CREDIT RISK MANAGEMENT AND PROFITABILITY IN NEPALESE COMMERCIAL BANKS

A Dissertation in Partial Fulfillment of the Requirements for the Degree of Masters of Business Studies (MBS), Faculty of Management, Tribhuvan University

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August 2022

CERTIFICATION OF AUTHORSHIP

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

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

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Anjana Adhikari

13 July, 2022

REPORT OF RESEARCH COMMITTEE

Miss Anjana Adhikari has defended research proposal entitled "**CREDIT RISK MANAGEMENT AND PROFITABILITY IN NEPALESE COMMERCIAL BANKS**" successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelineofAsso. Prof. Dr. Arun Kumar Thakur and submit the thesis for evaluation and viva examination.

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Dissertation Proposal Defended Date:
2078/05/01

Dissertation Submitted Date:
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APPROVAL SHEET

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ACKNOWLEDGEMENTS

I would like to express my sincere gratitude towards my supervisor Asso. Prof. Dr. Arun Kumar Thakur, Central Department of Management, Tribhuvan University for the continuous guidance and valuable suggestions during the preparation of this dissertation. Without his valuable comments and suggestions this dissertation would not have come to the present form.

I am equally indebted to Asso. Prof. Achut Gyawali and Prof. Dr. Puspa Raj Sharma for their guidance and constructive comments in the finalization of this thesis. My special thanks goes toProf. Dr. Mahananda Chalise(Chairperson, Research Committee) for his guidance throughout the preparation of this thesis along with valuable suggestions. I would also like to express my sincere gratitude to Prof. Dr. Ramji Gautam (Head of Department) for his encouragement and support to complete this dissertation.

I am obliged to all the members and staff of Central Department of Management for their co-operation in department.

I offer my sincere thanks to my colleague Miss Raksha Thapa for suggestions and constructive comments in this dissertation.

Finally, I would like to express my gratitude to my family members for their support, encouragement and understanding throughout the preparation of this dissertation.

Anjana Adhikari
2022/7/13

ABSTRACTS

The study is concerned with credit risk management of Nepalese commercial banks having five samples such as Nepal SBI, Nabil, Sanima, NIC Asia bank limited and Agricultural Development Bank Limited out of total 27 commercial banks. The major objective of this study is to examine the effect and relationship of credit risk management on profitability of Nepalese commercial banks. The samples have been chosen judgmentally considered. The total number of observations is fifty having ten years' annual financial statistics. As per research design, descriptive and casual comparative research design has been employed. The statistical tools consist of mean, standard deviation and coefficient of variation as well as the inferential statistic consists of mainly correlation, regression analysis and hypothesis testing for better evaluation of undertaken variables such as credit risk proxies (capital adequacy ratio, supplementary capital ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio), also known as independent variables (predictors) and profitability proxies such as return on equity and return on assets.

In conclusion, it is revealed that the profitability proxies return on equity is capital adequacy ratio and non-performing loan ratio that indicates they lead each other in the same direction. When there is positive change in credit risk factors capital adequacy ratio and non-performing loan ratio, as a result positive change can be found in profitability. However, return on equity has negative correlation with supplementary capital ratio, core capital ratio, credit deposit ratio and cash reserve ratio which implies that they lead each other in the opposite direction. When there is positive change in these credit risk factors such as supplementary capital ratio, core capital ratio, credit deposit ratio and cash reserve ratio, as a result it leads to negative effect on profitably of commercial banks. Similarly, the study also reveals that there is positive correlation between return on assets, capital adequacy ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio thus they lead each other in the same direction. However, return on assets has negative correlation with supplementary capital ratio which indicates that they lead one another in the opposite direction.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

ACRONYMS

AD	:	Annon Domini
ADBL	:	Agricultural Development Bank Limited
ANOVA	:	Analysis of Variances
C.V.	:	Coefficient of Variation
CAR	:	Capital Adequacy Raito
CDR	:	Credit Deposit Raito
CR	:	Core Capital Raito
CRR	:	Cash Reserve Ratio
e	:	Error Terms
et. al.,	:	And Others
etc.	:	Etcetera
FEM	:	Fixed Effect Model
F-Value	:	Fishers Value
FY	:	Fiscal Year
i.e.	:	That is
M	:	Models
MPS	:	Market Price per Share
NABIL	:	Nepal Arab Bank Limited
NIC	:	NIC Asia Bank Limited
NPLR	:	Non-performing Loan Ratio
NRB	:	Nepal Rastra Bank Limited
NSBI	:	Nepal SBI Bank Limited
P-Value	:	Probability Value
r	:	Coefficient of correlation
R^2	:	Coefficient of determination
Rs.	:	Rupees
ROA	:	Return on Assets
ROE	:	Return on Equity
S	:	Firm Size
S.D.	:	Standard deviation
SBL	:	Sanima Bank Limited
SN	:	Serial Number
SS	:	Supplementary Capital Ratio
Std.	:	Standard Deviation
β	:	Beta Value

CHAPTER-I
INTRODUCTION

1.1 Background of the Study

A organized process of managing risk is termed as credit risk management, that includes risk assessment, developing strategies, long-term customer relationships, credit ratioining, and collateral requirements. Likewise, the performance of commercial banks is significantly impacted by credit risk management. Factors specific to banks, such as capital sufficiency, loan size, non-performing loans, and liquidity, had a substantial impact on banks. According to (Kidane,2020) the researchers advised the bank to evaluate risk and develop methods to reduce credit risk incidence as a part of its credit risk management.

Risk being the vital aspect of uncertainty and chances of losing that may occur within any business transaction at any space and time. From the perspective of financial aspect, the business risk constitutes of various risk including the operational risk, credit risk, market risk,and many more. Credit risk arises when the borrowers' fails todeliver the predetermined financial accountability. According to Banu et al., 2021 credit risk management comprises of establishment of identity; along with the assessment, matching mitigations, with supervision of the credit risk exposures

The financial institutes should develop their credit policy according to their lending philosophy with specific procedures and the methods to monitor the lending activity. The basic principle of credit appraisal is to ascertain, borrowers who can access credit should be able to meet repayment obligations. However the borrowers even willing to pay higher rate of interest and more loans, could be refused by the lenders (Mishkin, 1997).

Commercial banks being primary providers of credits to common people and financial sectors are the primary financial intermediaries in any economy (Magnifique, 2011). It offers a comprehensive range of financial services and works within both retail and corporate clients that having wide range of deposit and lending portfolios. Commercial banks' money-making practices lead to the flexible credit system that is required for economic growth to occur at a comparatively stable rate. Banks profit in

particular by selling liabilities with a certain assemblage of liquidity risk and return and proceeds to purchase assets with a different combination of attributes, or asset transfer (Magnifique, 2011).

Banks are exposed to a variety of hazards in today's fast-paced business environment, including credit, liquidity, market, interpersonal , interest rate and exchange risk, etc. It is necessary to manage risks effectively as a result of this exposure to a variety of threats. Once a risk has been recognized and understood, one of the fundamental tasks to be completed is risk management. According to Shafiq and Nasr (2010), addressing a risk in advance is more preferable to waiting for it to occur. The identification and management of hazards are the focus of good risk management. Its goal is to maximize sustainable value to all of the organization's activities..

As per Bhattarai (2014)negative effects of the "non-performing loan ratio" are shown in bank performance. As opposed to the positive impact "cost per loan assets" has on bank performance. The outcome also demonstrated that indicators of credit risk and the ratio of assets to equity have a favorable impact on bank performance. Cash reserves and capital adequacy ratios are not taken into account as influencing factors in bank performance. This study came to the conclusion that bank performance and credit risk indicators had a substantial relationship.

According to Poudel (2012) the credit risk management is significantindicatorof financial activitiesof commercial banks. An scientific study on credit risk management and its impact on bank performance in the context of Nepal and other developing countries has been sparked by the fact that the success of bank performance depends on the efficacy of credit risk management among several other factors. The study found a substantial inverse relationship between commercial bank performance as indicated by ROA and credit riskas determined by default and capital adequacy ratio.

According to Jorion (2009), unknown risk is less risky than a known ot recognized risk. Risk must be managed rather than feared since it is so complex, multifaceted, and often interconnected. Risk is not avoidable, but it can be controlled. In fact, most banks are able to live well by taking chances, particularly "intelligent risks" as per (Payle, 1997; Greuning & Bratanvic, 1999).

A sound credit policy, as per Seppala (2000), would enhance prudential oversight of asset quality, develop a set of minimum standards, and apply a common language and research methods (assessment of risk, pricing, documenation, securities, authentication, and ethics), for measuring and reporting non-performing assets, loan classification, and provisioning. The bank's lending philosophy, as well as specific procedures and methods of monitoring the lending activity, should be outlined in the credit policy (Polizatto, 1990).

The above mentioned discussion suggest the studies dealing with impact of credit risk on the performance of Nepalese commercial bank are of highly importance. However theseoutcome in the context of Nepal and other nation, no such results using data that are more recent exist. Hence, this research attempts to analyze relationship between performance and credit risk in Nepalese commercial banks.

1.1.1 Brief Profile of Sample Banks

Agriculture Development Ltd.

The Agricultural Development Bank, Nepal was created in 1968 as a successor to the Cooperative Bank with the primary goal of providing institutional credit for boosting the productivity and output of the agricultural sector in the country. In 1973, ADBN and the Land Refrm Savings Corporation amalgamated. The Act was then amended to empower the bank to finance premier cottage businesses and to grant credit to small farmers under group liability. The changes also gave the bank permission to carry out commercial banking operations for the mobilization of domestic resources. The bank has a distinguished history of more than 53 years and is one of the top commercial banks in the nation.The bank has over 1.2 million contented customers as a result of its investments in agriculture, industry, trade, commerce, and homes. With its 278 offices, it is dispersed over the 7 provinces and 77 districts of the nation. The bank's primary focus is supporting rural agriculture, productive industries, and underprivileged sectors while providing comprehensive services with complete financial solutions.

Sanima Bank Limited

Sanima started operations in 2004 as a National Level Development Bank, promoted by prominent and eminent Non-Resident Nepalese (NRNs) businessmen. Sanima has

established itself as a "A" Class Commercial Bank since February 2012, with offices in Kathmandu, Naxal, Alakapuri.

Sanima Bank is offers comprehensive financial solutions to various customer segments and to achieving a healthy growth in profitability consistent with the bank's risk tolerance. It has made a priority to uphold the greatest levels of morality, professional honesty, corporate governance, and regulatory compliance. Sanima is viewed as a strong, trustworthy in the banking field as a result..Sanima has made a commitment to continuously improve for the benefit of the entire economy in order to exceed customer expectations in all facets of its operations.

There are 86 full-service branches and 21 extension centers in all 7 provinces, Sanima Bank provides a wide range of banking products and financial services to corporate and retail customers.

NIC Asia Bank Limited

NIC Bank, which was founded on July 21, 1998.After NIC Bank and Bank of Asia Nepal merged on June 30, 2013, the bank changed its name to NIC ASIA Bank. This was the first merger of its kind between two prosperous commercial banks in the nation, making it significant in the financial history of Nepal. NIC ASIA has made a name for itself as one of the most prosperous commercial banks in Nepal as of late.

The transition was handled very smoothly by NIC ASIA during the post-merger integration phase, gaining praise from the regulators and stockholders in the process. This opened the door for other mergers and consolidation in the Nepalese banking area. The Banker, Financial Times, UK recognized NIC ASIA as "Bank of the Year 2013-Nepal" following the merger; this is the bank's second recognition with this prestigious award; the first time was in 2007.

As per capital base, number of branches, ATM network, and customer base, this bank is at present one of the biggest private-sector commercial banks of the country. The bank has 472 ATMs throughout Nepal, 356 branches, 70 extension counters, 81 branchless banking locations, and a network covering all major financial hubs in the nation. The Bank firmly upholds the principles of meritocracy, openness, professionalism, teamwork, and superior customer service. All functions within the bank have adopted these core values, which are reflected in all actions the bank takes when conducting business.

