have a significant influence |

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|--|--|---------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|----------------------------------|-----------------------------|--|-------------------------------|---------------------------------------|---------------------------------------|----------------------------|-------------------------------|-------------------|
| | indicators on analysis of data. on the financial | profitability of performance of | public sector selected public sector | commercial banks banks in India. The | for the period empirical findings | 2010-2017. The indicate that ROA | research (profitability) is | focuses on top ten positively related to | public sector CAR, management | commercial banks quality and earnings | selected on the ability whereas it is | basis of total found to be | assets. negatively related to | AQ and liquidity. |
|--|--|---------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|----------------------------------|-----------------------------|--|-------------------------------|---------------------------------------|---------------------------------------|----------------------------|-------------------------------|-------------------|

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| 8 | Okpala et al., (2019) | To analyzed the impact of credit management strategies on the liquidity and profitability of quoted chemical & paints manufacturing companies in Nigeria. | The descriptive survey design was implemented. 500 staff representing 60% of the population was used as the sample population upon which copies of questionnaire were administered. 342 valid responses were returned by the participants and analyzed. | The result obtained indicated that the credit management strategies - credit risk assessment, debt recovery strategy, receivable collection policy, have positive and statistically significant impact on the liquidity sub-variable - Ability to pay, level of bad debt, and cash inflow (R=.654 R2=.632, p=.0<.05; R=.692, |
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| | | | One-way NOVA | R2=.674, was used for descriptive statistics, and a simple regression analysis method was used to test the formulated hypotheses. | p=.0< .05; R=.621, R2=.601, p=.0<.05). The effect of liquidity on profitability was positive and statistically significant (R=.723, R2=.701, p=.0<.05). |
| 9 | Kaitibi et al., (2018) | To analyzed the impact of efficient credit management on profitability of commercial banks in Sierra Leone. | The Rokel Commercial Bank was selected as a case study. Collection of secondary data was mainly from the five year's financial statements of the bank for period 2010 to 2014, and annual reports of the bank. The analysis of the data was quantitatively as well as qualitatively done using ratios analysis and | Profitability of commercial banks in Sierra Leone is significantly influenced by the efficiency of credit management. The findings from this study noted the need for banks in Sierra Leone to have in place a good credit policy in order to improve their profitability. | |

| | | charts. | | |
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| 10 | Said (2018) | To analyze the impact of utilization of funds into unproductive sectors in Mangolian commercial banks. | The Credit risk of the banking financial institutes as it basically does the business of lending and borrowing of the money mainly belonging to shareholders and depositors. | The study found that loans and advances and loan loss provision have positive and insignificant effect on profitability, while non-performing loan has a negative and insignificant effect on profitability. The overall estimates of the two regressions have good fit and are adequate statistically. |
| 11 | Kishori and Sheeba (2017) | To analyzed the impact of credit risk on the profitability of the bank. | The data was analyzed using multiple regression. | The result showed that credit risk has a significant, negative impact on profitability. Moreover, State Bank of India has been facing credit risk due to inefficient credit risk management. |
| 12 | Khan and Ali (2016) | To analyzed the nature of | Correlation and regression | It was found to improve credit risk |

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| | | relationship and used respectively management the strength of to find the nature practices. Pakistani relationship exists of the relationship banks can minimize between the and extent of the credit risk by variables. relationship reducing the between nonperforming assets dependent and and managing the independent leverage properly. variables. | | |
| 13 | Ndoka and Islami (2016) | To analyze the impact of non-performing loan and capital adequacy on profitability of commercial banks in Albania. | Using a regression model, the independent variable are non-performing loan ratio and capital adequacy ratio. Again the dependent variables used are ROA and ROE. | The overall findings of this study show that there exists a correlation between credit risk management of commercial banks in Albania and their profitability, meaning that an efficient credit risk management leads to higher profitability. |
| 14 | Alshatti (2015) | To examine the effect of credit risk variables on the financial performance of commercial banks of Jordan. | It used secondary sources to collect data through annual reports of sample banks and carried out panel regression analysis study. The credit risk management | The findings of this study show that there is a positive effect of nonperforming loans/gross loans on banks' financial performance and a negative effect of provision for facilities loan/net |

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| | | | <p>indicators used in facilities ratio on this study are banks' financial capital adequacy performance. ratio, credit However, he found interest/credit that capital adequacy facilities, ratio and credit provision for interest/credit facilities loss/net facilities ratio have facilities, leverage no effect on banks' ratio and level of financial non-performing performance. loans. The bank Further, the financial significant variables performance found in this study indicators are are non-performing ROA and ROE. loans/gross loans, provision for facilities loss/net facilities and the leverage ratio.</p> |
| 15 | Alshatti (2015) | To examine the effect of credit risk variables on the financial performance of commercial banks of Jordan. | <p>It used secondary sources to collect data through annual reports of sample banks and carried out panel regression analysis study. The credit risk management indicators used in this study are</p> <p>The findings of this study show that there is a positive effect of nonperforming loans/gross loans on banks' financial performance and a negative effect of provision for facilities loan/net facilities ratio on banks' financial</p> |

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|----|------------------------|---|--|---|
| | | | capital adequacy performance. ratio, credit interest/credit facilities, provision for facilities loss/net facilities, leverage ratio and level of non-performing loans. | However, he found that capital adequacy ratio and credit interest/credit facilities ratio have no effect on banks' financial performance. |
| 16 | Samuel (2015) | To examined the negative consequences of the credit risk that affects profitability of the bank. | They used Non- performing loan & loan Advances ratios as the measure of credit risk and ROA as a measure of profitability. | The result showed that the ratio of Non- performing loan to loan & Advances and loan and advances to total deposit negatively affect the profitability. |
| 17 | Noman et al. (2015) | To analyze the effect of credit risk management on the profitability of banks in Bangladesh | The study used an unbalanced panel data and 172 observations from 18 private commercial banks from 2003 to 2013. | The study found a negative and significant effect of credit risk on profitability. The analysis also found a negative and significant effect of capital adequacy ratio on profitability. |

2.2.2 Review Literature in Nepalese Context

Pandey and Joshi (2023) investigated how Nepalese commercial banks' profitability was affected by credit risk management. The study's goal is to examine how credit risk management affects Nepalese commercial banks' bottom lines. The study

employed default rate, capital adequacy ratio, and cost per loan asset as independent variables. The ROA and ROE are the dependent variables. To determine the importance and impact of credit risk management on the profitability of Nepalese commercial banks, regression models are estimated. It has been determined that the beta coefficients of the default rate and cost per asset with profitability (ROA, ROE) are statistically significant and negative. The statistical link between the default rate and the cost per loan asset with profitability is statistically negative, as indicated by the negative sign. The capital adequacy ratio's beta coefficient with respect to ROA and ROE is also shown to be positive and statistically significant. The capital adequacy ratio and profitability have a statistically significant positive association, as indicated by the positive sign of the beta coefficient.

Bagale (2023) examined the profitability and management of credit risk of Nepal's commercial banks. to investigate the effect of credit risk management on Nepal's commercial banks' profitability. Regression analysis, correlation, mean, and standard deviation were used to examine data that were gathered from a sample of 15 commercial banks that were active in the Nepali economy between 2011 and 2020. One important analytical tool is the pooled regression analysis model (OLS) for panel data analysis. The profitability of Nepal's commercial banks is significantly impacted by credit risk. According to the study, the non-performing loan ratio, cash reserve ratio, and loan loss provision ratio have little to no detrimental effects on the return on equity of Nepali commercial banks. The study shows that return on equity is positively impacted by bank size and liquidity ratio. The study also shows that in Nepali commercial banks, the liquidity ratio significantly improves return on equity. Additionally, it is evident that the capital adequacy ratio significantly reduces return on equity.

Bhatt (2023) studied the factors that affect credit risk management and how they relate to Nepal's commercial banks' performance. to investigate how the performance of Nepal's commercial banks relates to the factors that determine credit risk management. The impact of credit risk management on the performance of Nepal's commercial banks is also examined. It made use of SPSS for descriptive statistics, regression analysis, Pearson correlation, and F-test. The findings show that credit risk

management and environmental risk have a beneficial association. Credit risk management is also discovered to be significantly impacted by credit appraisal measurements. The findings demonstrate the important impact of market risk analysis on credit risk management. The findings demonstrate that market risk analysis, credit assessment metrics, environmental risk, and commercial bank performance are all mediated by credit risk management. Therefore, in order to lower credit risk and achieve strong financial performance, managers should work to implement risk prevention and control measures.

Maharjan (2023) examined how credit risk management and firm-specific factors affected Nepal's commercial banks' profitability. Bank profitability is examined using multiple regression modeling, correlation analysis, and descriptive statistics to examine the effects of firm-specific and credit risk factors. The firm-specific and credit risk management characteristics of Nepalese commercial banks have a substantial impact on their overall profitability. The profitability variables as determined by ROA and ROE are highly impacted by firm-specific factors such as LLP, NPL, CAR, CDR, and bank size.

Akahtar (2023) investigated the factors, both internal and external, influencing the total profitability of Nepal's commercial banks. For this study, the descriptive and causal comparative research designs have been used. Regression analysis has been performed on the pooled data of 13 commercial banks for the years 2014–15–2021/22. According to the regression results, the capital adequacy ratio has a considerable but positive impact on bank profitability, while bank size, the credit to deposit ratio, and inflation have a major negative impact. Furthermore, the real gross domestic product has a negligible and adverse impact on the profitability of banks. This study comes to the conclusion that the capital adequacy ratio has a major impact on the profitability of commercial banks in Nepal. It implies that capital aids in taking on riskier loans in order to boost earnings.

Manandhar (2023) examined the impact of interest rates and exchange rates on Nepal's commercial banks' profitability. The impact of interest rates and currency rates on banks' profitability was examined through correlational study design,

utilizing SPSS tools. The influence was investigated using regression analysis, correlation analysis, and inferential statistics. The foreign exchange and interest rate fluctuations are having a negative impact on Nepal's commercial banks' financial performance. Along with the detrimental effects of interest rate changes, changes in FOREX have a substantial impact on the profitability of commercial banks.

Gwachha & Karmacharya (2023) investigated the impact of macroeconomic variables on the stability of commercial banks in Nepal, including the NEPSE Index, exchange rates, money supply (M2), GDP growth, inflation rate (INF), and exchange rate (ER). The Autoregressive Distributed Lag (ARDL) approach was used for analysis and interpretation of the data, which the study collected from the Nepal Rastra Bank, which from 2001 to 2022 produced a quarterly economic bulletin and database on the Nepalese economy. The study's conclusions show that the money supply (M2) and interest rate have a major and favorable influence on bank stability. In a similar vein, bank stability is positively but marginally impacted by the NEPSE index. However, the exchange rate and inflation rate have a statistically significant negative impact on bank stability. The study's main conclusions show that there is a consistent and long-lasting relationship between macroeconomic factors and bank stability. GDP growth, inflation, the effective exchange rate, and the NEPSE index are all statistically significant variables, according to the ARDL methods analysis, suggesting that these variables have a strong ability to explain the evolution of bank stability in Nepal.

Acharya & Vyas (2022) examined how macroeconomic factors and bank-specific factors impact Nepalese commercial banks' profitability. Panel data from twenty-four commercial banks between 2011–12 and 2019–20 is used in the study. According to the study, factors unique to banks, like the capital adequacy ratio, non-performing loans, and cost of funding, have a negative impact on the profitability (ROA and ROE) of banks. Positive effects are seen in the interest rate spread, total investment to total asset, and net interest income to total asset. When it comes to macroeconomic factors, banks' performance is positively impacted by the gross domestic product (GDP) and negatively impacted by inflation (INF). Because the macroeconomic variable INF has a negative impact on GDP, the analysis indicates that it is the main factor influencing banks' profitability.

Gautam & Gautam (2021) examined the impact of macroeconomic variables on the financial performance of Nepal's commercial banks, including the country's goods, interest rates, inflation rates, and unemployment rates. Five of the best commercial banks were chosen using stratified sampling and ten-year secondary data, based on their financial performance. The influence of predictors on financial performance was evaluated using OLS (random effect model) estimation, and the endogeneity problem in the predictor variables was investigated using the Hausman test. The study's findings showed that macroeconomic variables, with the exception of the unemployment rate, had a considerable impact on the estimation of commercial banks' return on equity (ROE) in Nepal; however, ROA showed no discernible influence. The GDP is one of the important factors that has the most predictive power for Nepal's commercial banks' financial performance.

Shrestha & Niraula (2021) investigated how Nepal's commercial banks' financial performance was affected by capital adequacy. From 2010 to 2015, the study analyzed data from the yearly financial statements of five commercial banks using the ordinary least square regression model. According to the empirical findings, profitability is positively correlated with bank size, liquidity, capital sufficiency, asset management, expense management, and real interest rate. However, there is a negative correlation between profitability and GDP growth and inflation rate. However, the only factors that significantly affect the profitability of commercial banks are bank size, liquidity, and expense management.

Manandhar (2019) when credit risk is examined, it is shown that there is a positive correlation with capital to total deposit and inflation and a negative correlation with return on equity, capital adequacy ratio, gross domestic product, and bank branch. According to Shrestha (2014), there is a considerable positive correlation between non-performing loans and return on assets, return on equity, net interest margin, and capital adequacy ratio. The logarithm of total assets and the ratio of total loans to total deposits, however, show a negative association with non-performing loans.

Poudel (2018) multiple regression analysis was used to examine the many criteria related to credit risk management and how it impacts the financial performance of

banks in Nepal using data from 31 commercial banks between 2008 and 2017. The study's parameters were the capital adequacy ratio, cost per loan asset, and default rate. The results showed that the default rate is the most important predictor of bank financial success, and that all other indicators have an inverse effect on banks' financial performance. Based on the results, the author suggests that Nepalese commercial banks place greater emphasis on risk management because it generally improves bank performance. The author also suggests that banks increase their funding for default rate management and work to maintain an ideal level of capital adequacy in order to minimize loan risk and maximize performance.

Bhattarai (2018) analyzed the impact of bank specific and macroeconomic variables on Nepalese Commercial bank's financial performance. In order to investigate the effects of these five macroeconomic variables—the GDP, real interest rate, inflation rate, unemployment rate, and exchange rate—on return on equity (ROE), which is a proxy for profitability, and return on asset (ROA), panel data regression analysis with random effects was applied to the data. The results of the study showed that the real GDP growth rate significantly impacted the profitability of commercial banks as determined by ROE and ROA (return on equity). The other macro-indicators, as determined by ROA and ROE, have no discernible effect on profitability. Thus, it suggests that internal rather than external factors are having an impact on the profitability of banks in Nepal.

Bhattarai (2016) according to research, the "cost per loan assets" has a favorable impact on bank performance while the "non-performing loan ratio" has a negative one. The outcome additionally demonstrated the beneficial impact of assets growth ratio and credit risk indicators on bank performance. It is not believed that the cash reserve and capital adequacy ratio have an impact on a bank's performance. The study's conclusion was that credit risk indicators and bank performance have a substantial link. The financial performance of commercial banks can be predicted in large part by credit risk management. The success of bank performance is contingent upon the efficacy of credit risk management, among other factors. This has given rise to a plethora of scholarly papers discussing the relationship between credit risk management and bank performance in the context of developing nations such as

Nepal. The study found a substantial inverse association between credit risk as determined by default and capital adequacy ratio and the performance of commercial banks as measured by ROA.

Dhakal (2015) analyzed capital adequacy and provision for loan loss have a negative and substantial relationship. Nevertheless, there is no discernible correlation between GDP growth rate, inflation, and bank size when accounting for loan loss provisions. Credit risk has a positive correlation with total deposit and capital to inflation but a negative correlation with return on equity, capital adequacy ratio, gross domestic product, and bank branch. Non-performing loans have a significant positive correlation with return on assets, return on equity, net interest margin, and capital adequacy ratio. Nonetheless, there is a negative correlation between non-performing loans and the logarithm of total assets and the ratio of total loans to total deposit.

Table 2

Summary of Review of Literature in Nepalese Context

| | Author (Year) | Objective | Methodology | Findings |
|---|-------------------------|--|---|---|
| 1 | Pandey and Joshi (2023) | To analyze the impact of credit risk management on the profitability of Nepalese commercial banks. | Default rate, cost per loan assets and capital adequacy ratio are the independent variables used in this study. | The beta coefficient of default rate and cost per assets with profitability (ROA, ROE) has been found negative and statistically significant. The negative sign indicates that there is statistically negative relationship between default rate and cost per loan assets with profitability. Likewise, the beta coefficient of capital adequacy ratio with ROA and ROE is found to be positive and statistically significant. The positive sign of beta coefficient indicates that |

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| | | test | the | there | is |
| | | significance | and effect of | credit risk | management on |
| | | | profitability of | Nepalese | commercial |
| | | | banks. | | |
| 2 | Bagale (2023) | To examine the impact of Credit Risk Management on the Profitability of commercial Banks of Nepal. | Data collection from the sample of 15 commercial banks operated in Nepali economy for the period of 2011 to 2020 have been collected and analyzed using Pooled regression analysis model (OLS) of panel data analysis is | were Credit risk has the significant impact on profitability of commercial banks in Nepal. The study reveals that cash reserve ratio, loan loss provision ratio and non-performing loan ratio has insignificant negative impact on return on equity in Nepali commercial bank. The study reveals that bank size and liquidity ratio has positive impact on return on equity. The study also reveals that liquidity ratio has significant positive impact on return on equity in Nepali commercial bank. Capital adequacy ratio also reveals has significant negative impact on return on equity. | |

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| | | | used as a major tool of analysis. | |
| 3 | Bhatt (2023) | To examine the determinant s of credit risk management and their relationship with the performance of commercial banks in Nepal. It also examines the mediating role of credit risk management on the performance of commercial banks in Nepal. | Descriptive statistics, Pearson correlation, regression analysis, and F-test, using SPSS. | The results indicate that there is a positive relationship between environmental risk and credit risk management. It is also found that credit appraisal measurements have a significant effect on credit risk management. The results reveal that market risk analysis has a significant effect on credit risk management. The results show that credit risk management mediates the relationship between environmental risk, credit appraisal measurements, market risk analysis, and the performance of commercial banks. Therefore, managers should strive to impart risk prevention and control mechanisms to reduce credit risk and achieve good financial performance. |
| 4 | Maharjan (2023) | To analyze the impact | Descriptive statistics, | The overall profitability of Nepalese commercial banks is |

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| | | of firm correlation and affected significantly by their specific multiple firm specific and credit risk variables regression management variables. The firm and credit model used to specific variables like LLP, NPL, risk analyze the CAR and CDR are significantly management impact of firm affecting the profitability on specific and variables as measured by ROA profitability credit risk and ROE. of variables on commercial profitability of banks in banks. Nepal. |
| 5 | Akahtar (2023) | To examine the internal and external variables affecting the overall profitability of commercial banks in Nepal. The descriptive and causal comparative research designs have been adopted for the study. The pooled data of 13 commercial banks for the period 2014/15 to 2021/22 have been analyzed using regression model. The regression results revealed that credit to deposit ratio and inflation has significant negative effect on bank profitability whereas capital adequacy ratio has significant but positive effect on bank profitability. In addition, real gross domestic product has insignificant and negative effect on bank profitability. This study concludes that the commercial banks profitability in Nepal is mainly influenced by capital adequacy ratio. It means that capital helps take on more risky loans to increase profits. |
| 6 | Manandhar (2023) | To examine the role of Using SPSS tools, the role The changes in interest rate and foreign exchange rate is adversely |

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| | | interest rate of interest rate affecting the financial and exchange rate on banks performance of commercial banks in Nepal. Change in rate on profitability FOREX is significantly affecting profitability analyzed using commercial banks profitability of correlational along with negative impact of commercial research design. change in interest rate. banks of Inferential Nepal. statistics, correlation analysis and regression analysis used to study the impact. |
| 7 | Gwachha & Karmacharya (2023) | To examine the influence of macroeconomic factors such as Inflation (INF), Gross Domestic Product (GDP) growth, Inflation Rate (INF), Exchange rate (ER), |
| | | The examine obtained data from the Nepal Rastra Bank, which published a quarterly economic bulletin and database on the Nepalese economy from 2001 to 2022, and applied the Autoregressive Distributed Lag (ARDL) |
| | | The findings from this analyze indicate that the interest rate and money supply (M2) have a positive and significant impact on bank stability. Similarly, the NEPSE index has a positive but insignificant impact on bank stability. However, bank stability is negatively and statistically significantly impacted by both the exchange and inflation rates. The primary findings of the research indicate the presence of a sustained and stable association between bank stability and macroeconomic variables. The ARDL techniques analysis |