Nepal SBI Bank Limited

State Bank of India (SBI) has a 55 percent ownership stake in Nepal SBI Bank Ltd. (NSBL), a subsidiary of SBI. Employee Provident Fund, the local partner, holds 15% equity and the general public, 30%. According to the terms of the Technical Services Agreement between SBI and the NSBL, the former offers management support to the bank through its expatriate employees, including the Managing Director who is also the Chief Execitive Officer of the Bank. With 967 talented and committed Nepalese employees working in 122 outlets, including 88 full-fledged branches, 19 extension counters, 7 provincial offices, 7 branchless banking outlets, and a corporate office, NSBL was established in July 1993 and has since become one of the top banks in Nepal. The Bank offers value-added services to its customers through a vast network of 122 ATMs (including 2 mobile ATMs and 4 CRMs), internet banking, mobile wallet, SMS banking, IRCTC ticket online booking facility, etc. The Bank is present in 51 districts throughout Nepal. With more than 1 million pleased deposit customers and more than 6.50 lakh ATM/Debit cardholders, NSBL is one of the quickly growing commercial banks in Nepal.The Bank holds a dominant position in the nation in terms of the penetration of technological products, namely. Card Services, Mobile Banking, and Internet Banking. The bank is making substantial progress in net profit with relatively little NPA in the Nepalese banking industry. As of December 31, 2078, the Bank had deposits totaling Rs. 106.21 billion, advances totaling Rs. 101.57 billion (including staff loans), and investments totaling Rs. 21.20 billion (including investments in subsidiaries).

Nabil Bank Ltd.

The first private sector bank in the country, Nabil Bank Limited, has been operating since July 1984. Through its extensive network of 135 branch offices, 183 ATMs, several P.S. terminals, and remittance agents dispersed around the nation, Nabil Bank conducts business. More than 170 international correspondent banking relationships are also maintained by the Bank. Through its subsidiary Nabil Investment Banking Ltd, the Bank runs its investment banking division.

1.2 Problem Statement

The financial sector, particularly the banking system, could play a very important role in the successful transition and economic recovery of Nepal. Banks and other

financial institutions are a unique set of firms whose assets and liabilities, regulatory restrictions, economic functions, and operations establish them as an important subject for study. The bank's performance monitoring, analysis, and supervision need special analysis of their operations and activities from the viewpoint of different audiences such as owners, clients, regulators, and management itself. Different versions of financial ratioanalysis are used for a bank's performance analysis using financial statement items as initial data sources. Such analysis is not found in case of Nepalese context with latest information. The major statements to be analyzed in this study will definitely be the credit management adopted by Nepalese Commercial Banks. This study highly focused on following statements.

This credit creation process exposes the banks to high default risk, which might lead to financial distress including bankruptcy. All the same, beside other services, banks must create credit for their clients to make money, grow and survive stiff competition at the market place. The principal concern of this study is to ascertain to what extent banks can manage their credit risks, what tools or techniques are at their disposal and to what extent their performance can be augmented by proper credit management policies and strategies by analyzing the latest data of different commercial banks.

i) Which credit factors mostly affects profitability(ROA and ROE) in sample banks?
ii) Is there relationship between non-performing loan ratio, credit deposit ratio, cash reserve ratio and profitability (ROA and ROE).
iii) Is there relationship between supplementary capital ratio, core capital ratio, capital adequacy ratio and profitability (ROA and ROE)?
iv) To what extent the credit risk makes an impact on profitability (ROA and ROE)of sample banks?

1.3 Objectives of the Study

The main objective of this study is to examine the effect of credit risk on profitability of sample banks. Similarly, specific objectivesof the study are listed below:

i) To examine the most affecting credit factor for profitability in sample banks.
ii) To examine the relationship between non-performing loans ratio, credit deposit ratio, cash reserve ratio and profitability.

iii) To examine the relationship between supplementary capital ratio, core capital ratio, capital adequacy ratio and profitability.

iv) To analyze the affectof credit risk on profitability of sample banks.

1.4 Research Hypothesis

A hypothesis is a provisional formulation or possible solution or tentative explanation or suggested answers to the problems facing the scientist. The tentative assumptions of the proposed research are:

$H_1$1: There is significant relationship between capital adequacy ratio (CAR) and return on assets (ROA).

$H_1$2: There is significant relationship between non-performing loan ratio (NPLR) and return on assets (ROA).

$H_1$3: There is significant relationship between cash reserve ratio (CRR) and return on assets (ROA).

$H_1$4: There is significant relationship between credit deposit ratio (CDR) and return on assets (ROA).

$H_1$5: There is significant relationship between capital adequacy ratio (CAR) and return on equity (ROE).

$H_1$6: There is significant relationship between non-performing loan ratio (NPLR) and return on equity (ROE).

$H_1$7: There is significant relationship between cash reserve ratio (CRR) and return on equity (ROE).

$H_1$8: There is significant relationship between credit deposit ratio (CDR) and return on equity (ROE).

1.6 Rationaleof the Study

Banking operations come with the factor of risk; it is inevitable. In the simplest way possible, risk is an uncertainty of a situation or event that may happen in the future and for banks, it is the uncertainty of an outcome of business investments. The various typesof banking risks may be classified as strategic risk, compliance risk, credit risk, cyber security risk, liquidity risk, market risk, operational risk, etc. Out of these credit risk represents the most important type of risk for commercial banks. Thus, this study will address to tackle the various risk that occur in the commercial banks.

Study on commercial bank’s lending practice carry a great significance to shareholders, professionals, bankers themselves and the students eager to know about lending practices and their management. Credit is the major sources of income in any commercial banks. There is no doubt that the profit earned by any bank dependson the volume of credit. Study on commercial bank's credit risk carry a great significance to shareholders, professionals, bankers themselves and the student eager to know about lending practices and their management. This study is based on measuring the efficiency of commercial banks in the managing the credit risk and making different provisions.

1.7 Limitations of the Study

The benefits and limitations are the two faces of a same coin. Each and every research work has more or less limitations. To make this study precise, meaningful and valuable some limitations are made so that the objective of this study is achieved within limited time, resource and information. Some limitations of this study are listed below:

i) The study is limited toonly five commercial banks out of 27 commercial banks.

ii) In this study, only selected financial and statistical tools and techniques have been incorporated as per requirement.

iii) The study based on only the past year's periods since fiscal year 2010/11-2019/20.

iv) The study is based on secondary data such as annual report, financial statement etc. Thus, primary source and data have been completely ignored.

CHAPTER-II
LITERATURE REVIEW

In this chapter, the focus has been made on the review of literature relevant to the credit and its overall consequences in commercial banks. Each study is based upon historical data and knowledge, the past knowledge provides foundation to the present study. This chapter helps to take adequate feedback to broaden the information based and inputs to my study, therefore this chapter has its own importance in this study. This chapter is devoted into the conceptual framework, review journals and articles and review of thesis.

2.1 Conceptual Review

2.1.1 Concept of Credit

The amount of money that the creditor lends to the borrower, either with or without security, is known as credit. Credit and advances is an important item on the asset side of the balance sheet of a commercial bank. Bank earns interest on credits and advances which is one of the major sources of income for banks. Bank prepares credit portfolio; otherwise, it will not only effect debts but also affect profitability adversely (Nwankwo, 1991).

Credit isfinancialassetsresultingfrom the delivery ofcash or otherassets byalenderto a borrowerinreturn of obligationrepay onspecifieddate ondemand. Bank generally grants credit on four ways such as overdraft, cash credit, direct credit and discounting of bills (Chhabra & Taneja, 1991).

Loan and advances dominate assets, the assets side of the balance sheet of any bank. Similarly, earning from such loan and advances occupy a major space in income statement of the banks. However, it is very important to be remained that most of the bank failure in the world due to shrinkage on the value of the loan and advance. Here loan is known as risky assets. Risk of non-repayment of loan is known as credit risk or default risk. Performing loans have multiple benefits to the society while non-performing loan erodes even existing capital (Pradhan, 1994).

Theseare thebasic componentsprovideasolidfoundationformanagingvalue and risk planning, it focuses in just an operating and competing in the financial services

industry. The modern strategicapproachalso includesaframeworkforrisk managementandstrategicfor completinginthecomponentfitsforthemodernidea ofthebasicbusiness ofbankingas measuring, managing and accepting risk. The bank's objective is to manage value and risk by maximizing those or eliminating those that destroy value.

The main task of commercial bank is to collect funds as deposit through several sources and lend them to different sectors like; manufacturing, transportation, trade, construction, communication and other public utilities etc. Doing all these activities every bank has to face so many risks. There are many other risk categories that are prevalent in the banking sector, but the major types of risk, including as credit risk, market risk, and operating risk, are well-known.The credit risk is the potential financial loss resulting from the failure of customers to honors fully the terms of loan or contract. On the other hand, the market risk includes balance sheet riskandtradingrisksuchaspotentialriskto earningsandcapitalresultingfromchangesin interest rate, liquidity conditions, impact of foreign exchange rate fluctuations etc. Meanwhile operating risk arises from the natural disasters, errors in processing and settlement of transactions safeguarding of assets, system failure, fraud and forgery.

2.1.2 Classification of Credit

In the context of Nepal, Nepal Rastra Bank has provided following directives for classification of Loan and advances and its loss provision for minimizing possible risk in bank's lending. According to NRB, loan is classified into five categories: -

i) Pass loan
ii) Watch List
iii) Substandard loan
iv) Doubtful loan
v) Bad Loan

2.1.3 An Overview on Credit Risk

The risk of a loan defaulting due to a borrower's failure to make the required payments is known as credit risk.. Anthony Saunders defines the credit risk as "the risk that the promised cash flow from loans and securities held by financial institutions may not be paid in full". Credit risk involves inability or unwillingness of a costumer or counterparty to meet commitments in relation to lending, trading,

hedging, settlement and other financial transaction(Michel et. al., 2001). CRM aims to increase the bank's risk-adjusted rate of return by maintaining the CR within reasonable ranges. The bulk of institutions' largest and most volatile sources of credit are loans. The banking book, the trading book, and both the on and off-balance sheet are additional sources of credit risk related to bank operations. In addition to loans, banks are increasingly exposed to credit risk or counterpart risk in a range of other financial instruments, including acceptance, interbank transactions, trade finance, foreign currency transactions, guarantees, and the settlement of transactions (Michel et. al., 2001).

Since the bank will give the store its customer status if it offers credit, it also has certain influence on the current state of the national economy. However to that, it funds commerce and industry also. Companies will pay taxes to the government, which will help the economy grow as a whole. It likewise provides depositor security. The derivative that maximizes wealth from the start is thought to be credit. Credit risk is seen to be the most important issue, even if other variables may also affect profitability and wealth maximization. It is the most challenging assignment because it is a fundamental activity in commercial banking (Michel et. al., 2001).

Consequently, serious consideration should be given to good credit management.. Management is the system which helps to complete the task effectively. Creditriskmanagementisalso thesystemwhichhelpsto manage credit effectively, in other words, credit risk management refers the management of credit exposure arising from loans, corporate bodies, and credit derivatives. Credit exposures arethemainsources ofinvestmentincommercialbanksandreturn onsuchinvestmentis supposed to be main sources of income(Michel et. al., 2001).

2.1.4 Credit Risk Management

Credit risk management is the procedure implemented by organization with the aim of diminishing and avoiding credit risk. Credit risk management is the form of engineering in which models and structures are created that either prevent financial failure or else provide safeguard against it. By maintaining credit risk exposure within reasonable bounds, credit risk management seeks to maximize a bank's risk-adjusted rate of return (Michel et. al., 2001).While talking about the credit risk management, five C's of creditworthiness should be considered and they are:

Character

The good characterand intention ofthe borrowerisveryimportant andthusshouldbe seriouslyconsidered. Information about the character of the client can be gathered from his working place, reference, neighbors and other places he is associated with. This job tedious but should be carried out for secure investment(Michel et. al., 2001).

Capacity

It can be described as a customer ability to pay. Applicant's past performance records measure it. For this an interview with applicants, customers\suppliers will further clarify the situation. The gross income, expenses and net income should be analyzed whether the borrower lives on salary\wages or any other forms of income sources. Whether the borrower has extra income source other than usual based which should be used to repay the scheduled installments should be considered(Michel et. al., 2001).

Capital

Capital provides a caution to absorb operating and assets losses that might otherwise impair debt repayment. This, in fact is the insurance against the loans granted to the borrowers(Michel et. al., 2001).

Collateral

Sufficiency of collateral is necessary to ensure the recovery of loan. In case of default, by any cause,thecollateralkeptshould havevalueenoughto recovertheloangrantedandinterest borne by it. It is recommended that only 50% of the value of collateral is granted as loan but considering other factors like character of borrower and his credit worthiness, this percentage can be made flexible(Michel et. al., 2001).

Condition

Borrowers may be subject to unfavorable economic conditions beyond their control. Repaymentdependsnot onlyuponcharacter,capacityandcollateralbutthosefactors over which the borrower exercise little or no control. As for example, natural calamities or drastic economic crises etc.(Michel et. al., 2001).