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| | | Money Supply (M2), and NEPSE Index on bank stability of commercial banks in Nepal. | technique for evaluation and interpretation | demonstrates that GDP growth, inflation, effective exchange rate, and NEPSE index are statistically significant factors, implying that they have a robust capacity to clarify the evolution of bank stability in Nepal. |
| 8 | Acharya & Vyas (2022) | To analyze, how the bank specific and macroecono mic variables affects the profitability of Nepalese commercial banks. | The analyze uses panel data of twenty-four commercial banks from 2011/12 to 2019/20. The study finds that bank-specific variables such as capital adequacy ratio, non-performing loan, and Cost of funds negatively affect banks' profitability (ROA and ROE). | Interest rate spread, total investment to total asset, and net interest income to total asset have a positive effect. Regarding macroeconomic variables, gross domestic product (GDP) positively impacts banks' performance, while inflation (INF) has a negative impact. The study concludes that the macroeconomic variable INF is the primary determinant of banks' profitability because it also adversely influences GDP. |
| | Gautam & Gautam | To analyze the effect of | Five top commercial | The analyze result revealed significant influence of |

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| (2021) | <p>macroeconomic indicators such as domestic products, interest rate, inflation rate, and unemployment rate on the financial performance of commercial banks in Nepal.</p> <p>banks based on the financial performance as were selected with stratified sampling, with secondary data of ten years. Hausman test was used to examine the endogeneity issue in the predictor variables and the effect of predictors on financial performance were estimated using OLS estimation (random effect model).</p> | <p>macroeconomic factors except the unemployment rate for estimating ROE of commercial banks in Nepal while no significant impact was revealed for ROA. Among the significant variables, GDP contributes more in predicting the financial performance of commercial banks in Nepal.</p> |
| 9 Shrestha & Niraula (2021) | <p>To analyze the impact of capital adequacy on financial performance of commercial</p> <p>The examine employed the ordinary least square regression model to analyze the data obtained from</p> | <p>The empirical results suggest that liquidity, capital adequacy, asset management, expense management, and real interest rate are positively related to profitability. GDP growth and inflation rate on the other hand, are related negatively to</p> |

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| | | banks in the annual profitability. | |
| | | Nepal. financial statements of five commercial banks from 2010 to 2015. | However, only liquidity and expense management have a significant effect on commercial banks profitability. |
| 10 | Manandhar (2019) | To analyze the impact of credit risk variables on Profitability of Nepalese Commercial Banks. | Descriptive research design using correlation and multiple regression analysis. Return on assets, return on equity, net interest margin and capital adequacy ratio have significant positive relation with non-performing loans. However, ratio of total loans to total deposit and logarithm of total assets have negative relationship with non-performing loans. |
| 11 | Poudyal (2018) | To analyze the impact of credit risk parameters on financial performance of 31 commercial banks of Nepal. | Correlational research design applying multiple regression analysis. The 31 parameters specified in the study were default rate, cost per loan assets and capital adequacy ratio. The findings revealed that all these factors have an inverse impact on banks' financial performance, and that default rate is the most significant predictor of bank financial performance. From the findings, the author recommends for Nepalese commercial banks to emphasize more on risk management as risk management, in general, has a significant contribution to bank performance. |
| 12 | Bhattarai (2018) | To analyze the impact | Panel data regression The analyze findings indicated that real GDP growth rate had |

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| <p>of bank analysis with negative significant effect on specific and random effects profitability of commercial banks macroeconomic was utilized on as measured through Return on mic the data to Assets (ROA) and Return on variables on examine the Equity (ROE). While rest of the Nepalese effects of these macro-indicators do not have a Commercial five significant impact on profitability bank's macroeconomic measured by ROA and ROE. It is financial variables which therefore indicating that internal performance included: Gross factors are impacting the . Domestic profitability of banks in the Nepal Product (GDP), rather than external factors. Real interest rate, Inflation rate, unemployment rate, and Exchange rate on Return on Asset (ROA) and Return on Equity (ROE) which proxies' profitability.</p> | |
| <p>13 Bhattarai (2016)</p> | <p>To Using SPSS, The success of bank performance examined correlation and depends on effectiveness of credit the different regression risk management among other parameters analysis, the things which leads to surge an affecting impact of NPA academic paper on credit risk credit risk ratio, CAR, management and effect on bank management banks size, LLP performance in the context of of Nepalese and related Nepal and other developing</p> |

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| | commercial banks. | variables credit management of banks. | on risk of performance measured by ROA and credit risk measured by default and capital adequacy ratio. |
| 14 | Dhakal (2015) | To analyze the effect of credit risk management on the profitability of commercial banks in Nepal. | Multiple regression analysis to determine the degree of association between credit risk and profitability variables. Capital adequacy has negative and significant relation with provision for loan loss. However, there is no significant relationship between bank size, GDP growth rate and inflation with provision for loan loss. Credit risk has negative relationship with return on equity, capital adequacy ratio, gross domestic product and bank branch but positive relationship with inflation and capital to total deposit. |

2.3 Research Gap

The term "research gap" describes the difference between this research and earlier research. Numerous professionals, researchers, and students have undertaken a number of studies regarding credit risk management and profitability.

Between the current study and earlier studies, there is a certain gap. "Credit Risk Management" is the subject of the earlier studies. Earlier, secondary data was used in a lot of research projects. In order to achieve the desired results for the study, a variety of efficient methods and instruments are employed, however some primary and secondary data are also used in this research.

The study's intended goals were met through the application of statistical and financial methods for fact analysis. Analyses of ratios are among the statistical and financial techniques; these also include trend analysis, coefficient of variation, mean, standard deviation, and correlation analysis.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is the process of solving an issue by carefully and methodically handling the data gathering, analysis, and interpretation. It can be viewed as a science that studies scientific research methodology. This chapter examines the numerous approaches that researchers typically take when analyzing the research challenge and the reasoning behind them. It describes the several iterative procedures a researcher must follow while examining a problem with specific goals in mind. It is the procedures that the researcher adheres to in order to provide the findings of his investigation. Actually, it is the research plan that the investigator will carry out. Therefore, research methodology is very important as it represents the method of entire research.

3.1 Research Design

A research design is an investigation's plan, structure, and strategy developed to find the answers to research questions and manage variance. The plan provides the general framework for the research program. As such, the study's analysis is predicated on a particular research design. This study used both an analytical and descriptive research design.

According to its definition, research is human activity that involves applying intellect to the study of matter. Finding, analyzing, and developing strategies and frameworks to expand human understanding of a wide range of scientific topics pertaining to our planet and the cosmos is the main goal of applied research. A compilation of all available data on a specific topic is sometimes referred to as research. This study employs a quantitative methodology.

3.2 Population and Sample

Since, this is simple research based on secondary data only, for this research, As of November 2023 there are 20 commercial banks are regarded as population out of which only seven banks, RBBL, NBL, NABIL, EBL, SBL, CZBIL and NIMBL are

taken as sample. The sample banks are taken with objective to include all categories of commercial banks operating in Nepal as government owned banks, joint venture banks and privately owned commercial banks. Better performing banks like EBL, NABIL bank and worst performing banks like CZBIL, NIMBL are included in the sample of the study. Thus, it is based on the convenience sampling.

3.3 Sources of Data

The majority of the data used in this study are secondary. The bank's audited annual report and other printed materials, such as booklets, special reports, survey reports, published literature, and annual reports, are sources of secondary data.

3.4 Data Analysis Tools

An analysis and presentation of the study's pertinent data will be made using information gathered from secondary sources. As a result, the information gathered will be categorized and displayed using a common style. The data for this study are analyzed mostly through statistical methods. The results are tallied and arranged under different categories. For a meaningful interpretation of the outcomes, they are compared with the similar result from the past. The following provides a quick overview of the tools:

3.4.1 Financial Tools

As financial tools, mainly credit risk and profitability related ratio are calculated

3.4.2 Statistical Tools

As a statistical tool, mean, standard deviation, coefficient of variation (CV), correlation coefficient and regression analysis are used.

a. Arithmetic Mean

Arithmetic mean of a given set of observations is the sum of the observation divided by the number of observations. In such a case all items are equally important. Simple arithmetic means is used in this study as per necessary for analysis.

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

Where,

$\sum X$ = Sum of all values of the observation

N = Numbers of observation

X = Value of variable

σ = Standard Deviation

The letter (σ) is typically used to represent the standard deviation. Karl Pearson defined it as the given observations from their arithmetic mean of a group of values and proposed it as a commonly used measure of dispersion. Another name for it is the root mean square deviation. In this study, the standard deviation has been utilized to quantify the extent of analysis's fluctuation of interest.

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{n}}$$

b. Coefficient of Variation

The term "coefficient of standard deviation" refers to the relative measure of dispersion based on standard deviation, whereas "coefficient of variation" is the product of 100 times the coefficient of standard deviation. C.V. indicates it as such:

$$\text{C.V.} = \frac{\text{S.D.}(\sigma)}{\text{Mean}(\bar{X})} \times 100$$

Where, S.D. (σ) = Standard Deviation

\bar{X} = Mean value of variables

The distribution having less C.V. is said to be less variable or more consistent.