2.1.5 Credit Risk Management Techniques

As the majority of bank assets are in the form of loan, as the lending function is simple and create the value of the bank. The main danger is the chance of the

borrower not to pay the loan amount. Therefore, the proper prudent management of the credit risk is very important. Merton and Bodies have suggested three techniques for the credit parameter in their article published in the journal of Banking and Finance (Michel et. al., 2001).

Risk Based Pricing

It has been established that risk-based pricing required lenders to change the rate that compensates for the riskiness of the loan. The pricing procedure needs to be straight forward and not based solely an historical loan loss experience. In practice, loan pricing tends to follow the prime rate plus basis. Because the prime rate is not the lowest rate that a bank charges the credit worthiest customers can negotiate from the prime rate. The discount prime rate is what bank use to attempt to compete with open market instruments such as commercial paper and corporate bonds.

Assets Restriction

Bank lenders and other creditors have a claim on the borrower's assets. As long as the market value of assets exceeds the value of liabilities, creditors are protected because proceeds from sales of assets cover the entire claim alternatively, as long as positive net worth exists, business firms are not going to turn over the creditors assets that exceeds the value of claim against them. Thus, one ways for lenders to protect themselves is to try to ensure that the value of assets always exceed than value of claims. Restriction amount of debt a borrower takes on and restricting the variability of the value of assets are the basic ways of meeting this objective. Restricting covenants is long agreement and the strength of bank customer relationshipsare practicalwaysthatlenderimposeassetsrestrictions orestablishborrower’s incentives for compliance.

Monitoring

If lender have a contractual right to monitor assets value continuously and to seize assets, than loan losses can be minimized either by auditing assets values and seizing assets before short falls exist or by requiring the posted value of collateral assets to equal or the posted value of collateral assets to equal or exceeds the promised payment for private loan, which banks have considerable expertise in organization, monitoring without continuous surveillance is costly.

2.1.6 Credit Risk Management Framework

Fluctuationsininterestrate,exchangerate,andcommodityandrealestatepricesarenot somethingnew. However, fluctuation in economic and financial variables destabilized the corporate strategies and performance of the banks and their client customers. Thus, it is crucial to those banks have a framework for parameter and for selling parameter services to clients. Risk management can be carried out on a bank's balance sheet by adjusting the percentage of capital, or off the balance sheet by using most of the parameter tools derived from the methodology of financial engineering; these off-balance sheet tools are known as derivatives contracts for activities or simply as "derivatives" (John, 1998).

The risk management framework rests on three pillars are summarized as follows.

i) Good investment choices produce real value. For conventional banks, this refers to making wise decisions about their allocation of funds and investments, as well as their non-conventional activities, such as, mutual funds, derivatives in insurance, and investment banking.

ii) Making wise investments requires internal cash flow generation that is sufficient. Companies that don't have internal cash flow tend to reduce investment more significantly than their rivals. Enough internal cash flow generation in banking is crucial to sustaining a firm's capital adequacy. In turn, having enough money is necessary for expansion and wise investment. Banks with insufficient capital are susceptible to greater regulatory scrutiny, a higher deposit insurance premium, and potential takeover by outsiders with regard to cost and control.

iii) Proper and prudent look at major market indicator. Bank should look properly at major market indicator because negative changes in external variables like interest rates and commodity prices can disrupt cash flow, a company ability to invest be jeopardized.

2.1.7 Factor Affecting Credit Policy

Thecreditpolicy ofafirmprovidestheframeworkto determinewhether ornotto extend credit and loan such to extend. The credit policy decisions of banks have two broad dimensions; credit standards and credit analysis. A firm has to establish and use

standards to makingcreditdecision,developappropriatesources ofcreditinformationandmethods of credit analysis. Credit risk management or the credit policy is a tool for analyzing and managing the credit risk. Generally, the following factors are to be considered to make effective credit risk management. It is also called the factors of credit policy. It helps to get effective credit worthiness.

Industry Environment

It determines the nature of the industry structure its attractiveness and the company's position within the industry, structural weakness of a company which is disadvantaged, theaters first way out and security value.

Financial Conditions

It determines the borrower'scapacityto repaythroughcashflowasthefirstway out. The strength of second way out i.e. through collateral liquidation is also assessed. Further the possibility to fall bank on income of sister concern in case of financial crunch of the company condition threatens repayment capacity.

Management Quality

It determines the integrity, competence and nature of alliances of the borrower's management team. Weakness in replacements needs tobe evaluated.

Technical Strength

It determines the strength and quality of the technical support required for sustainable operation ofthecompanyinterms ofmanpower,theviability ofthetechnologyuses, availability of after sales services, cost of maintenance and replacement need to be evaluated.

Security Realization

It determines the control over various securities obtained by bank to secure the loan provided excitability of the security documents and present value of the properties mortgaged with the bank. Weakness in security threatens the bank's second way out.

2.1.8 Directives of NRB on Credit Aspect

Commercial banks are heavily regulated than its non-bank competitors in the financial service industry. They are subjected to follow the updated regulations issued by the regulation authority. N.R.B is the regulating authority of Nepal. As per directives issued by NRB, loans and advances shall be classified into the following four

categories. In addition, audit is made to inspect compliance of terms and condition laid down. Credit audit is required to check whether credit is given in within authority, drawing power etc. Credit audit helps the bank to adopt corrective measures where weakness has been pointed out and to focus further on strengths. On the basis of outstanding loans and advances classification and provisioning for credit as per directives shall be provided as follows:

Table 1

Classification of Loan and Loan Loss provision

Loan Classification	Provision	Meaning
Pass Loan	1%	Not overdue/Overdue up to 1 month
Watchlist	5%	Overdue up to 3 month (1-3 months)
Sub-standard	25%	Overdue up to 6 months (3-6 months)
Doubtful	50%	Overdue up to 1 year (6-12 months)
Loss	100%	Overdue for more than 1 year
Restructuring and Rescheduling	12.5 % for Pass Loan 25% for substandard 50% for doubtful 100% for loss	Changes made in loan timing (credit period) and terms and condition (other structure) in between

Source: NRB Directives, 2076

The provisions relating to the classification of loans from banks and financial institutions(BFIs) have been amended by Nepal Rastra Bank (NRB). The central bank issued a circular instructing the licensed "A," "B," and "C" class BFIs to categorize their non-performing loans (NPL) into five different categories. BFIs were previously required to categorize loans into Pass, Sub-standard, Doubtful, and Loss categories according on the length of the debt service delay.

A lender must categorize loans that have not been serviced for three months as "Pass" loans in accordance with the new regulations. The term "Watch List" also refers to loans that have gone unpaid for three months. However, loans that haven't had their principal and interest paid within the payback period are included in the "Watch List."

Loans that are non performing and have not been serviced for three to six months must be designated as "Sub-standard" loans. Similar to this, loans that are not in service for six months in a row must be designated as "doubtful" loans. The "LESS" loans are those for which interest and/or a principal installment have not been paid for longer than a year.

The NRB has directed the BFIs to set aside a predetermined amount of 1% for "pass" loans, 5% for "watch list" loans, 25% for "sub-standard" loans, 50% for "doubtful" loans, and 100% for "loss" loans. Also described as "perfoming loans" by the central bank are "pass" and "watch list," while "non-perfoming loans" are "restructured," "sub-standard," "doubtful," and "loss loans."

In the meantime, the NRB has forbidden BFIs from charging their customers for the electronic clearance of checks for an amount below Rs 200,000. Previously, BFIs were required to charge their customers for electronic clearing of checks for amounts greater than Rs 500. "Charge for the clearing of check even for small amount could lead to preference of cash among clients. Thus, we have decided to scrap the provision that allowed BFIs to charge clearing fee for the check amount below Rs 200,000," Manmohan Kumar Shrestha, executive director at Banks and Financial Institutions Regulation Department of NRB, told Republica.

The NRB has also required BFIs to appoint CEO and make appointments for managerial positions within three months of the positions becoming vacant, including "D" class micro-finance development banks. According to Shrestha, the new provision was introduced to guarantee proper governance in BFIs.

2.1.9 Evaluation of Financial Performance

The importance and role of financial performance have been significantly impacted by modern financial evaluation. Finance nowadays is best described as being constantly evolving with new concepts and methods. The company's efficient manager is the only one who can accomplish the setup goals. A bank becomes riskier if it doesn't retain enough equity capital. A bank must employ more debt with high fixed costs if its equity capital is insufficient. Therefore, the capital structure of any company must have enough equity capital. The bank's major objectives are to collect as much money as possible from customers and to move it to the most profitable

sector. A bank cannot make money if it does not use the resources it has collected (Chanra, 2015).

As per (Gupta, 2015), financial analysis is the method of determining the particular bank's financial strengths and weaknesses.It is conducted to ascertain an organization's liquidity, solvency, efficiency, and profitability position. The performance of finance can be divided into three major decisions: the decision to invest, the decision to finance, and the decision to pay dividends. A strategic combination of the three decisions will increase the firm's worth.

2.1.10 Financial Statements Analysis

Financial statement analysis is the method of determining how the various components of the financial statements relate to one another in order to gain a good understanding of the position and performance of the company. The focus of financial analysis is on crucial figures in the financial accounts and the major relationship that exists between them. The financial analyst's initial responsibility is to choose the information pertinent to the decision being considered from all of the information contained in the financial statements. The next step is to organize the information to emphasize key relationships. The last step is interpretation, which includes making inferences and drawing conclusions. Financial analysis is, in essence, the process of selection, comparison, and evaluation (Khan, 2007).

The process of evaluating a company's financial strengths and weaknesses by correctly creating a relationship between the items on the balance sheet and the profit and loss account is known as financial performance analysis. Financial performance analysis is the thoughtful selection of information from financial statements in order to evaluate the firm's financial health. This is accomplished by assessing key financial ratios, comparing financial data across organizations, and looking for trends in important financial data. Additionally, it involves evaluating the firm's history, present, and projected future financial condition.

2.1.11 Types of Financial Analysis

Financial analysis can be both internal and external.

Internal Financial Analysis

Meeting a company's internal requirements requires internal financial analysis, commonly referred to as managerial financial analysis. Its goal is to estimate last

fiscal period's results or determine liquidity. A series of administrative decisions incorporating various measures intended for the optimization of a certain business issue is the typical output of internal analysis. The financial section of a company normally conducts the internal analysis, which is constantly altered due to changes in the macro- and microenvironment. The nature of the data sources (internal accounting books and reports) used for the internal analysis ensures that the results are always accurate.

External Financial Analysis

When a company's management takes the initiative rather than a third party, an external analyst must conduct what is known as external financial analysis because they lack access to internal financial data. External analysis' primary goals and objectives may be different from its managerial analysis. An investor's definition of creditworthiness and investment potential may satisfy the purposes of an external financial study. Similar to this, a bank may find financial liquidity or solvency to be of interest. Potential business partners want to know as much information as possible about a company, the amount of risk involved, and the potential rewards and losses in order to make better decisions.Based on publicly available financial accounts, external financial analysis aims to identify potential bankruptcies, evaluate corporate performance, and determine the financial viability of an organization. Regardless of the type of analysis, its methodologies are quite similar in how they determine and interpret a variety of financial ratios, examine changes over time, and analyze structural changes in articles. Correctly using financial analysis allows for many questions regarding a company's financial health to be answered (Pandey, 2006).

2.2 Review of Previous Study

The section of this study deals with the review of journals and articles with reference to national and international context. The most recent journals and articles have been incorporated for review.

2.2.1 Review of Journals and Articles

Poudel (2012) conducted a research on the impact of credit risk management on financial performance of commercial banks in Nepal and has tried to explore various parameters pertinent to credit risk management as it affects banks financial performance. Such parameters covered were; default rate, cost per loan assets and

capital adequacy ratio. All these factors, according to the study, have a negative effect on a bank's financial performance; nonetheless, the default rate is the best indicator of a bank's performance. The study's broad goals were to determine the influence of credit risk management on banks' financial performance, and its specific goals were to determine the influence of the default rate and cost per loan assets on banks' financial performance. The outcome demonstrated that credit risk management is a crucial indicator of bank financial performance. Thus, risk management is important for the success of bank performance.The study's findings additionally demonstrated that the default rate is one of the most crucial risk management indicators than cost per loan assets. The banks are encouraged to place more emphasis on risk management because it generally has a very large impact on bank performance. The bank must allocate more funds to the management of default rates and work to maintain the bare minimum level of capital adequacy in order to minimize risk on loans and achieve maximum performance.