A distribution having greater C.V. is said to be more variable or less consistent.

c. Correlation Coefficient

The link between variables can be measured in a number of ways. The correlation coefficient, which displays the strength and direction of the association between the variables, is the most straightforward and trustworthy metric. Assume that there is only a relationship between the two variables under investigation and that no other variables could have an impact on it. In this study, Karl Pearson's correlation of covariance method is applied as needed for analysis. It is denoted by 'r'. Thus,

$$\text{Correlation Coefficient } (r_{xy}) = \frac{\text{COV.}(x,y)}{\sigma_x \sigma_y}$$

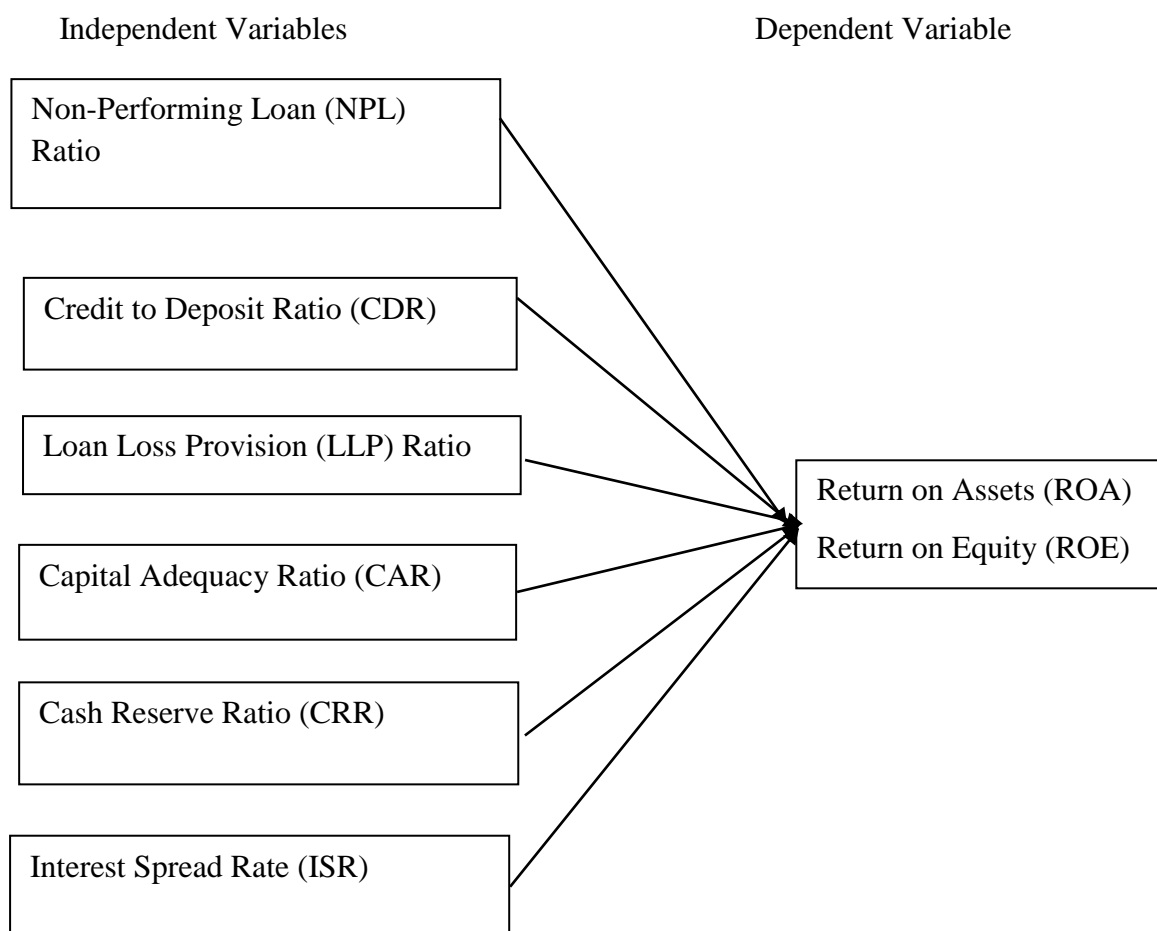
$$\text{Cov}(x,y) = \frac{\sum(x-\bar{x})(y-\bar{y})}{n}$$

d. Multiple Regression Analysis

A statistical technique called multiple regression is used to determine a criterion's value from a number of other independent, or predictor, factors. It is the process of combining several variables at the same time to determine how and to what degree they influence a particular result. When there are unquantifiable or unpredictable components involved, this method fails.

3.5 Research Framework

This study will be based on the schematic diagram as presented in Figure 1.



Source: Nwanna and Oguezue (2017)

Figure 1. Research framework

Dependent Variables

Return on Assets (ROA)

The ratio of net income to total assets, or return on asset (ROA), expresses the amount of net income generated for every dollar of assets. According to Vang and Chan (2009), it shows how well management is turning the bank's actual investment resources into profits. In light of the bank's total assets, it so demonstrates the profitability and efficiency of the management of the bank. Mathematically, ROA is expressed as,

$$\text{Return on Assets} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}} * 100$$

Because it eliminates biases caused by variations in financial leverage, ROA is a helpful statistic for assessing bank profitability for banks with comparable risk profiles (Bhattarai, 2014). ROA is a thorough indicator of a bank's entire performance from an accounting standpoint (Jr. Sinkey & Sinkey Jr., 1992). In previous studies by Alshatti (2015), Berríos (2013), Bhattarai (2014), Kaaya and Pastory (2013), Kurawa and Garba (2014), Nawaz et al. (2012), Ndoka and Islami (2016), Ogboi and Unuafe (2013), Adeusi et al. (2014), Poudel (2012), Zou and Li (2014), Zubairi and Ahson (2014), etc., ROA has been widely used as a metric of bank profitability when examining the relationship between credit risk management and bank performance. Thus, providing us an argument for using return on asset (ROA) as an indicator of bank profitability.

Return on Equity (ROE)

The ratio of net income to total equity capital, or return on equity, or ROE, represents the return to shareholders on their equity. It assesses how effectively management is turning a profit with the capital contributed by shareholders (Athanasoglou, Brissimis, & Delis, 2008). Based on the equity that shareholders have contributed to the bank, return on equity (ROE) is one of the most significant metrics for assessing the productivity and profitability of the bank's management. The ROE equation is expressed as

$$\text{Return on Equity} = \frac{\text{Net Profit After Tax}}{\text{Total Equity}} * 100$$

A bank that has a higher return on equity (ROE) is often better able to provide a higher return to its shareholders. The better a bank is, the higher its return on equity (ROE) relative to its rivals. Hence, higher ROE is always preferred by bank stockholders; nevertheless, as noted by Saunders and Cornett (2011), there may occasionally be a risk to the bank as a result, as rising ROE suggests that net income is growing more quickly than total equity. Furthermore, a significant decline in equity capital could lead to a breach of minimum regulatory capital requirements, raising the likelihood that the banks won't be able to maintain their solvency (Saunders & Cornett, 2011). ROE has been used as a metric of profitability in a number of prior empirical studies (Aduda and Gitonga (2011), Afriyie and Akotey (2012), Alshatti (2015), Berríos (2013), Ndoka and Islami (2016), Adeusi et al. (2014), Zou and Li (2014), Zubairi and Ahson (2014)) that looked at the relationship between credit risk management and bank performance. As a result, ROE is the second profitability metric that the study uses.

Independent Variables

Non-Performing Loan (NPL) Ratio

The non-performing loan ratio (NPLR) is one of the most important indicators of credit risk and financial stability. A rise in NPLR is thought to indicate a bank's credit policy failure, lower bank earnings, and a significant contributing factor to the financial crisis (Saba, Kouser, & Azeem, 2012). Since NPLR shows the percentage of non-performing loans to the entire loan portfolio, it is also seen as a gauge of how banks handle their credit evaluation (Hosna, Manzura, & Juanjuan, 2009). If the borrower is still making payments on the loan, a non-performing loan is typically described as late payment rather than default (Choudhry, 2011). But the likelihood of a loan being fully repaid is negligible after it enters non-performance (Saba et al., 2012). The ratio is calculated as;

$$\text{NPL Ratio} = \frac{\text{Non – Performing Loan's}}{\text{Total Loan and Advance}} * 100$$

Substandard, questionable, and virtual loss and loss are all considered non-performing loans, and they are grouped based on how difficult it is to collect on them. Even when the borrower hasn't paid back the entire amount owed, a non-performing loan

becomes performing if the borrower begins making payments on it once more. Numerous research on the relationship between non-performing loans and financial performance have been done since non-performing loans are important to financial institutions; nevertheless, the authors' findings appear to be inconsistent. Afriyie and Akotey (2012) and Alshatti (2015) found a positive effect of non-performing loans on bank financial performance, while Aduda and Gitonga (2011), Li and Zou (2014), Bhattarai (2014), Kaaya and Pastory (2013), and Ndoka and Islami (2016) found an inverse impact of non-performing loans on the bank profitability. Nonetheless, no connection was discovered by Adeusi et al. (2014), Kithinji (2010), Nawaz (2012), or Ogboi and Unuafe (2013) between bank performance and non-performing loans.

Credit to Deposit Ratio (CDR)

A bank's liquidity is evaluated using the credit-to-deposit ratio (CDR), which is calculated by dividing its total loans by its total deposits over the same time period. A percentage is used to represent the CDR. The bank could not have adequate liquidity to meet any unforeseen funding requests if the ratio is excessively high. On the other hand, the bank could not be making as much money as it could if the ratio is too low. Divide the entire number of loans made by a bank by the total amount of deposits made during the same time period to find the loan-to-deposit ratio. The numbers are available on the balance sheet of a bank. Deposits are presented as liabilities and loans as assets. The loan-to-deposit ratio demonstrates how well a bank can manage customer withdrawals and loan losses. In the case of an economic downturn leading to loan defaults, investors keep an eye on banks' CDRs to ensure there is sufficient liquidity to service loans. Additionally, the CDR aids in demonstrating how successfully a bank draws in and holds onto clients. New money and customers are being brought on board if a bank's deposit volume is rising.

Investors can ascertain whether a bank is appropriately managed with the use of the CDR. The bank won't have as much money to lend if its deposits are declining or remain unchanged. Sometimes banks will take out loans to cover their demand in an effort to increase interest income. However, as interest must be paid on the debt, a bank will incur debt servicing expenses if it chooses to support its lending activities through debt rather than deposits. Because of this, banks that borrow money to lend to

their clients usually have larger debt loads and smaller profit margins. Since the interest rates provided to depositors are far lower than the rates it would pay to borrow money, banks would choose to lend money using deposits. Investors can identify banks that don't need to raise their debt by using the CDR to determine which ones have enough deposits on hand to lend.

For banks, the right CDR requires a careful balancing. Banks run the risk of overextending themselves if they lend too much of their deposits, especially during a recession. Banks may experience opportunity cost, though, if they lend out too few of their deposits because such deposits would remain on their balance sheets and generate no income. Banks with low CTD ratios may see a decline in earnings due to a decrease in interest income. Variations in the loan-to-deposit ratios can be caused by a variety of circumstances. Both the demand for loans and the amount of money investors deposit can be impacted by economic conditions. Customers are less inclined to raise their deposits if they are unemployed. By altering interest rates, the central bank controls monetary policy. Depending on the state of the economy, demand for loans may rise in the event of low rates. The ratio is calculated as;

$$\text{Credit to Deposit Ratio} = \frac{\text{Total Loan and Advances}}{\text{Total Deposits}} * 100$$

Loan Loss Provision (LLP) Ratio

A bank's level of protection against potential losses can be determined by looking at its loan loss provision coverage ratio. A greater ratio indicates a bank's improved ability to absorb unanticipated losses over and beyond the loan loss provision. Lending money to individuals, families, and enterprises is the business of banks and credit unions. However, not all loans are paid back in full; in fact, a lot of banks charge exorbitant interest rates to lend to riskier borrowers. Banks predict losses and aim to keep adequate capital to withstand future write-offs in order to stabilize earnings and stay solvent during difficult periods. The ratio is calculated as;

$$\text{LLP Ratio} = \frac{\text{Total Loan Loss Provision}}{\text{Total Loan and Advance}} * 100$$

Capital Adequacy Ratio (CAR)

The capital adequacy ratio is a measure of a bank's capital level stated as a percentage of its risk-weighted credit exposure. It is computed as the ratio of capital to the risk-weighted total of the bank's assets (Poudel, 2018). It is the proportion of capital that a bank must maintain in accordance with legal requirements. In order to assess banks' ability to absorb losses and make sure that, in the worst case, they would still be able to absorb a respectable amount of losses, it is imperative that they maintain a certain CAR (Reddy & Prasad, 2017). Generally speaking, banks with high CAR are seen as low risk and likely to fulfill their financial obligations. The protection of depositors and the stability of the financial system will increase with a larger ratio. It is reasonable to argue that having adequate capital adequacy enhances profitability since it allows banks to withstand potential losses and avoid failure or insolvency. The ratio is calculated as;

$$\text{Capital Adequacy Ratio} = \frac{\text{Total Capital Fund (Tier I + Tier II)}}{\text{Total Risk Weighted Assets}} * 100$$

Mixed results were found in several empirical research that examined and used CAR in their study. For example, a substantial positive association between capital adequacy ratio and bank performance was reported by Abdelrahim (2013), Afriyie and Akotey (2012), Bhattarai (2014), Kurawa and Garba (2014), and Ogboi and Unuafe (2013). Conversely, a negative correlation was discovered by Alshatti (2015), Zou and Li (2014), Ndoka and Islami (2016), and Poudel (2012) between the capital adequacy ratio and bank performance. Nonetheless, the majority of research suggests that banks should keep CAR to shield them against potential losses. Therefore, it is anticipated that the capital adequacy ratio and profitability will positively correlate.

Cash Reserve Ratio (CRR)

A percentage of all customer deposits held with the central bank is the cash reserve ratio. It is one of the tools the reserve bank uses for monetary policy to manage the amount of money in the economy (Abid & Lodhi, 2015). The interest rates, liquidity, and bank profitability are all significantly impacted by this (Teja, Tejaswi, Madhavi, & Ujwala, 2013; Bhattarai, 2014). When a central bank lowers its CRR, the bank's cash reserve ratio (CRR) rises, interest rates fall, and bank profitability rises as a

result of the increased cash available for funding that results in higher interest earnings. In contrast, Bank availability of funds declines as CRR rises, which implies that there is less money available for loans, which lowers interest income and lowers profitability. The availability and lack of funds in the banks will be a function of the CRR's increase and reduction, indicating the banks' liquidity situation. However, CRR itself works as a barrier to the banks' profitability rather than generating any revenue for the financial institutions. For various categories of banks and financial institutions, the central bank of Nepal has established different rates for the stipulated regulatory requirement of CRR to be maintained. The CRR that commercial banks are required to maintain in accordance with Nepal Rastra Bank regulations 2021/22 is set at 5% (Bank, 2021).

The ratio is calculated as;

$$\text{Cash Reserve Ratio} = \frac{\text{Balance with Nepal Rastra Bank}}{\text{Total Deposits}} * 100$$

Interest Spread Rate (ISR)

The difference between the interest rate a bank pays depositors and the interest rate it receives on consumer loans is known as the net interest rate spread. The profitability of a bank is greatly dependent on the net interest rate spread. Contemplating the net interest rate as a profit margin can be helpful. Commercial banks and other loan-granting organizations get their interest income from a variety of sources. One important source of information is deposits, also known as core deposits. These can be found mostly in the form of certificates of deposit (CDs) or checking and savings accounts. These are frequently acquired at cheap prices. In addition, wholesale deposits, debt issuance, and shareholder stock are ways that banks raise money. Banks offer a range of loans with higher interest rates, including credit card loans, home equity loans, student loans, auto loans, and mortgages on real estate.

Managing the difference between the interest rates it pays customers on their deposits and the interest it gets from their loans is a bank's main activity. Put another way, a bank makes money from the interest rate spread when the interest it receives on loans exceeds the interest it pays on deposits. Net interest rate spreads are comparable to profit margins in a straightforward way. The financial institution is probably going to

be more profitable the wider the spread. This is only a general overview, though, as financial institutions also focus on innovative approaches to primary investing, client loyalty, and customer acquisition. The formula for calculating the ratio is;

$$\text{ISR} = \frac{\text{Interest Income}}{\text{Interest Earning Assets}} - \frac{\text{Interest Expenses}}{\text{Interest Paying Liabilities}} * 100$$

3.7 Model Specification

A measure of a company's profitability in relation to its total assets is called return on assets. Investors, analysts, and management can use return on assets (ROA) to assess how well a company uses its resources to turn a profit. Return on equity (ROE) is a number that tells investors how well a business—or, more precisely, how well its management team is using the money that its shareholders have provided. There are two functions for this study which is given as:

$$\text{Model 1 } Y_1 = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + e_t$$

$$\text{Model 2 } Y_2 = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + e_t$$

Where,

Y_1 = Return on Asset

Y_2 = Return on Equity

B_0, B_1, B_2, B_3, B_4 and B_5 are regression coefficients.

X_1, X_2, X_3, X_4 and X_5 are independent variables.

X_1 = Non-Performing Loan (NPL) Ratio

X_2 = Credit to Deposit Ratio (CDR)

X_3 = Loan Loss Provision (LLP) Ratio

X_4 = Capital Adequacy Ratio (CAR)

X_5 = Cash Reserve Ratio (CRR)

X_6 = Interest Spread Rate

e_t = Error Terms

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Results

To enhance the study's informativeness and make the report more user-friendly, data and statistics about the profitability and credit risk management of Nepal's commercial banks are tallied and graphically shown in this chapter. The raw data are gathered from many sources and presented more effectively as trend values, ratios, and analyses of the banks' profitability and credit risk management. Data analysis compiles the gathered data, whereas data presentation presents the study's interpretation. Without interpretation, analysis is incomplete, and without analysis, interpretation cannot move further. Throughout this course of investigation, financial and statistical methods have been used to assess data that has been collected from multiple sources. Tables that are relevant have been included to summarize the computation's results. In order to arrive at a conclusion, this chapter presents data and analyzes it.

Findings are a crucial component of all professional operations, commercial, industrial, and marketing endeavors, as well as academic research. Utilizing the gathered data, which is regarded as raw data and needs to be processed before being used for any purpose, is essential. Findings aid in the interpretation of data, decision-making, and research question resolution. Software and tools for data processing can be used for this. The process of presenting data begins with data collection, which is then processed using a variety of techniques and sorted. Since raw data is inherently non-comprehensive, processed data aids in extracting information from it. Using graphs, charts, maps, and other visual aids to depict the data is part of presenting it. Through the addition of a visual element, these techniques aid in enhancing the comfort and speed of data comprehension. The many variables are measured in their absolute value under this topic. Different variables are measured separately, as opposed to ratio analysis. Thus, some of the significant individual variables are reviewed in this chapter together with their absolute values for mean and standard deviation.

4.1.1 Descriptive Statistics

The table 3 represents descriptive statistics of dependent and independent variables of commercial banks of Nepal for study period of 2013/14 to 2022/23. The dependent variable are profitability indicators (ROA and ROE) whereas independent variables are NPL ratio, CDR, LLP ratio, CAR, CRR and ISR. The detailed information regarding mean, standard deviation, minimum value, maximum value, and count can be presented as following;

Table 3

Descriptive Statistics

| Details | Min. | Max. | Mean | S.D. |
|---------------------------|-------|-------|---------|--------|
| Return on Assets | 0.63 | 3.60 | 1.6813 | 0.0636 |
| Return on Equity | 4.03 | 68.21 | 20.5567 | 1.5717 |
| Non-Performing Loan Ratio | 0.12 | 7.27 | 2.1474 | 0.1982 |
| Credit to Deposits Ratio | 46.08 | 93.58 | 78.3173 | 1.2995 |
| Loan Loss Provision ratio | 0.87 | 2.74 | 1.0949 | 0.0292 |
| Capital Adequacy Ratio | 2.69 | 19.09 | 12.3320 | 0.3994 |
| Cash Reserve Ratio | 3.05 | 25.09 | 11.1976 | 0.6512 |
| Interest Spread Rate | 3.15 | 7.32 | 4.3970 | 0.0934 |
| Valid N (listwise) | 70 | | | |

The average of non-performing loan ratio for sample commercial bank was 2.148 percent with average credit to deposit ratio (CDR) of 78.317 percent, an average ROA of 1.681 percent, average ROE of 20.557 percent, average LLP of 1.095 percent, average CAR of 12.332 percent, average CRR of 11.198 percent and average ISR of 4.397 percent.

In 70 information's of seven commercial banks recent ten year's performance, the maximum ROA is 3.602 percent and minimum ROA of 0.630 percent. ROE ranging from minimum of 4.027 percent and maximum of 68.214 percent. Highest non-

performing loan ratio is 7.270 percent and minimum of 0.117 percent. CDR is minimum of 46.80 percent whereas maximum ratio of 93.580 percent. The LLP ratio is minimum of 0.875 percent and maximum of 2.741 percent, CAR is lowest of 2.690 and highest of 19.090 in 70 information. The minimum cash reserve ratio (CRR) is 3.050 percent and maximum CRR of 25.090 percent, the lowest ISR is 3.150 percent and highest ISR of 7.320 percent.