Ogboi and Unuafe (2013) conducted a study on the effect of credit risk management and capital adequacy on the commercial bank's financial performance in Nigeria.Nigerian banks have kept investing significant amounts of their limited financial resources in risk management modeling in an effort to maximize returns and reduce bank risk exposure through provision for loans. However, there isn't a lot of empirical data in Nigeria about the size of the relationships between credit risk and bank profitability. A few studies that looked at the connections failed to take into account the importance of capital adequacy in accordance with Basel II standards in a cohesive framework. This study assessed the effect of credit risk management and capital adequacy on banks' financial results in Nigeria using a time series and cross-sectional data from selected banks' annual reports and accounts from 2004 to 2009. This is done in an effort to provide more empirical data regarding the impact of capital requirements and credit risk management on bank profitability in Nigeria. The relationship between loan loss provisions (LLP), loans and advances (LA), non-performing loans (NPL), capital adequacy (CA), and return on asset (ROA) was estimated using panel data modeling (ROA).The findings demonstrated that prudent credit risk management and adequate capital had a positive impact on banks' financial performance, with the exception of loans and advances, which were discovered to have a detrimental effect on banks' profitability over the study period. The conclusion

is that Nigerian banks should implement appropriate credit risk management techniques by conducting rigorous credit evaluation prior to loan distribution and drawdown. Additionally, it is advised that sufficient attention be given to raising the Tier 1 capital of Nigerian banks.

According to Gatuhu (2013), who performed research on the impact of credit management on the financial performance of microfinance organizations in Kenya, credit management is one of the most crucial tasks for any company, regardless of the type of industry it operates in. A financial institution must practice sound credit management in order to be stable and continue to make a profit, while declining credit quality is the most common reason for poor financial performance and indiscipline.The greatest threat in microfinance, like in any financial organization, is lending money and not receiving it back. The goal of the study was to ascertain how credit management affected Kenyan microfinance institutions' financial performance. The research used a descriptive survey approach. The study's sample included 59 MFIs in Kenya that are AMFI members. The investigation was conducted using data from a census study. Questionnaires were used to collect primary data, and all of the questions on the questionnaire were answered. To analyze the data, descriptive statistics were utilized. Additionally, descriptions were created based on the data from the tables.According to the study, customer evaluation, credit risk management, and collection policy all had an impact on the financial performance of MFIs in Kenya. The study found a strong correlation between the financial performance of MFIs and client evaluation, credit risk management, and collection policy. The study determined that the financial performance of MFIs in Kenya is highly influenced by client evaluation, credit risk control, and collection policy. A strict policy is more effective in debt collection than a lenient one, according to research on the impact of collection practices on financial performance. The report advises MFIs to improve their collection practices by converting a stricter policy to a more flexible one for efficient debt collection.

Uwuigbe, Oyewo and Uwuigbe (2015) studied on credit management and bank performance of listed banks in NigeriaThe study evaluated credit management's impact on bank performance in Nigeria critically. The audited consolidated annual financial statements of listed banks covering the period 2007-2011 were examined in order to determine how well the study's objectives were being met. More specifically,

the purposive sampling methodology was used to choose and analyze a total of ten (10) listed banks for the study. Nevertheless, the study adopted the use of both descriptive statistics and econometric analysis employing the panel linear regression methodology consisting of periodic and cross-sectional data in the estimation of the regression equation while evaluating the research hypotheses. The study's conclusions showed that while the ratio of non-performing loans and bad debt had a substantial negative impact on the performance of banks in Nigeria, the relationship between the ratio of secured and unsecured loans and the performance of banks was not significant. As a result, the study advises that bank management build sound lending frameworks, suitable credit administration procedures, and effective machinery to administer lending functions in accordance with set standards.

Otieno, Nyagol and Onditi (2016) conducted a research onrelationship between credit risk management and financial performance: According to empirical data from microfinance banks in Kenya, a strong microfinance banking sector is essential for economic development since it supports low-end entrepreneurs running SMEs, which make up the majority of the Kenyan economy. The microfinance-banking sector in Kenya has struggled with risk management issues. This made the implementation of the Risk Based Supervision approach for monitoring Microfinance Banks necessary in 2010. The CIS capability was also made available to MFBs so they could check for credit defaults.To construct a multiple regression model and evaluate for significance of the relationship between risk management and financial performance, panel data analysis based on system GMM approach was utilized. The results showed a substantial negative correlation between credit risk management using PAR and LLPCR parameters and both RAA and RAE performance measures, as shown by the regression coefficient of f - 0.2 calculated by GMM. Accordingly, the study came to the conclusion that there is a substantial relationship between credit risk management and performance and that credit risk management affects MFBs' performance.According to the study, credit managers must perform under a sound credit granting procedure with clearly defined credit-granting criteria that include information about the MFB's target market, a complete knowledge of the lender, the purpose and structure of the credit, and its origin of repayment.

Kahuthu (2016)published a paperon the effectsof credit management and liquidity on financial performance of deposit taking SACCO’S. Savings and Credit Cooperative

Societies (SACCO'S) have extended loans over time without focusing on the quality of the loans in their portfolios, and as a result, they have held significant assets on their books that are unrecoverable. Similar to this, they have disbursed cash to clients without making any specific monetary level determinations. Determining whether credit and liquidity management were major variables in determining the revenues of deposit-taking SACCO's in Kenya was crucial for the study.To establish factually if the two variables had any effect, the study selected to compare the beta coefficients before and after the implementation of statutory management in 2015. On the basis of data manipulation and analytical analysis, the rigorous research processes were followed and results, recommendations, and discoveries were made. According to the study's findings, responsibly managed liquidity and credit management, along with the legislative framework serving as a moderating factor, had a significant impact on SACCO's financial performance.According to the study, SACCO's need continuously maintain proper loan products and sufficient cash levels for their profitability and financial stability. They should also develop important policies for hiring and retaining workers, managing liquidity, and providing loans to help SACCO's improve their financial performance. With the knowledge gained from this study, SACCO's will be able to manage their own resources in a way that ensures sustainability and profitability.

Shrestha (2017) studied on the influenceof credit risk management on profitability using data from Nepalese commercial banks. It was determined that capital adequacy ratios, cost per loan asset ratios, and assets growth ratios are positively associated to returns on assets and returns on equity, indicating that the greater the capital adequacy ratio, the better the returns on assets and returns on equity would be. Similar to this, a rise in cost per loan asset results in higher returns on assets and equity. The return on assets and return on equity would also be higher the bigger the assets to equity ratio.The relationship between the cash reserve ratio and the leverage ratio and the return on assets and return on equity is negative, indicating that an increase in the non-performing loan ratio results in a decline in the return on assets and return on equity. Similar to this, the return on assets and return on equity would be lower the bigger the cash reserve ratio. The return on assets and return on equity both decline as the leverage ratio rises. In contrast, the beta coefficient is negative for non-performing

loans, cash reserves, leverage, and bank performance. The beta coefficient is positive for capital adequacy ratio, cost per loan assets, and assets growth ratio.

Gadzo, Kportorgbi, and Gatsi (2019) studied on credit risk and operational risk on financial performance of universal banks in Ghana: A partial least squared structural equation model (PLS SEM) approach. Financial institutions, particularly universal and commercial banks, have recently had to deal with aggressive mergers and acquisitions throughout Africa. The level of financial inclusion is hindered by these events, and the public's faith in the financial system as a whole is diminished. In the context of the structural equation model, this study evaluated the impact of credit and operational risk on the financial performance of universal banks (SEM). Without any missing variables, data were gathered from all 24 universal banks in Ghana. Using the PLS-SEM, the results revealed that, in contrast to the empirical study but consistent with the lemon theory's information asymmetry tenet, credit risk has a negative impact on financial performance. Additionally, it was discovered that operational risk had a detrimental impact on the financial performance of Ghana's universal banks.Additionally, the study found that bank-specific factors such asset quality, bank leverage, cost to income ratio, and liquidity had a beneficial impact on the universal banks' financial performance as well as credit risk and operational risk. We suggest encouraging banks to lower their lending rates in order to lower credit risk and subsequently increase profitability. In order to increase profitability, banks should reduce leverage and concentrate more of their portfolio on liquid investment income.

Oduro, Asiedu and Gadzo (2019) studied on impact of credit risk on corporate financial performance: Evidence from listed banks on the Ghana stock exchange. An increased exposure to credit risk can endanger the financial health and viability of a bank. Based on this, this study uses financial data from banks listed on the Ghana Stock Exchange over a 15-year period, from 2003 to 2017, to identify the elements that determine the amount of bank credit risk and further evaluates the consequences of bank credit risk on corporate financial performance. Credit risk is found to be inversely associated to factors like capital sufficiency, operational effectiveness, profitability, and net interest margin using the 2SLS technique. In contrast, bank size and funding gap typically have a positive relationship with credit risk.Additionally, annualized inflation adjustments have a tendency to have a favorable impact on credit risk. The increase in bank credit risk has been seen to have a detrimental impact on

company financial performance, which is consistent with Basel accord. As a result, managing the exposure to credit risk is crucial if banks are to remain viable in their sector.

The study's objective was to evaluate how credit risk management affected Ethiopia's commercial banks' profitability. The National Bank of Ethiopia provided secondary data over ten-year periods (2010-2019). The study used a fixed effect model and correlation analysis. Commercial banks' profitability was assessed using return on assets, as well as bank-specific factors like capital adequacy, loan and advance to total deposit ratios, non-performing loans, bank size, and liquidity, as well as macroeconomic factors like inflation and GDP that serve as indicators of credit risk management.The results demonstrated that the profitability of commercial banks in Ethiopia is significantly impacted by credit risk management in terms of bank-specific and macroeconomic factors. The outcome also showed that the volume of non-performing loans during the study had no impact on the profitability of commercial banks. The study suggested that in order to reduce the negative effects of external factors (Gross Domestic Product and Inflation) on the profitability of commercial banks in Ethiopia, banks' credit risk management should devote as much attention as possible to both internal and external factors (Kidane, 2020).

The main goal of this study is to determine the impact of credit risk management indicators on the profitability characteristics of Bangladeshi state-owned commercial banks. The researcher has examined four sample banks' audited yearly reports for a period of ten years to meet the study's objectives.To achieve its intended conclusion, the study used the ANOVA technique, a multiple regression model, and a correlation matrix. The results showed that while there is considerable and minor variance as well as relationship in the various indicators of credit risk management across the sample banks during the study period, there is only insignificant variation in the various aspects of profitability. Additionally, the various credit risk management indicators, such as loan and advance, classified loan, unclassified loan, leverage ratio, bad debt, default ratio, cost per loan asset, and cost to income ratio, have a negligible impact on profitability metrics like return on assets, return on equity, and net profit percentage of the sample banks over the course of the study. Therefore, the study has advised that the banking industry's management place a focus on developing a clever credit management strategy as well as lending guidelines to construct the appropriate credit

risk management practice to adequately satisfy the demand of loan applicants (Banu et al., 2021).

2.3 Research Gap

Research gap refers to the gap between previous research and this research. A few research studies have been conducted by the different students, experts and researcher about credit managment. They conducted on the financial companies and public enterprises regarding credit risk management. There is research gap between the present study and previous studies at first, fiscal years i.e. time and in the sample banks. This study includes advance tools like ratio analysis, correlation analysis and coefficient of variation,as specific tools which different tools were not used in previous reaseach. However, this research is about credit management of five commercial banks of Nepal. In previous study, they failed to study the perfect credit management of Nepalese commercial banks. This study tries to fulfill this weakness. In addition, there is less research made in this topic especially in banking sector.

CHAPTER-III

RESEARCH METHODOLOGY

Research Methodology is the set of various instrumental approach used in achieving the predetermined objective as stated in the earlier chapters. It counts on the resources and to the extent of their reliability and validity in this research.

The research methodology has primarily sought the evaluation of the credit management. The research methodology adopted in this chapter follows some limited but crucial steps aimed to achieve the objective of the research. Research methodology refers to the various sequential steps along with a reasonable of each such step to be adopted by researcher in studying a problem with certain objectives in view.

3.1 Research Design

The study has employed both descriptive and causal comparative. Secondary data are collectedfromtheirrespectiveannualreport otherpublicationandjournals ofthe related banks published by Nepal Rastra Bank, Nepal stock exchange and other related magazines. A research design is the specification of methods and procedures for acquiring the information needed.