4.1.2 Correlation Analysis

The degree of link between two variables is measured using correlation coefficients. Although there are other varieties of correlation coefficients, Pearson's is the most widely used. A correlation coefficient that is frequently used in linear regression is Pearson's correlation, usually known as Pearson's "r." A statistical indicator of how strongly two variables have a linear relationship is the correlation coefficient. Its possible values are between -1 and 1. A perfect negative, or inverse, correlation is represented by a correlation coefficient of -1, where values in one series rise while those in the other series drop and vice versa. A straight association, or perfect positive correlation, is shown by a coefficient of 1. When the correlation coefficient is zero, a linear link is absent.

In science and finance, correlation coefficients are used to evaluate the degree of relationship between two variables, elements, or data sets. For instance, one would think there is a large positive correlation between oil prices and forward returns on oil stocks since high oil prices are advantageous for crude producers.

Table 4 provides a detailed display of the correlation coefficient between several indicators pertaining to the profitability and credit risk management of Nepal's commercial banks over the last ten years, from 2013–14 to 2022–23.

Table 4

Correlation Analysis

| Details | ROA | ROE | NPL | CDR | LLP | CAR | CRR | ISR |
|---------|--------|--------|--------|--------|--------|--------|--------|-----|
| ROA | 1. | | | | | | | |
| ROE | .316** | 1. | | | | | | |
| NPL | -.031 | .666** | 1. | | | | | |
| CDR | -.127 | -.79** | -.74** | 1 | | | | |
| LLP | -.212 | .404** | .416** | -.41** | 1. | | | |
| CDR | -.153 | -.89** | -.66** | .769** | -.43** | 1. | | |
| CRR | -.093 | .431** | .212 | -.44** | .178 | -.41** | 1. | |
| ISR | .276* | .572** | .427** | -.52** | -.030 | -.53** | .402** | 1. |
| N | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |

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

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

The return on assets (ROA) is moderately positively correlated with ROE and IRS whereas lower degree of positive correlation with bank's size, lower degree of negative correlation with NPL ratio, CDR, LLP, CAR and CRR as well.

The return on equity (ROE) is also showing positive correlation with ROA, NPL, LLP, CRR and ISR, but a high degree of negative correlation with CDR and CAR.

Non-performing loan ratio (NPL) is highly negatively correlated with credit to deposit ratio (CDR) and capital adequacy ratio (CAR). NPL ratio is averagely positively correlated with ROE, LLP, ISR and CRR, NPL ratio is and the ratio is low negatively correlated with return on assets (ROA) ratio.

Credit to deposit ratio (CDR) is averagely negatively correlated with most of the ratio, except a high degree of positive correlation with capital adequacy ratio (CAR), having correlation coefficient of 0.769. The high negative correlation can be observed between CDR with ROE and NPL.

The loan loss provision ratio (LLP) is moderately positively correlated with ROE and NPL ratio, LLP is low positively correlated with CRR, LLP ratio is averagely negatively correlated with CDR and CAR. LLP ratio has very low degree of negative correlation with ROA and ISR.

Capital adequacy ratio is negatively correlated with all of the calculated ratio, except a high degree of positive correlation with credit to deposit ratio (CDR). CAR ratio is very highly negatively correlated with return on equity (ROE) ratio, an average negative correlation with NPL, LLP, CRR and ISR whereas a low degree of negative correlation with ROA.

The cash reserve ratio (CRR) is showing very low degree of negative correlation with ROA ratio, an average negative correlation with CDR, CAR as well as an average positive correlation with ROE, NPL and ISR but a low positive correlation with LLP ratio with a correlation coefficient of 0.176.

Interest spread rate (ISR) is moderately positively correlated with ROA, ROE, NPL and CRR, low degree of negative correlation with LLP ratio strong negative correlation with CDR and CAR.

4.1.3 Regression Analysis of Variables

Multiple regression is a tool used to analyze the relationship between dependent and independent variables. A statistical technique called multiple regression analysis is used to forecast an unknown variable's value based on the known values of two or more variables. It is employed to calculate the impact of one or more independent variables on a variable that is dependent. Regression analysis is a set of statistical procedures used in statistical modeling to estimate the relationships between one or more independent variables—also referred to as "predictors," "covariates," "explanatory variables," or "features"—and a dependent variable, also known as the "outcome" or "response" variable. Finding the line or a more complicated linear combination that most closely fits the data in accordance with a particular mathematical criterion is the most popular type of regression analysis, known as linear regression.

Table 5 is the result of regression analysis where ROA is the dependent variable and NPL, CDR, LLP, CAR, CRR and ISR are the independent variables.

Model 1 Model Summary

Table 5

Model Summary

| Model | R | R Square | Adjusted R Square | S.E. of the Estimate |
|-------|-------|----------|-------------------|----------------------|
| 1 | 0.739 | 0.524 | 0.463 | 0.48853 |

Predictors: (Constant), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), Loan Loss Provision ratio (LLP), Interest Spread Rate (ISR), Capital Adequacy Ratio (CAR) and Credit to Deposits Ratio (CDR).

This result is based on panel data of 7 commercial banks with 70 observations for the period of 2013/14 to 2022/23, by using linear regression model. The table reveals the regression analysis between dependent variable and independent variables. The dependent variable is ROA (return on assets) whereas the independent variables are NPL, CDR, LLP, CAR, CRR and ISR.

The value of R^2 and adjusted R^2 are 0.524 and 0.463 respectively. The overall explanatory power of regression model is fair with adjusted R^2 of 0.46. This indicates, 46% of the sample variation in ROA is explained by independent variables.

Table 6

ANOVA

| Model | Sum of Squares | d.f. | Mean Square | F | Sig. |
|------------|----------------|------|-------------|--------|-------|
| Regression | 4.720 | 7 | .674 | 12.825 | .0013 |
| Residual | 14.797 | 62 | .239 | | |
| Total | 19.517 | 69 | | | |

Dependent Variable: Return on Assets

Predictors: (Constant), Non-Performing Loan Ratio, Cash Reserve Ratio, Loan Loss Provision ratio, Interest Spread Rate, Capital Adequacy Ratio, Credit to Deposits Ratio.

The F test is a measure of the overall significance of the estimated regression. F significance in the model represent that the model is being fairly fitted well since it is less than 0.01. Thus, the overall explanatory power of the regression model is fair and statistically fitted. The corresponding F-ratio is 12.825 and the result is fairly significant and fitted well.

Table 7

Regression coefficients

| Model | Unst. Coefficients | | St. Coeff. | t | Sig. |
|------------|--------------------|------------|------------|-------|-------|
| | B | Std. Error | Beta | | |
| (Constant) | 4.619 | 2.953 | | 1.564 | 0.123 |
| NPL Ratio | -0.128 | 0.059 | -0.399 | - | 0.033 |
| CDR | -0.016 | 0.011 | -0.337 | 2.183 | 0.137 |
| LLP Ratio | -0.475 | 0.297 | -0.218 | - | 0.115 |
| CAR | -0.041 | 0.030 | -0.256 | 1.600 | 0.182 |
| CRR | -0.033 | 0.014 | -0.338 | - | 0.021 |
| ISR | 0.178 | 0.101 | 0.261 | 1.351 | 0.008 |
| | | | | 2.374 | |

The result indicates that the coefficient of ISR is significantly positive 0.178. The corresponding p-value is less than 0.05, hence there is significant relationship between ISR and ROA. It indicates that return on assets of selected commercial banks in Nepal significantly positively effect on interest spread rate. It indicates that, higher the interest spread rate, higher will be the return on assets ratio.

The regression coefficients of ROA with NPL and CRR are significantly negative having coefficient of -0.128 and -0.033. The corresponding p-values are less than 0.05, with respective p-values of 0.033 and 0.021. These results indicate that, the ROA of commercial banks in Nepal declines significantly with increase in NPL and CRR ratio and vice-versa. The significant association of NPL and CRR on ROA with negative coefficient is favorable for the sample banks.

The regression coefficient of CDR is non-significantly negatively associated with ROA. The regression coefficient is -0.016 with corresponding p-value greater than 0.05, which shows there is not significant association between ROA with credit to deposit ratio. The non-significant negative association between CDR and ROA results that, increase in CDR results decrease in ROA and vice versa, but the decrease will be non-significant. The p-value is 0.137 indicating non-significant relationship between CDR and ROA.

The regression coefficient of LLP is non-significantly negatively associated with ROA. The regression coefficient is -0.465 with corresponding p-value greater than 0.05, which shows there is not significant association between ROA and LLP. The non-significant negative association between LLP and ROA results that, increase in LLP results decrease in ROA and vice versa, but the decrease will be non-significant. The corresponding p-value is 0.122 indicating non-significant relationship between LLP and ROA.

The regression coefficient of CAR has regression coefficient non-significantly negatively associated with ROA. The regression coefficient is -0.040 with corresponding p-value greater than 0.05, which shows there is not significant relationship between ROA with CAR. The non-significant negative association between CAR with ROA results that, increase in CAR results decrease in ROA and vice versa, but the decrease will be non-significant. The corresponding p-value is 0.186 indicating non-significant relationship between CAR and ROA.

Table 7 is the result of regression analysis where ROE is the dependent variable and NPL, CDR, LLP, CAR, CRR and ISR are the independent variables.

Model 2 Model Summary

Table 8

Model Summary

| Model | R | R Square | Adjusted R Square | S.E. of the Estimate |
|-------|-------|----------|-------------------|----------------------|
| 2 | 0.921 | 0.849 | 0.832 | 5.3886 |

Predictors: (Constant), Non-Performing Loan Ratio, Cash Reserve Ratio, Loan Loss Provision ratio, Interest Spread Rate, Capital Adequacy Ratio, Credit to Deposits Ratio. This result is based on panel data of 7 commercial banks with 70 observations for the period of 2013/14 to 2022/23, by using linear regression model. The table reveals the regression analysis between dependent variable and independent variables. The dependent variable is ROE (return on equity) whereas the independent variables are NPL, CDR, LLP, CAR, CRR and ISR.

The value of R^2 and adjusted R^2 are 0.849 and 0.832 respectively. The overall explanatory power of regression model is fair with adjusted R^2 of 0.83. This indicates, 83% of the sample variation in ROE is explained by independent variables

Table 9

ANOVA

| Model | Sum of Squares | d.f. | Mean Square | F | Sig. |
|------------|----------------|------|-------------|--------|-------|
| Regression | 10130.880 | 7 | 1447.269 | 49.842 | 0.000 |
| Residual | 1800.292 | 62 | 29.037 | | |
| Total | 11931.171 | 69 | | | |

Dependent Variable: Return on Equity

Predictors: (Constant), Non-Performing Loan Ratio (NPL), Cash Reserve Ratio (CRR), Loan Loss Provision ratio (LLP), Interest Spread Rate (ISR), Capital Adequacy Ratio (CAR), Credit to Deposits Ratio (CDR).