It is the overall operational pattern of framework of the project. It stipulates what information is to be collected from which source by what procedure. If it is good design, it will ensure that the information obtain is relevant to the research question and that objective and economical procedures collected it. Infact,theresearch constitutes the blue print for thecollection, measurement and analysis of data as such the design includes anoutline of researcher hypothesis and its operational implications to the final analysis of data.

3.2 Population and Sample

The term population of data denotes for the data of each organization which is within the boundaryof specific organization.The population for this study includes each of Nepal's 27 recognized commercial banks that are currently in operation. A represented part of population selected from it to investigating its properties is called sample. Whereas, sample data are the data of those organizations which has beenselected from

the whole population for study. The five banks are selected on the basis of different nature of banks thus purposive sampling technique has been employed.

Table 2
Specification of Sample and Sample Period
(2010/11-2019/20)

SN	Name of Commercial Banks	Abb.	Sample Period	No. of Observations
1	Agricultural Development Bank Limited	ADBL	2010/11-2019/20	10
2	Sanima Bank Limited	SBL	2010/11-2019/20	10
3	NIC Asia Bank Limited	NIC	2010/11-2019/20	10
4	Nepal SBI Bank Limited	NSBI	2010/11-2019/20	10
5	Nabil Bank Limited	NABIL	2010/11-2019/20	10
			Total No. of Observations	50

Thus, the study is based on fifty number of observations.

3.3 Types and Sources of Data

Data is very reliable and effective source for research. The financial data from fiscal year 2010/11 to 2019/20 have been taken in to consideration for data presentation and analysis purpose. The study uses the secondary data to fulfill its objectives. Secondary data are those data that are collected by someone else or used already and made available toother in the form of published statistics such as annual reports, periodicals, newspapers, magazines etc. Once a primary data is used, it loses its originality and becomes secondary. This study is mainly depends on the use of secondary data that consists of annual reports of the concerned banks. Besides the annual reports, various other sources of data have also been used for the purpose of the study plan documents, newspaper, magazine, economic journals, NRB reports etc.

3.4 Collection of Data

Data refers to the raw form of information. It may be sign, symbol, number or other unstructured form. Data collection is the process of gather data from relevant sources. Which should be accurate, relevant and consistent. In this research, Quantitative data are used rather than qualitative data. These data collect from secondary sources mainly from the website of sample banks. The other secondary sources are governmental sources, semi-governmental sources, private organization, Non-

government organization, International non-government organization, newspapers, Google, YouTube etc. After collection of data, it is transfer into information after a series of steps.

3.5 Tools for Analysis

To make the study more specific and reliable, the researcher uses two types of tool for analysis,

i) Financial Tools

ii) Statistical Tools

3.5.1 Financial Tools

Financial analysis is the way of noticing the financial strength and weakness of the firm by establishing some relationship to the items found in profit and loss account and Balance sheet. Many ratios reflecting to the term credit is assessed to illustrate the result that has been resulted after managing or controlling credit. The ratio analysis under financial tool has been used to examine the financial strength and weakness of the bank. In addition, for relative measure of variables ratio analysis is also be examined.

A) Ratio Analysis: Ratio analysis is the comparison of line items in the business. Ratio analysis tools have been used to evaluate a number of issues with an entity, such as its operations. This type of analysis is particularly useful toanalystsoutside of a business, since their primary source of information about an organization is its financial statements. Ratio analysis is less useful to corporate insiders, who have better access to more detailed operational information about the organization.

Liquidity (Cash Reserve Ratio)

Total deposits consist of current deposits, saving deposit, fixed deposit money at call and short notice and other deposits. This ratio shows the proportion of total deposits held as compared to the most liquid assets. High ratio shows the strong liquidity position of the bank but very high ratio is not favorable for the bank because it does not produce appropriate profit to bear the high interest. This ratio is calculated by dividing cash and bank balance by total deposits.

$$\text{Cash and Bank Balance to Total Deposit} = \frac{\text{cash and Bank Balance}}{\text{Total Deposits}}$$

Non-Performing Loan Ratio

NRB has directed all the commercial banks to create loan loss provision against the doubtful and bad debts. This ratio helps in minimizing the non-performing loans and helps to control the credit.

$$\text{Non- Performing Loans to Loan and advance Ratio} = \frac{\text{Non-performing Loans}}{\text{Loan and advances}}$$

Return on Equity

Net income after taxes divided by total equity capital is the ratio used to calculate return on equity. A financial ratio known as RE measures how much profit a company made in comparison to the total amount of stockholder equity invested or funded on the balance sheet. The shareholders want R&E in exchange for their investment.

It indicates the rate of return made on the money shareholders of the bank placed there. RE demonstrates the efficiency with which a bank's management uses shareholder cash (Khrawish, 2011).

$$\text{Return on Equity Ratio} = \frac{\text{Net Profit After Tax}}{\text{Total Shareholders}'\text{Equity}}$$

Capital Adequacy Ratio

The capital requirement is a bank regulation, which sets a framework on how banks and depository institutions must handle their capital. The first global minimum capital adequacy standard for the banking sector Basel I was agreed and adopted in 1988. It required banks to maintain minimum capital to asset ratio with the assets weighted using broad risk classifications. Capital adequacy is the determination of the minimum capital amount required to satisfy a specified economic capital constraint (Miccolis, 2002).

Ratnovski and Huang (2009) found out that Canadian banks compared toother large commercial banks in OECD countries were more resilient during the 2008 economic turmoil since they relied more on depository funding as compared to the other banks that relied more on wholesale funding.

A related study in Kenya conducted by Ochung (1999) established that there was a very strong correlation between deposits of commercial banks and Financial Institutions and their individual performances. The bank should maintain at least 11 percent of bank's total assets which may entail declared reserves (retained assets).

$$\text{Capital Adequacy Ratio} = \frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk Weighted Assets}}$$

A) <u>Core Capital Ratio</u>

The tier 1 capital ratio is the ratioof a bank's core tier 1 capital that is its equity capital and disclosed reserve to its total risk-weighted assets. It is a key measure of a bank's financial strength that has been adopted regulation. The bank should maintain at least 6 percent of bank's total assets which may entail declared reserves (retained assets).

The tier 1 capital ratio measures a bank's core equity capital against its total risk-weighted assets which include all the assets the bank holds that are systematically weight for credit risk.

$$\text{Core capital Ratio} = \frac{\text{Tier 1 Capital}}{\text{Total Risk Weighted Assets}}$$

A) <u>Supplementary Capital Ratio</u>

Tier 2 capital includes undisclosed funds that do not appear on a bank has financial statement, revaluation reserves, hybrid capital instruments, subordinated term debt also known as junior debt securities and generate loan loss or uncollected reserved, revalued reserve is an accounting method that recalculated the current value of the holding that is higher than what is was originally recorded as such as with real estate.

Under capital adequacy, ratio minimum 11 percent need to be maintained whereas core capital ratio deals with minimum 6 percent and others is concerned with supplementary capital. Tier 2 capital is supplementary capital because it is less reliable than tier 1 capital. It is more difficult to accurately measure due to its composition of assets that are difficult to liquidate often. Banks will split these funds into upper and lower level pools deepening on the characteristics of the individual assets.

$$\text{Tier 2 capital ratio} = \frac{\text{Tier 2 Capital}}{\text{Total Risk Weighted Assets}}$$

Table 3
List of variables with formulae

Variables	Notion	Measure
Dependent variables		
Return on Equity (Percentage)	ROE	Net income/Total equity
Return on Assets (Percentage)	ROA	Net income/ Total assets
Independent variables		
Liquidity	CRR	25% of total deposit or 1/Equity Multiplier
Capital Adequacy Ratio	CAR	Sum of SCR and CCR
Supplementary Capital Ratio	SCR	Tier 2 capital/ Total Risk weighted assets
Core Capital Ratio (percentage)	CCR	Tire 1 Capital/Total risk weighted asssets
Non-Performing Loan Ratio (percentage)	NPLR	Non-performing loan/Total amount of outstanding loans in banks
Credit Deposit Ratio	CDR	Total Credit/Total Deposit

3.5.2 Statistical Tools

The relationship between two or more variables must be measured using statistical techniques. It is a mathematical method used to make it easier to analyze and explain the operations of organizations. It also aids in the presentation of the data, demonstrating the relationships and variances between various organizational parameters. Some statistical tools are employed in this research study to analyze the data more precisely. These tools are provided below.

Arithmetic Mean

The arithmetic mean of observations in the summationof all the observation divided by the observations number (Elhance & Agarwal, 1975).The arithmetic average of a variable, which represents the overall group means, is the optimum value. Arithmetic mean of a series is calculated as:

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

Where Σx = Sum of the variables 'x' and N = No. of Observation

Standard Deviation

The standard deviation is the purest form of dispersion, satisfying all of the criteria for a good dispersion measure but omitting the flaw inherent in other forms. The positive square root of the mean as squared by the deviation from the arithmetic mean is known as the standard deviation. The ranges and magnitude of deviation from the centre or mean are indicated. It gauges the amount of dispersion (Elhance & Agarwal, 1975). The variability has increased as the standard deviation has decreased, and vice versa. Dispersion quantifies how widely the data deviate from the central value. In other words, it aids in the analysis of the variability of data quality. It calculates as follows:

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

Coefficient of Variation (CV)

The most accurate indicator of dispersion is the standard deviation. The measurement of the coefficient of standard deviation is the term used to describe the relative measure of dispersal depending on the standard deviation. Thepercentage ofmeasure ofco-efficient ofso iscalledco-efficient of variation (Elhance & Agarwal, 1975).Less CV is the more uniformity and consistency and vice versa. Only standard deviation is not appropriate to compare two pairs of variables but also CV iscapableto comparetwo variablesindependentlyinterms oftheirvariability. The formula for calculation is as follow:

$$\text{Coefficient of Variation (C.V.)} = \frac{\text{S. D.}}{\bar{X}} \times 100$$

Correlation Coefficient (r)

The relationship between the dependent and independent variables is known as the correlation coefficient. It is a method for figuring out how these two variables relate to one another. The two variables are considered to be connected if a change in the independent variable's value results in a change in the dependent variable's value (Elhance & Agarwal, 1975).

$$\text{Correlation Coefficient (r)} = \frac{n\Sigma xy - \Sigma x \Sigma y}{\sqrt{n\Sigma x^2 - (\Sigma x)^2}\sqrt{n\Sigma y^2 - (\Sigma y)^2}}$$

If $r = 0$, then there is no correlation between variables.

If $r > 0$, then there is a positive correlation between variables.

If $r < 0$, then there is a negative relationship between variables.

One very convenient and useful way of interpreting the value of the coefficient ofcorrelation(r) between the two variables is the coefficient of determination, which is denoted by r^2. The independent variable explains the entire variation in the dependent variable.The significance of the coefficient of correlation (r) is tested with the help of 2 tailed p-values at 1 per cent and 5 per cent level of significance.

Regression Analysis

The literal or dictionary meaning of the regression is moving backward, going back, or the return to the average value. Regression analysis is the technique of studying how the variations on one series are related to variation in another series. It determines the nature and strength of relationship between two variables (Elhance & Agarwal, 1975). Thus, regression is the estimation of unknown values or prediction of one variable from known values of other variables.

The Regression Model 1,

$ROE_{it} = \beta_0+\beta_1 CAR +\beta_2 SC+ \beta_3 CR +\beta_4 NPLR + \beta_5 CDR + \beta_6 CRR+ \varepsilon_{it}$

Where,

β_0	=	Constant Value
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$	=	Coefficient of Independent Variables
ROE	=	Return on Equity
SCR	=	Supplementary Capital Ratio
CR	=	Core Capital Ratio
NPLR	=	Non-performing loan Ratio
CAR	=	Capital Adequacy Ratio
CDR	=	Capital Deposit Ratio
CRR	=	Cash Reserve Ratio
ε_{it}	=	Error Terms

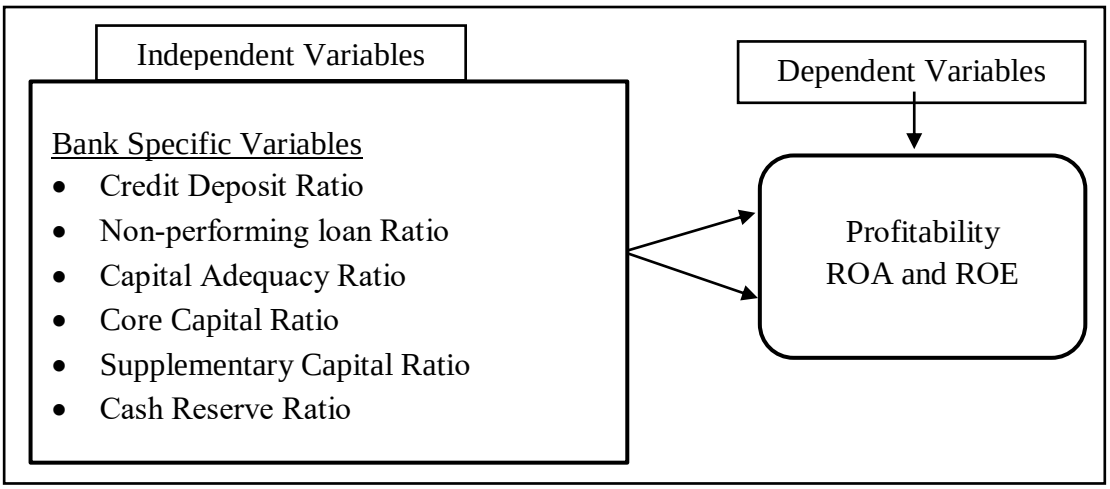
The Regression Model 2,

$ROA_{it} = \beta_0+\beta_1 CAR +\beta_2 SC+ \beta_3 CR +\beta_4 NPLR + \beta_5 CDR + \beta_6 CRR+ \varepsilon_{it}$

β_0	=	Constant Value
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$	=	Coefficient of Independent Variables
ROA	=	Return on Assets
SCR	=	Supplementary Capital Ratio
CCR	=	Core Capital Ratio

NPLR	=	Non-performing loan Ratio
CAR	=	Capital Adequacy Ratio
CDR	=	Capital Deposit Ratio
CRR	=	Cash Reserve Ratio
ε_{it}	=	Error Terms

3.6 Research Framework



Source: Michel et. al. (2001)

Figure 1: Theoretical Framework

3.7 Definition of Variables

Dependent Variables

Return on Equity

The ratio of net income after taxes to total equity capital is known as return on equity. When compared to the total amount of stockholder equity invested or funded on the balance sheet, ROE. indicates to how much profit a company made. Shareholders want ROE in exchange for their investment. It shows the rate of return on investment made by the bank's stockholders. ROE demonstrates the efficiency with which a bank's management uses shareholder cash (Khrawish, 2011).

ReturnonAssets

Financialperformancemeasureshowwellafirmisgeneratingvaluefortheowners.Itcanbe measured through various financial measures such as profit after tax, return on assets(ROA), return on equity (ROE), earnings per share and any market value ratio that isgenerallyaccepted (Pandey, 2010).

Independent Variables

Non-Performing Loan Ratio (NPLR)

NRB has directed all the commercial banks to create loan loss provision against the doubtful and bad debts. This ratio helps in minimizing the non-performing loans and helps to control the credit. Non-performance loan ratio is a performance indicator of bank efficiency. The lower the ratio, the more efficient the bank. Similarly, higher ratio is a symbol of the inefficient management of the bank. Nonperforming loan ratio up to 5% is acceptable as per the international banking practices (Kattel, 2014).

Capital Adequacy Ratio

The capital requirement is a bank regulation, which sets a framework on how banks and depository institutions must handle their capital. The first global minimum capital adequacy standard for the banking sector Basel I was agreed and adopted in 1988. It required banks to maintain minimum capital to asset ratio with the assets weighted using broad risk classifications. Capital adequacy is the determination of the minimum capital amount required to satisfy a specified economic capital constraint (Miccolis, 2002).

Supplementary Capital Ratio (SC)

Revalued reserves, hybrid capital instruments, subordinated term debt also known as junior debt securities, and uncollected reserves are all included in tier 2 capital. Revalued reserves are an accounting method that recalculates the current value of the holding at a higher level than what was originally recorded, such as with real estate.

Under capital adequacy, ratio minimum 11 percent need to be maintained whereas core capital ratio deals with minimum 6 percent and others is concerned with supplementary capital. Because it is less dependable than tier 1 capital, tier 2 capital is considered supplemental capital. Due to its concentration of assets that are frequently challenging to dispose, it is more challenging to measure accurately. Banks will divide these funds into upper and lower level pools while paying close attention to the characteristics of each asset.

Core Capital Ratio (CC)

The tier 1 capital ratio measures how much equity capital and disclosed reserve a bank has in relation to its overall risk-weighted assets. It is a crucial indicator of a bank's financial health that has been adopted as a regulatory standard. The bank

should maintain at least 6 percent of bank's total assets which may entail declared reserves (retained assets). The tier 1 capital ratio compares a bank's total risk-weighted assets, which are all of its assets that are systematically weighted for credit risk, to its core equity capital.

Credit Deposit Ratio

Credit-deposit ratio is a ratio between the banks total loans and total deposits. The ratio is generally expressed in percentage terms if the ratio is lower than one, the bank relied on its own deposits to make loans to its customers, without any outside borrowing.

Cash Reserve Ratio

Cash reserve ratio is used for credit management because loan is supply on the basis of liquidity as per NRB Directives, rules and regulations. ‘A’ class commercial banks can maintain CD Ratio at most eighty percent. That is why, it must be used for loan management for every manager and every financial institution. Liquidity ratios measure a corporation's ability to meet its maturing short-term obligations.

CHAPTER-IV

RESULTS AND DISCUSSION

4.1 Data Presentation and Analysis

The purpose of this chapter is to analyze and interpret the data collected during the study. Various statistical tools described in chapter three have been used for fulfilment of study' objectives. The chapter four provides systematic presentation, interpretation and analysis of secondary data in order to deal with various issues associated with credit risk effect on profitability of Nepalese commercial banks.

Table 4
Capital Adequacy Ratio Status
(2010/11-2019/20)

Year	Capital Adequacy Ratio (CAR) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	19.49	24.85	70.67	28.41	12.89
2011/12	19	22.93	83.23	20.74	11.01
2012/13	16.34	32.75	95.14	14.87	13.17
2013/14	15.09	34.83	83.68	12.54	14.05
2014/15	13.99	34.48	57.24	11.08	12.49
2015/16	17.18	36.78	59.27	12.36	12.44
2016/17	20.41	33.46	59.86	15.57	13.83
2017/18	20.33	25.16	51.84	12.41	12.24
2018/19	20.37	27.13	50.57	13.19	13.32
2019/20	19.33	17.23	36.16	13	13.5
Mean	18.15	28.96	64.77	15.42	12.89
SD	2.35	6.41	18.12	5.31	0.89

Source: Annual Report, 2010/11 to 2019/20

The table 4 shows capital adequacy ratio for commercial banks, in average, such as ADBBL, NSBI, NABIL, SBL and NIC has 18.15 percent, 28.96 percent, 64.77 percent, 15.42 percent and 12.89 percent respectively. The minimum capital adequacy requirement (CAR) prescribed by Nepal Rastra Bank (NRB) as per its new capital adequacy framework is 10 percent, out of which 6 percent must be the core capital.

Thus, all commercial banks have accessibly sustained capital adequacy ratio. However, there is moderately inconsistency and fluctuation of capital adequacy ratioover ten years in all commercial banks because of aggressive standard deviation.

Table 5
Supplementary Capital Ratio
(2010/11-2019/20)

Year	Supplementary Capital Ratio (SR) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	4.08	1.2	1.75	1.84	1.55
2011/12	3.28	2.05	1.71	1.5	1.1
2012/13	2.72	2.8	1.61	3.08	0.97
2013/14	2.44	3.09	1.5	2.29	2.2
2014/15	1.94	2.84	1.39	1.65	1.96
2015/16	1.99	2.51	1.22	1.36	1.75
2016/17	1.8	2.18	1.2	1.15	1.45
2017/18	1.05	1.77	1.19	1.11	6.58
2018/19	1.1	1.4	1.1	0.82	5.08
2019/20	2.82	3.16	2.4	2.76	5.15
Mean	2.32	2.30	1.51	1.76	2.78
SD	.95	.69	.39	.74	2.02

Source: Annual Report, 2010/11 to 2019/20

The table 5 depicts average supplementary capital ratio, also called Tier 2 capital, for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 2.32 percent, 2.30 percent, 1.51 percent, 1.76 percent and 2.78 percent percentage respectively. Unreported funds that do not appear on a bank's financial statements, revaluation reserves, hybrid capital instruments, subordinated term debt also known as junior debt securities that produce loan losses or uncollected reserves, etc. are all included in Tier 2 capital.

The standard deviation for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 0.95 percent, 0.69 percent, 0.39 percent, 0.74 percent and 2.02 percentage respectively. Therefore, there is no consistency found in supplementary capital ratio.

Table 6
Core Capital Ratio
(2010/11-2019/20)

Year	Core Capital Ratio (CR) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	15.41	10.32	8.83	27.54	11.34
2011/12	15.72	9.16	9.3	19.82	9.91
2012/13	13.61	9.59	9.98	13.91	12.21
2013/14	12.62	10.19	9.68	11.52	11.84
2014/15	12.05	11.18	10.18	10.13	10.53
2015/16	15.19	10.98	10.51	10.69	10.69
2016/17	18.61	13.53	11.7	14.07	12.38
2017/18	19.28	13.38	11.81	11.14	8.66
2018/19	19.27	12.72	11.4	10.63	8.24
2019/20	16.5	12.39	10.67	10.37	8.35
Mean	15.83	11.34	10.41	13.98	10.42
SD	2.63	1.57	1.01	5.60	1.58

Source: Annual Report, 2010/11 to 2019/20

The table 6 displays that core capital ratio, also called Tier 1 capital, in average for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 15.83 percent, 11.34 percent, 10.41 percent, 13.98 percent and 10.42 percentage respectively which is above 6 percent. Therefore, the core capital ratio has sufficiently been covered by commercial banks. The tier 1 capital ratio measures how much a bank's equity capital and designated reserve are in relation to its overall risk-weighted assets.

It is a crucial indicator of a bank's financial condition that has been adopted as a regulatory standard. The bank should maintain at least 6 percent of bank's total assets which may entail declared reserves (retained assets). However, there is inconsistency and fluctuation over core capital ratioover ten years, as standard deviation in not null.

Table 7
Credit Deposit Ratio Status
(2010/11-2019/20)

Year	Credit Deposit Ratio (CDR)in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	117.38	17.50	30.00	101.25	84.1
2011/12	104.06	17.50	60.00	86.25	73.13
2012/13	100.81	20.00	65.00	85.27	77.43
2013/14	94.8	22.07	65.00	82.9	75.5
2014/15	93.77	28.42	34.84	83.97	78.91
2015/16	95.46	29.53	45.00	88.1	83.81
2016/17	92.9	16.34	48.00	89.03	89.2
2017/18	95.64	15.79	34.00	97.45	93.79
2018/19	93.62	16.84	34.00	90.42	95.3
2019/20	85.84	9.47	35.26	85.1	91.53
Mean	97.43	19.35	45.11	88.97	84.27
SD	8.50	6.02	13.74	6.00	7.93

Source: Annual Report, 2010/11 to 2019/20

The table 7 shows the status of credit deposit ratioover ten fiscal year. It is found that in average, the credit deposit ratio in commercial banks such as ADBL, NSBI, NABIL, SBL and NIC has 97.43 percent, 19.35 percent, 45.11 percent, 88.97 percent and 84.27 percentage respectively. Since, there is higher credit deposit ratio commercial banks are able to flow the loan to customer in market out of its own deposit without external borrowing. However, there is inconsistency and fluctuation of credit deposit ratioover ten year in all commercial banks because of aggressive standard deviation.

Table 8
Non-Performing Loan Ratio Status
(2010/11-2019/20)

Year	Non-performing Loan Ratio (NPLR)in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	8.99	13.21	22.29	0.004	0.06
2011/12	8.98	11.25	23.74	0.479	0.73
2012/13	5.85	16.47	32.66	0.027	2.32
2013/14	5.46	19.97	33.65	0.017	2.33
2014/15	5.35	21.36	29.93	0.073	2.07
2015/16	4.36	25.56	37.30	0.019	0.76
2016/17	4.6	22.38	39.22	0.01	0.36
2017/18	3.5	19.87	31.12	0.03	0.06
2018/19	3.29	18.33	24.25	0.08	0.46
2019/20	2.84	12.33	18.55	0.45	0.75
Mean	5.32	18.07	29.27	0.12	0.99
SD	2.17	4.69	6.81	0.18	0.90

Source: Annual Report, 2010/11 to 2019/20

The table 8 displays the non-performing loan status. The average non-performing loan ratio for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 5.32 percent, 18.07 percent, 29.27 percent, 0.12 percent and 0.99 percentage respectively. The higher non-performing loan ratio in joint venture banks indicates that there is greater chance of loss as compared to private owned banks. The commercial banks found to tackle the doubtful and bad debts. However, there is fluctuation and consistency in non-performing loan ratio in commercial banks.