The F test is a measure of the overall significance of the estimated regression. F significance in the model represent that the model is fairly fitted well since it is less than 0.01. Thus, the overall explanatory power of the regression model is fair and statistically fitted. The F-ratio is 49.866 with significance of less than 1 percent, indicating that, ROE is significantly dependent with the independent variables and also it is better fitted for the information.

Table 10

Regression coefficients

| Model | Unst. Coefficients | | St. Coeff. Beta | T | Sig. |
|------------|--------------------|---------------|--------------------|--------|-------|
| | B | Std. Error | | | |
| (Constant) | 124.211 | 32.572 | | 3.813 | 0.000 |
| NPL Ratio | -0.125 | 0.647 | -0.016 | -0.193 | 0.847 |
| CDR | -0.315 | 0.120 | -0.260 | -2.612 | 0.011 |
| LLP ratio | 2.832 | 3.274 | 0.053 | 0.865 | 0.390 |
| CAR | -2.583 | 0.333 | -0.656 | -7.755 | 0.000 |
| CRR | -0.073 | 0.154 | -0.030 | -0.477 | 0.635 |
| ISR | 1.635 | 1.118 | 0.097 | 1.462 | 0.149 |

The result indicates that the coefficient of ISR and LLP are non-significantly positive with ROE having regression coefficients of 2.934 and 1.642. The corresponding p-values are greater than 0.05, hence there is non-significant relationship between ISR and LLP with ROE. It indicates that return on equity of selected commercial banks in Nepal non-significantly positively effect on loan loss provision ratio and interest spread rate. It indicates that, higher the LLP and ISR, higher will be the return on equity ratio and vice versa. The corresponding p-values are 0.373 and 0.147 for LLP and ISR with ROE.

The regression coefficient of ROE with CDR and CAR are significantly negative having coefficient of -0.314 and -2.581. The corresponding p-values are less than 0.05, with respective p-values of 0.011 and 0.000. These results indicate that, the

ROA of commercial banks in Nepal declines significantly with increase in CDR and CAR and vice-versa. The significant association of CDR and CAR on ROE with negative coefficient is favorable for the sample banks.

The regression coefficient of NPL is non-significantly negatively associated with ROE. The regression coefficient is -0.128 with corresponding p-value greater than 0.05, which shows there is not significant association between ROE with non-performing loan ratio. The non-significant negative association between NPL and ROE results that, increase in NPL results decrease in ROE and vice versa, but the decrease will be non-significant. The p-value is 0.844 indicating non-significant relationship between NPL and ROE.

The regression coefficient of CRR is non-significantly negatively associated with ROE. The regression coefficient is -0.073 with corresponding p-value greater than 0.05, which shows there is not significant association between ROE and CRR. The non-significant negative association between CRR and ROE results that, increase in CRR results decrease in ROE and vice versa, but the decrease will be non-significant. The corresponding p-value is 0.635 indicating non-significant relationship between CRR and ROE.

4.2 Discussion

From the analysis of data, following major findings have been obtained; With regard to the credit to deposit ratio (CDR), the mean credit to deposit ratio is highest for the Siddhartha Bank Limited lowest ratio for Rastriya Banijya Bank limited. The standard deviation result shows that, RBBL has the highest volatility in percentage of CDR whereas CZBIL has the lowest value of standard deviation. There is higher consistency in NPL ratio for RBBL bank with lowest value of CV and EBL showing greater variability with maximum CV of 29.74 percent and 70.44 percent respectively. As revealed by correlation matrix, the non-performing loan (NPL) is highly negatively correlated with credit to deposit ratio (CDR) and capital adequacy ratio (CAR) whereas the NPL is moderately positively correlated with ROE, LLP, CRR and ISR along with very low degree of negative correlation with ROA. The dependent variables of this study are ROA and ROE, which are positively correlated to each

other. These dependent variables are positively correlated with ISR for ROA and CRR, LLP and NPL for ROE, but negatively correlated with CDR and CAR for both of dependent variables. With strong positive correlation between profitability variable (ROA and ROE) and ISR, the increase in interest spread rate results into increase in ROA and ROE and vice-versa. The regression result under model I (ROA model) indicates that, coefficient of ISR is positive and rest of coefficients are negative, where ROA is a dependent variable but CDR, ISR, NPL, CAR, CRR and LLP are independent variable. The p-value of NPL, CRR and ISR are lower than 0.05 indicating more significant association with ROA and rest of variables has p-value greater than 0.05 with an indication of non-significant association with ROA. The F-ratio is 12.825 and being best fitted with F-significance of less than 0.01. The regression result under model II (ROE model) indicates that, coefficient of LLP and ISR are positive and rest of coefficients are negative, where ROE is a dependent variable but CDR, ISR, NPL, CAR, CRR and LLP are independent variable. The p-value of CDR and CAR are lower than 0.05 indicating more significant association with ROE and rest of variables has p-value greater than 0.05 with an indication of non-significant association with ROE. The F-ratio is 49.87 and being best fitted with significance of less than 0.01. Among these two regression models, ROE model statistically significant with 83 percent of sample variation in ROE is explained by independent variables. The ROA model is also statistically significant and being fitted well and explained by independent variables. The adjusted R^2 values of two models are average with about 0.46 and 0.83 for ROA and ROE respectively. The average of ROA is 1.68 percent, average ROE of 20.56 percent, average NPL ratio of 2.15 percent, average CDR of 78.32 percent, average LLP ratio of 1.09 percent, average CAR of 12.33 percent, average CRR of 11.20 percent and average ISR of 4.40 percent for 70 information in 10 recently ended fiscal years of 7 conveniently selected commercial banks.

In this study, ROA and ROE are significantly associated with credit risk variables. Under model I, ROA is positively correlated with ISR but rest of the variables are negatively associated with ROA. NPL and CRR have p-value less than 0.05 representing significantly negative association with ROA, but remaining dependent variables are showing non-significant association with ROA due to their p-value

greater than 0.05. Under model II of regression, ROE is positively associated with LLP and ISR whereas, NPL, CDR, CAR and CRR are negatively associated with ROE. The p-value of CDR and CAR are less than 0.05 representing significant association and remaining variables are non-significantly associated with ROE. This result is consistent with the findings of Pandey and Joshi (2023), Bagale (2023), Bhatt (2023), Maharjan, (2023), Okpala et al. (2019), Bhattarai, (2018), Nwanna and Oguezie (2017) and Samuel (2015). Some of the studies are inconsistent with the findings of this study, these are; Gwachha & Karmacharya (2023), Ahmed et al. (2022), Shrestha & Niraula (2021), Manandhar (2019), Poudel (2018), Kishori and Sheeba (2017) and Alshatti (2015).

As revealed by correlation matrix, the non-performing loan (NPL) is highly negatively correlated with credit to deposit ratio (CDR) and capital adequacy ratio (CAR) whereas the NPL is moderately positively correlated with ROE, LLP, CRR and ISR along with very low degree of negative correlation with ROA. The result is consistent with the findings of Akahtar (2023), Naili and Lahrichi, (2023), Acharya & Vyas (2022), Jackson and Tamuke (2022) and Kaitibi et al. (2018). There are some researches, which found inconsistent results with this findings of the study, such as; Said (2018), Bhattarai (2016), Samuel (2015) and Noman et al. (2015).

Credit risk management practices has been well implemented in Nepali banks. Thus, it can be concluded that credit risk management such as complying with credit risk policy, clearly defined roles and responsibility for the responsible employees of the credit risk department. Similarly, banks should provide the employees with required skills and knowledge to help them perform regular activities and make tactful decisions to ensure profitability and performance of the bank. Commercial banks tactfully follow the credit risk mitigation measures so as to avoid the risk of having NPAs and LLPs. The process from decision making to the loan sanction should be carefully monitored and analyzed to reduce credit risk and improve loan repayment. This result is consistent with the most of the studies, but some empirical results are also inconsistent with the findings. The similar outcome resulted from the studies of; Bhatt et al., (2023), Mudanya et al., (2023), Bagale (2023), Bhatt (2023), Maharjan (2023), Kwashie et al. (2022), Jackson and Tamuke (2022), Gautam & Gautam (2021), Shrestha & Niraula (2021), Ali and Dhiman (2019), Bhattarai, (2018) and

Kaitibi et al. (2018). The inconsistent results are; Gwachha & Karmacharya (2023), Ahmed et al. (2022), Nwanna and Oguezue (2017), Kishori and Sheeba (2017), Khan and Ali (2016), Ndoka and Islami (2016) and Dhakal (2015).

CHAPTER V

SUMMARY AND CONCLUSION

This chapter is the final chapter of the study which consists of summary, conclusion and implication. As mentioned in the objectives of the study, this chapter summarizes the relationship and effect of credit risk management and other variables on ROA and ROE of commercial banks of Nepal.

5.1 Summary

The goal of this study is to investigate and evaluate the different elements that go into credit risk management and the ways in which they affect the sample bank. Based on secondary data from seven commercial banks in Nepal, this study examines 70 observations from 2013–14 to 2022–23. This is accomplished by looking at numerous data points and aspects of credit risk management, their effects on profitability, how they contribute to the rise in non-performing loans, and issue areas in their efficient handling. Using the proper instruments and procedures, a variety of financial data regarding the profitability and credit risk management of commercial banks are sorted, tabulated, evaluated, and correlated.

The introduction, literature review, research technique, data presentation and analysis, and summary, conclusion, and suggestion are the five chapters that make up the study's structure.

Background information, the problem description, the study's purpose, its significance, its constraints, and its plan are all emphasized in the first chapter.

The concept review, various terms related to credit risk management and profitability, a review of prior research and studies, etc., are covered in the second chapter. To help with the analysis portion of the study, several NRB directives, NRB banking, and financial statistics are examined.

The third chapter provides a brief explanation of the research methodology, which includes the research design, population and sample, types and sources of data, data collection techniques, and data analysis tools. This methodology is used to analyze the profitability and credit risk management of the sample banks under consideration.

The data needed for the study are gathered from secondary sources in the fourth chapter, where they are then presented, examined, and interpreted utilizing a variety of financial management accounting methods and procedures. Statistics are also used to show the findings.