Table 9
Cash Reserve Ratio Status
(2010/11-2019/20)

Year	Cash Reserve Ratio (CRR) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	25.71	7	4.9	26.57	27.4
2011/12	36.65	8.33	8.6	30.24	28.84
2012/13	32.27	9.58	9.32	30.96	29.27
2013/14	30.43	9.32	11.32	26.68	28.68
2014/15	28.77	10.92	14.15	22.32	28.91
2015/16	23.33	8.33	6.77	24.24	23.79
2016/17	31.18	10.04	10.02	26.08	25.8
2017/18	29.15	7.18	10.05	24.72	24.45
2018/19	27.2	6.65	4.78	22.87	26.05
2019/20	33.98	8.89	11.2	24.01	27.09
Mean	29.87	8.62	9.11	25.87	27.03
SD	3.94	1.40	2.96	2.89	1.95

Source: Annual Report, 2010/11 to 2019/20

The table 9 depicts the cash reserve ratio status over ten years. The average cash reserve ratio for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 29.87 percent, 8.62 percent, 9.11 percent, 25.87 percent and 27.03 percentage respectively. Cash reserve ratio (CRR) was set as 4 percent till 2019/20. Nepal Rastra Bank report the data. Thus, all commercial banks have successively hold the cash reserve ratio which indicates there is almost no liquidity issue and short-term loan tackling ability. However, there is inconsistency in cash reserve ratioover ten years in all commercial banks because of higher level of standard deviation.

Table 10
Return on Equity Status
(2010/11-2019/20)

Year	Return on Equity (ROE) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	15.20	16.19	29.02	7.36	28.09
2011/12	33.28	15.02	30.25	5.72	19
2012/13	15.73	20.31	32.78	12.58	14.63
2013/14	9.39	22.85	27.97	15.09	15.93
2014/15	16.65	17.08	22.73	18.19	13.05
2015/16	13.96	17.46	25.61	22.69	16.5
2016/17	11.69	14.85	22.41	14.39	16.84
2017/18	13.87	15.81	20.94	18.67	12.09
2018/19	14.74	16.20	17.76	23.2	22.73
2019/20	11.71	10.44	13.61	16.09	19.26
Mean	15.62	16.62	24.31	15.40	17.81
SD	6.58	3.30	5.95	5.78	4.77

Source: Annual Report, 2010/11 to 2019/20

The table 10 depicts the return on equity status. The average return on equity ratio for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 15.62, 16.62, 24.31, 15.40 and 17.81 percentage respectively. The equity shareholders have been provided satisfactory return in commercial banks. The wealth and growth of equity shareholders have been managed by commercial banks in satisfactory way.

However, there is inconsistency in return on equity ratioover ten year in all commercial banks because standard deviation is not null. In addition, per year consistency over ROE has been observed.

Table 11
Return on Assets
(2010/11-2019/20)

Year	Return on Assets (ROA) in Percentage				
	ADBL	NSBI	NABIL	SBL	NIC
2010/11	3.99	1.01	2.43	1.66	2.34
2011/12	2.9	0.83	2.8	0.89	1.64
2012/13	2.97	1.19	3.25	1.39	1.78
2013/14	1.76	1.51	3.65	1.46	1.71
2014/15	3.57	1.8	2.06	1.55	1.21
2015/16	2.32	1.59	2.32	1.78	1.51
2016/17	2.15	1.57	2.69	1.86	1.64
2017/18	2.71	1.97	2.61	1.85	0.97
2018/19	2.77	1.94	2.11	2.07	1.56
2019/20	1.86	1.17	1.58	1.41	1.32
Mean	2.70	1.46	2.55	1.59	1.57
SD	0.71	0.39	0.60	0.33	0.37

Source: Annual Report, 2010/11 to 2019/20

The table 11 displays the return on assets status. The average return on assets ratio for commercial banks, ADBL, NSBI, NABIL, SBL and NIC has 2.70 percent, 1.46 percent, 2.55 percent, 1.59 percent and 1.57 percentage respectively. The return on assets in average is less than 5 percent which indicates that there is lack of proper and utmost utilization of available assets in commercial banks. The commercial banks can enhance profitability with the optimum utilization of all sorts of available assets. Similarly, there is inconsistency in return on assets ratioover ten years in all commercial banks because standard deviation is not null.

4.2 Descriptive Analysis

The descriptive analysis for independent variables such as capital adequacy ratio (CAR), core capital ratio (CR), supplementary capital ratio (SC), non-performing loan ratio (NPLR), credit deposit ratio (CDR), cash reserve ratio (CRR) and return on equity (ROE) and return on assets (ROA) as dependent variables. The descriptive analysis is based on total fifty number of observations.

Table 12
Descriptive Analysis

Descriptive Statistics

Ratios	Units	N	Range	Minimum	Maximum	Mean	Std. Deviation
CAR	%	50	84.13	11.01	95.14	28.04	21.19
SC	%	50	5.76	0.82	6.58	2.13	1.158
CC	%	50	19.30	8.24	27.54	12.39	3.59
NPLR	%	50	39.22	0.00	39.22	10.76	11.96
CDR	%	50	107.91	9.47	117.38	67.03	31.34
CRR	%	50	31.87	4.78	36.65	20.10	9.73
ROA	%	50	3.16	0.83	3.99	1.97	0.73
ROE	%	50	27.56	5.72	33.28	17.95	6.15

The table 12 deals with descriptive analysis. The mean value for capital adequacy ratio is 28.04 percent with standard deviation 21.19 over ten years. The minimum and maximum percentage of CAR is 11.01 and 95.14 percentage. Thus, the range for CAR is 84.13 percentage. Thus, it is found that the commercial banks have excessively maintained CAR standard of 11 percent. Therefore, the higher a bank's CAR, the more likely it is to be able to withstand a financial downturn or other unforeseen losses.

Likewise, the mean value for core capital ratio is 12.39 percent with standard deviation 3.59 over ten years. The minimum and maximum percentage of CR is 8.24 and 27.54 percentage. Thus, the range for CR is 19.30 percentage. Likewise, the mean value for supplementary adequacy ratio is 2.13 percent with standard deviation 1.158 over ten years. The minimum and maximum percentage of SC is 0.82 and 6.58 percentage. Thus, the range for SC is 5.76 percentage. Therefore, the higher a bank's CC and SC, the more likely it is tobe able toliquidity and unforeseen market potential loss.

Similarly, the mean value for NPLR ratio is 10.76 percent with standard deviation 11.96 over ten years. The minimum and maximum percentage of NPLR is 0.00 and 39.22 percentage. Thus, the range for NPLR is 39.22 percentage. Continuously, the mean value for credit deposit ratio is 67.03 percent with standard deviation 31.34 over

ten years. The minimum and maximum percentage of CDR is 9.47 and 117.38 percentage. Thus, the range for CDR is 107.91percentage. Thus, the credit flow out of total deposit has not meet its standard of 90 percent flow. Therefore, there is relatively poor credit growth compared with deposit growth.

Moreover, the mean value for cash reserve ratio is 20.10 percent with standard deviation 9.73 over ten years. The minimum and maximum percentage of CRR is 4.78 and 36.65 percentage. Thus, the range for CRR is 31.87 percentage. Thus, there seems to be no liquidity crisis in commercial banks. Further, the commercial banks have sufficiently deposit out of the customers deposit in commercial banks. Further, the mean value for return on assets ratio is 1.97 percent with standard deviation 0.73 over ten years. The minimum and maximum percentage of ROA is 0.83 and 3.99 percentage. Thus, the range for ROA is 3.16 percentage. Thus, the ROA is below 5 percent. The optimum utilization of available assets is required in commercial banks. Eventually, the mean value for return on equity ratio is 17.95 percent with standard deviation 6.15 over ten years. The minimum and maximum percentage of ROE is 5.72 and 33.28 percentage. Thus, the range for ROE is 27.56 percentage. Thus, it is found that there is shareholders' growth in commercial banks and well maximized the growth of common shareholders'.

4.3 Correlation Analysis

The correlation analysis among independent variables such as capital adequacy ratio (CAR), core capital ratio (CR), supplementary capital ratio (SC), non-performing loan ratio (NPLR), credit deposit ratio (CDR), cash reserve ratio (CRR) and return on equity (ROE) and return on assets (ROA) as dependent variables. The Bivariate Pearson's' correlation analysis have been incorporated to analyze the relationship between the independent and dependent variables.

Table 13
Correlation Analysis with ROE as dependent variable

Variables	Correlations						
	CAR	SC	CC	NPLR	CDR	CRR	ROE
CAR	1	-.242	-.207	.865**	-.448**	-.674**	.588**
		.091	.148	.000	.001	.000	.000
SC		1	-.187	-.207	.167	.181	-.111
			.193	.149	.245	.209	.443
CC			1	-.274	.361**	.413**	-.499**
				.054	.010	.003	.000
NPLR				1	-.687**	-.810**	.476**
					.000	.000	.000
CDR					1	.886**	-.133
						.000	.358
CRR						1	-.323*
							.022
ROE							1
ROA							

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

The table 13 shows correlation analysis with ROE.Study reveals that there is positive correlation between return on equity and capital adequacy ratio. Positive correlation between return on equity and capital adequacy ratio implies that when capital adequacy ratio increases, the return on equity also increases, as they lead one another in the same direction. However, both supplementary and core capital ratio have negative correlation with return on equity which indicates that they lead each other in the inverse direction. Positive direction implies that when there is positive change in one variable another variable is positively affected and vice versa. Negative direction implies that when there is positive change in one variable as a result negative consequences may find in another variable.

Similarly, there is positive correlation between return on equity and non-performing loan ratio. Positive correlation between return on equity and non-performing loan ratio implies that when non-performing loan ratio increases, the return on equity also increases, as they lead one another in the same direction.

Similarly, it is found that there is negative correlation between credit deposit ratio and return on equity which implies meaning that they lead one another in the inverse direction. When credit deposit ratio increases the return on equity decrease and vice-versa. Moreover, there is negative correlation between cash reserve ratio and return on

equity which implies that they lead one another in the inverse direction. When cash reserve ratio increases the return on equity decrease and vice-versa.

Moreover, capital adequacy ratio has negative correlation with credit deposit ratio, supplementary capital ratio, core capital ratio and cash reserve ratio which indicates that they lead each other in the inverse direction. However, there is positive correlation between non-performing loan ratio and capital adequacy ratio.

Likewise, non-performing loan ratio has negative correlation with supplementary capital ratio, core capital ratio which indicates that they lead each other in the inverse direction. Similar, there is negative correlation between capital adequacy ratio, non-performing loan ratio and credit deposit ratio thus; they lead one another in the inverse direction. However, credit deposit ratio has positive relationship with supplementary capital and core capital ratio which indicate that they lead each other in the same direction.

Table 14
Correlation Analysis with ROA as dependent variable

Variables	Correlations						
	CAR	SC	CC	NPLR	CDR	CRR	ROA
CAR	1	-.242	-.207	.865**	-.448**	-.674**	.442**
		.091	.148	.000	.001	.000	.001
SC		1	-.187	-.207	.167	.181	-.203
			.193	.149	.245	.209	.158
CC			1	-.274	.361**	.413**	.142
				.054	.010	.003	.326
NPLR				1	-.687**	-.810**	.349*
					.000	.000	.013
CDR					1	.886**	.262
						.000	.066
CRR						1	.021
							.884
ROE							.470**
							.001
ROA							1

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

The table 14 depicts correlation analysis with ROA. Study also reveals that there is positive correlation between return on assets, capital adequacy ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio thus they lead each other in the same direction. However, return on assets has negative correlation with supplementary capital ratio which indicates that they lead one another in the

opposite direction. Thus, as a result, when there is increment over capital adequacy ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio, there would also be increment over return on assets. Conversely, when there is increment over supplementary capital ratio there would also be increment over return on assets.