5.2 Conclusion

After analyzing the profitability and credit risk management of Nepalese commercial banks over a ten-year period, from 2013–14 to 2022–23, the study finds that each variable on its own provides useful information for predicting both credit risk and profitability. The study's main finding is that the model employed has a high statistical significance. A variety of independent variables, including CDR, ISR, NPL, LLP, CAR, and CRR, can influence how well ROA and ROE are predicted. It is clear from the normality test that dependent variable data are regularly distributed.

For the estimation of ROA under model I, where NPL, CRR, and ISR are significantly negatively associated and the remaining variables are associated non-significantly, the regression findings show that the coefficient of ISR is positive and the rest of the independent variables have negative coefficients. The ROE determination under Model II is positively correlated with the coefficient of LLP and ISR, whereas the remaining factors are negatively correlated with CDR and CAR. The p-value for both models is less than 0.05. The data fit best under two regression models, with an adjusted R² explaining over 85% of the information in the ROE model and an F-significance of less than 0.01. The data are also best fitted with F-significance having less than 0.01 and adjusted R² explaining only about 46 percent of the information in ROA model.

5.3 Implications

5.3.1 Managerial Implications

- High level of non-performing loan not only decreases the profitability of the bank, but also affects the entire financial as well as operational health of the organization.
- Based on the major findings of this study; some implications have made so as to overcome issues of credit risk management of the banking sector.
- Banks should keep enough liquidity so that they can conduct lending and other banking activities smoothly.
- Presence of higher credit risk in bank is one of the major cause behind affecting profitability in Nepalese commercial banks.
- Therefore, proper financial analysis should be performed to manage adequate credit risk.

5.3.2 Practical Implications

- Management of credit risk by every bank and financial institution is of great practical implication. They can minimize the risk of loan loss and maintain maximum return from their banking business.
- Loan loss provision and non-performing loan are required to be minimum for every financial institution. Adequate provisioning for loan and lease loss helps to manage credit risk by the banks.
- It is necessary to classify the loan and advance distributed by the banks into different categories according to their maturity period and time since payment of last installment for bank loan and interest. The classified loan to be managed with objective to minimize credit risk of the concerned banks.
- For minimization of credit risk, it is required to allocate sufficient collateral for issuance of any credit facility by the concerned banks and overvaluation of the properties to be prohibited from the responsible human resources.
- Practically, management of credit risk refers to the management of the bank's affairs. Adequate mechanism to be developed by every financial institution of Nepal to measure credit risk and thereafter, minimize such risk accordingly.

5.4 Future Scope

Further research in this area is warranted given the findings of this study on credit risk management and how it affects the profitability of commercial banks in Nepal. The cross-sectional and self-report nature of the data is typical of survey research. Future study should take into account a number of important aspects. Additionally, the researcher thinks that in order to provide a more comprehensive picture of the labor activities carried out in Nepalese contexts, a larger and more representative sample of participants in the study is necessary. As this study was limited to seven Nepali commercial banks, additional sample banks may be included in future research projects. Not to mention, the Nepalese business environment is expected to become more globally competitive over the next several years, and the banking industry will likewise develop in terms of operational years. As a result, it would be fascinating to broaden the scope of the credit risk management survey in order to record modifications over time in the strategy's adoption and noteworthy effects on the banks' performance.

REFERENCES

- Abdelrahim, K. E. (2013). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: A Qualitative Study. *Asian Transactions on Basic and Applied Sciences* 3(1). 2221-2291
- Abid, S. F., & Lodhi, S. (2015). Impact of Changes in Reserve Requirement on Banks Profitability: A Case of Commercial Banks in Pakistan. *European Journal of Business and Management*, 7(31), 1-6.
- Acharya, K. R., & Vyas, S. K. (2022). The impact of bank-specific and macroeconomic variables on commercial banks profitability in Nepal. *Patan Pragya*, 10(1), 74-85.
- Acharya, M. (2003). Development of the financial system and its impact on poverty alleviation in Nepal. *Economic Review*, 15(2), 134-164.
- Akahtar, N. (2023). Internal and External Variables and Profitability of Commercial Banks in Nepal. *International Journal of Scientific Research in Engineering and Management (IJSREM)*, 7(3), 1-14.
- Alshatti, A.S. (2015). *The effect of credit risk management on financial performance of the Jordanian commercial banks*. Investment Management and Financial Innovations, 2(1), 338-345.
- Bajracharya B.C. (2020). Business Statistics, *MK Publishers and Distributers*, 9th Edition 2078 B.S.
- Bhatt, T. K., Ahmed, N., Iqbal, M. B., & Ullah, M. (2023). Examining the Determinants of Credit Risk Management and Their Relationship with the Performance of commercial Banks in Indonesia. *Journal of Risk and Financial Management*, 16(4). 10-21.
- Bhattacharai, B. P. (2018). Impact of Bank Specific and Macroeconomic Variables on Performance of Nepalese Commercial Banks. *Global Review of Accounting and Finance*, 9(1), 35-53.
- Bhattacharai, (2016) Effect of Credit Risk on the Performance of Nepalese commercial Banks. *NRB Economic Review*, 28(1), 41-64.
- Damena, (2011). *Determinants of commercial banks profitability: an empirical study on Ethiopian commercial banks*, masters project paper, Addis Ababa University. (12) 505-511

- Dhakal, B. (2015). The determinants of loan loss provision in Nepalese Commercial Banks. Kathmandu. *Journal of Banking and Finance*, 30(2), 220-240.
- Flamini, V., McDonald, C. A., & Schumacher, L. B. (2009). The determinants of commercial bank profitability in Sub-Saharan Africa, *Journal of International Financial Markets, Institutions & Money*, 21(3) 307-327.
- Gautam, P. K., & Gautam, T. (2021). Role of macroeconomic factors predicting financial performance of commercial banks in Nepal. *International Research Journal of Management Science*, 6(1), 39-52.
- Gwachha, K. P., & Karmacharya, S. (2023). Macroeconomics as the Basis of Commercial Banks Stability in Nepal. *Quest Journal of Management and Social Sciences*, 5(1), 1-13.
- Joshi, (2073). *Business Research Methods*. Kathmandu: Samjhana Pulpation Pvt. Ltd.
- Khan, and Ali, (2016) Impact of Liquidity on Profitability of Commercial Banks in Pakistan: An Analysis on Banking Sector in Pakistan. *Global Journal of Management and Business Research: C Finance*, 16(1) 15-27.
- Koirala, P. & Bajracharya, P. (2004), Nepalese Capital Market: Issues and Challenges, Economic Review, (Nepal Rastra Bank). *Occasional paper 2* (16) 4-19.
- Kurawa, J. M., & Garba, S. (2014). An evaluation of the effect of credit risk management (CRM) on the profitability of Nigerian banks. *Journal of Modern Accounting and Auditing*, 10(1), 104.
- Maharjan, M. (2023). *Imapct of Firm Specific Variables and Credit Risk on Profitability of Nepalese Commercial Banks*. Dissertation, Tribhuvan University, Faculty of Management, Kathmandu. Retrieved 2024.
- Manandhar, R. (2023). *Role of Interest Rate and Exchange Rate on Banks' Profitability: Evidence from Nepalese Commercial Banks*. Dissertation, Tribhuvan University, Faculty of Management, Kathmandu. Retrieved 2024.
- Manandar, A. (2019). Credit Risk Management in Nepalese Commercial Banks. *International Journal of Marketing, Financial Services and Management Research*, 2(7), 47-51.
- Modigliani, F. & Miller, M. H. (1958). The Cost of capital, corporation finance & the theory of investment, 48 (23) 261-297.
- Mudanya, Erickson, Kadima & Miroga. (2023). Credit risk management practices and financial performance of commercial banks in Kenya: A case of banks in Vihiga County. *The Strategic Journal of Business & Change Management* 9 (21) 305–16.

- Naili, M., & Lahrichi, Y. (2023). The determinants of banks' credit risk: Review of the literature and future research agenda. *International Journal of Finance and Economics*, 27(1), 334–360.
- Nawaz, M., Munir, S., Siddiqui, S. A., Tahseen-ul-Ahad, F., Asif, M., & Ateeq, M. (2012). Credit risk and the performance of Nigerian banks. *Interdisciplinary Journal of Contemporary Research in Business*, 4(7), 49-63.
- Ndoka, S., & Islami, M. (2016). The Impact of Credit Risk Management in the Profitability of Albanian Commercial Banks. *European Journal of Sustainable Development*, 5(3), 445.
- Ogboi, C., & Unuafe, O. K. (2013). Impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria. *Journal of emerging issues in economics, finance and banking*, 2(3), 703-717.
- Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237.
- Pandey I.M. (2019). *Financial Management*, Pearsons publisher and distributors, 12th edition.
- Poudel, P. R. (2016). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of Arts and Commerce*, 1(5), 9-15.
- Poudel, (2018) Assessment of Credit Risk in Nepali Commercial Banks. *Journal of Applied and Advanced Research*, 3(3), 65-72.
- Rasiah, D. (2010). Theoretical Framework of Profitability as Applied to Commercial Banks in Malaysia. *European Journal of Economics, Finance and Administrative* 19 (12) 74-97.
- Saba, I., Kouser, R., & Azeem, M. (2012). Determinants of Non-Performing Loans: Case of US Banking Sector. *The Romanian Economic Journal*, 44(6), 125-136.
- Said, A. (2018). Effect of the asset quality on the bank profitability: A study of US commercial small banks. *International Research Journal of Applied Finance*, 9(4), 196-204.
- Shabbir, M., & Rehman, A. (2016). The Impact of Financial Crises and Economic Growth of East Asian Countries. *Journal of Internet Banking and Commerce*, 21(1), 1.

- Shrestha, B. G., & Niraula, D. (2021). The consequences of Credit performane and Capital Adequacy Evidence from Commercial Banks in Nepal. *The Batuk: A Peer Reviewed Journal of Interdisciplinary Studies*, 7(1), 1-12.
- Teja, K. R., Tejaswi, M., Madhavi, B., & Ujwala, G. (2013). Cash Reserve Ratio Impact on Stock Market (India) in Long Run. *International Journal of Marketing, Financial Services & Management Research*, 2(8), 85-93.
- Zubairi, H. J., & Ahson, S. (2014). Impact of Risk Management Practices on Profitability of Islamic Banks in Pakistan. *International Journal on Management*, 3(17), 7-18.

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