4.4 Regression Analysis

The two dependent variables have been undertaken thus the regression analysis deals with both variables. The regression analysis among independent variables such as capital adequacy ratio (CAR), core capital ratio (CR), supplementary capital ratio (SC), non-performing loan ratio (NPLR), credit deposit ratio (CDR), cash reserve ratio (CRR) and return on equity (ROE) and return on assets (ROA) as dependent variables. The major two equations are $ROE_{it} = \beta_0+\beta_1 CAR +\beta_2 SC+ \beta_3 CR +\beta_4 NPLR + \beta_5 CDR + \beta_6 CRR+ \varepsilon_{it}$ and $ROA_{it} = \beta_0+\beta_1 CAR +\beta_2 SC+ \beta_3 CR +\beta_4 NPLR + \beta_5 CDR + \beta_6 CRR+ \varepsilon_{it.}$

Table 15
Regression Analysis of CAR, SC, CC, NPLR, CDR, CRR on ROE

M	Intercept	Regression Coefficients						R^2	F-Value	P-Value
		CAR	SC	CC	NPLR	CDR	CRR			
1	13.167 (11.095)	0.171 (5.035)						.35	25.35	0.00**
2	19.210 (10.410)		-.590 (-.774)					.012	.599	.443
3	28.562 (10.332)			-.856 (-.993)				.249	15.94	0.00**
4	15.321 (14.671)				.245 (3.747)			.226	14.04	0.00**
5	19.700 (9.501)					-.026 (-.929)		.018	.863	358
6	22.053 (11.455)						-.204 (-2.362)	.104	5.578	.022*
7	19.537 (5.229)	.156 (2.312)	-.663 (-1.182)	-.922 (-4.774)	.087 (.640)	.060 (1.220)	.095 (.514)	.59	10.31	0.00**

Notes:

(i) Figures in parentheses are t- values.

(ii) The asterisk (*) sign indicates that result is significant at 5 percent level and double asterisk (**) sign indicates that result is significant at 1 percent.

The table 15 deals with regression analysis with ROE. Simple linear regression and multiple linear regression analysis undertaking ROE as dependent variable. The

multiple regression model summary, the R Square for this model, which 0.59. This means that 59% of the variation in the dependent variable return on equity can be explained by independent variables such as capital adequacy ratio, supplementary capital ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio. The fitness of the model is stated by an F-value of 10.31 at a 0.00 percent level of significance. This implies that the research model is a good-fit in explaining the credit risk management and its effect on profitability of commercial banks of Nepal.

The regression coefficient of capital adequacy ratio in the regression coefficient analysis is 0.171 which indicates that if capital adequacy ratio is increased by one percent, the average influence on return on equity will increase by 17.1 percentage. The R-square value of 0.35 indicates that return on equity i.e. profitability is explained 35 percent by capital adequacy ratio.

The corresponding p-value is 0.00 which is less than 0.05; hence, there is statistically positive and significant relationship between capital adequacy ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between capital adequacy ratio and return on equity is accepted.

The regression coefficient of supplementary capital ratio in the regression coefficient analysis is -0.590 which indicates that if supplementary capital ratio is increased by one percent, the average influence on return on equity will decrease by 59 percentage. The R-square value of 0.012 indicates that return on equity i.e. profitability is explained 1.2 percent by supplementary capital ratio.

The corresponding p-value is 0.443 which is greater than 0.05; hence, there is statistically negative and insignificant relationship between supplementary capital ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between supplementary capital ratio and return on equity is not accepted.

The regression coefficient of core capital ratio in the regression coefficient analysis is -0.856 which indicates that if core capital ratio is increased by one percent, the average influence on return on equity will decrease by 85.6 percentage. The R-square value of 0.249 indicates that return on equity i.e. profitability is explained 24.9 percent by core adequacy ratio.

The corresponding p-value is 0.00 which is less than 0.05; hence, there is statistically negative but significant relationship between core capital ratio and return on equity.

Thus, the alternative hypothesis; there is significant relationship between core capital ratio and return on equity is accepted.

The regression coefficient of non-performing loan ratio in the regression coefficient analysis is 0.245 which indicates that if non-performing loan ratio is increased by one percent, the average influence on return on equity will increase by 24.5 percentage. The R-square value of 0.226 indicates that return on equity i.e. profitability is explained 22.6 percent by non-performing loan ratio.

The corresponding p-value is 0.00 which is less than 0.05; hence, there is statistically positive and significant relationship between non-performing loan ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between non-performing loan ratio and return on equity is accepted.

The regression coefficient of credit deposit ratio in the regression coefficient analysis is -0.026 which indicates that if credit deposit ratio is increased by one percent, the average influence on return on equity will decrease by 2.6 percentage. The R-square value of 0.018 indicates that return on equity i.e. profitability is explained 1.8 percent by credit deposit ratio.

The corresponding p-value is 0.358 which is greater than 0.05; hence, there is statistically negative and insignificant relationship between credit deposit ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between credit deposit ratio and return on equity is not accepted.

The regression coefficient of cash reserve ratio in the regression coefficient analysis is -0.204 which indicates that if cash reserve ratio is increased by one percent, the average influence on return on equity will decrease by 20.4 percentage. The R-square value of 0.104 indicates that return on equity i.e. profitability is explained 10.4 percent by cash reserve ratio.

The corresponding p-value is 0.022 which is less than 0.05; hence, there is statistically negative but significant relationship between cash reserve ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between cash reserve ratio and return on equity is accepted.

Table 16
Regression Analysis of CAR, SC, CC, NPLR, CDR, CRR on ROA

M	Intercept	Regression Coefficients						R^2	F-Value	P-Value
		CAR	SC	CC	NPLR	CDR	CRR			
1	1.550 (9.985)	.015 (3.410)						.195	11.63	0.01**
2	2.244 (10.468)		-.127 (-1.433)					.041	2.055	.158
3	1.618 (4.345)			.029 (.993)				.020	.985	.326
4	1.746 (13.309)				.021 (2.580)			.122	6.659	0.013*
5	1.567 (6.583)					.006 (1.883)		.069	3.545	.066
6	1.942 (8.099)						.002 (.146)	.00	.021	.884
7	.057 (.135)	-.003 (-.392)	-.097 (-1.537)	.010 (.472)	.061 (4.041)	.024 (4.412)	-.011 (-.517)	.627	12.06	0.00**

Notes:

(i) Figures in parentheses are t- values.

(ii) The asterisk (*) sign indicates that result is significant at 5 percent level and double asterisk (**) sign indicates that result is significant at 1 percent.

The table 16 deals with regression analysis with ROA alsodepicts the simple linear regression and multiple linear regression analysis undertaking ROA as dependent variable. The multiple regression model summary, the R Square for this model, which .627. This means that 62.7 percent of the variation in the dependent variable return on assets can be explained by independent variables such as capital adequacy ratio, supplementary capital ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio. The fitness of the model is stated by an F-value of 12.06 at a 0.00 percent level of significance. This implies that the research model is also a good-fit in explaining the credit risk management and its effect on profitability of commercial banks of Nepal.

The regression coefficient of capital adequacy ratio in the regression coefficient analysis is .015 which indicates that if capital adequacy ratio is increased by one percent, the average influence on return on assets will increase by 12.7 percentage. The R-square value of .195 indicates that return on assets i.e. profitability is explained 19.5 percent by capital adequacy ratio. The corresponding p-value is .01 which is less than 0.05; hence, there is statistically positive and significant relationship between capital adequacy ratio bhthth and return on assets. Thus, the alternative hypothesis;

there is significant relationship between capital adequacy ratio and return on assets is accepted.

The regression coefficient of supplementary capital ratio in the regression coefficient analysis is -.127 which indicates that if supplementary capital ratio is increased by one percent, the average influence on return on assets will decrease by 12.7 percentage. The R-square value of .041 indicates that supplementary capital ratio i.e. profitability is explained 4.1 percent by supplementary capital ratio. The corresponding p-value is .158 which is greater than 0.05; hence, there is statistically negative and insignificant relationship between supplementary capital ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between supplementary capital ratio and return on assets is not accepted.

The regression coefficient of core capital ratio in the regression coefficient analysis is .029 which indicates that if core capital ratio is increased by one percent, the average influence on return on assets will increase by 2.9 percentage. The R-square value of .20 indicates that return on assets i.e. profitability is explained 20 percent by core capital ratio. The corresponding p-value is .326 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between core capital ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between core capital ratio and return on assets is not accepted.

The regression coefficient of non-performing loan ratio in the regression coefficient analysis is .021 which indicates that if non-performing loan ratio is increased by one percent, the average influence on return on assets will increase by 2.1 percentage. The R-square value of .122 indicates that non-performing loan ratio i.e. profitability is explained 12.2 percent by non-performing loan ratio. The corresponding p-value is .013 which is less than 0.05; hence, there is statistically positive and significant relationship between non-performing loan ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between non-performing loan ratio and return on assets is accepted.

The regression coefficient of credit deposit ratio in the regression coefficient analysis is .006 which indicates that if credit deposit ratio is increased by one percent, the average influence on return on assets will increase by 0.6 percentage. The R-square value of .069 indicates that return on assets i.e. profitability is explained 6.9 percent by credit deposit ratio. The corresponding p-value is .066 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between credit

deposit ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between credit deposit ratio and return on assets is not accepted.

The regression coefficient of cash reserve ratio in the regression coefficient analysis is .002 which indicates that if cash reserve ratio is increased by one percent, the average influence on return on assets will increase by 0.2 percentage. The R-square value of .000 indicates that return on assets i.e. profitability is not explained by cash reserve ratio.

The corresponding p-value is .884 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between cash reserve ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between cash reserve ratio and return on assets is not accepted.

Table 17
Hypothesis Summary

Hypotheses	Variables DV	Variables IV	P-Value	Remarks at 95 Confidence Level
$H_1$1: There is significant relationship between capital adequacy ratio and profitability.	ROA	CAR	.001	P-value<.05 Accept $H_1$1
$H_1$2: There is significant relationship between non-performing loan ratio and profitability.	ROA	NPLR	.013	P-value<.05 Accept $H_1$2
$H_1$3: There is significant relationship between cash reserve ratio and bank profitability.	ROA	CRR	.066	P-value>.05 Do not Accept $H_1$3
$H_1$4: There is significant relationship between credit deposit ratio and bank profitability.	ROA	CDR	.884	P-value>.05 Do not Accept $H_1$4
$H_1$5: There is significant relationship between capital adequacy ratio and profitability.	ROE	CAR	.000	P-value<.05 Accept $H_1$1
$H_1$6: There is significant relationship between non-performing loan ratio and profitability.	ROE	NPLR	.000	P-value<.05 Accept $H_1$2
$H_1$7: There is significant relationship between cash reserve ratio and bank profitability.	ROE	CRR	.358	P-value>.05 Do not Accept $H_1$3
$H_1$8: There is significant relationship between credit deposit ratio and bank profitability.	ROE	CDR	.022	P-value<.05 Accept $H_1$4

4.5Major Findings

i) The mean value for capital adequacy ratio is 28.04 percent with standard deviation 21.19 over ten years.

ii) The mean value for core capital ratio is 12.39 percent with standard deviation 3.59 over ten years.

iii) The mean value for supplementary adequacy ratio is 2.13 percent with standard deviation 21.19 over ten years.

iv) The mean value for NPLR ratio is 10.76 percent with standard deviation 11.96 over ten years.

v) The mean value for credit deposit ratio is 67.03 percent with standard deviation 31.34 over ten years.

vi) The mean value for cash reserve ratio is 20.10 percent with standard deviation 9.73 over ten years.

vii) The mean value for return on assets ratio is 1.97 percent with standard deviation 0.73 over ten years.

viii) The mean value for return on equity ratio is 17.95 percent with standard deviation 6.15 over ten years.

ix) The study reveals that there is positive correlation between equity on equity and capital adequacy ratio.

x) Supplementary and core capital ratio have negative correlation with return on equity which indicates that they lead each other in the inverse direction.

xi) There is positive correlation between return on equity and non-performing loan ratio. Positive correlation between return on equity and non-performing loan ratio.

xii) Similarly, the study also reveals that there is positive correlation between assets on equity, capital adequacy ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio thus they lead each other in the same direction.

xiii) However, return on assets has negative correlation with supplementary capital ratio which indicates that they lead one another in the opposite direction.

xiv) It is found that there is negative correlation between credit deposit ratio and return on equity.

xv) Moreover, there is negative correlation between cash reserve ratio and return on equity.

xvi) The capital adequacy ratio has negative correlation with credit deposit ratio, supplementary capital ratio, core capital ratio and cash reserve ratio which indicates. However, there is positive correlation between non-performing loan ratio and capital adequacy ratio.

xvii) The non-performing loan ratio has negative correlation with supplementary capital ratio, core capital ratio.

xviii) Similar, there is negative correlation between capital adequacy ratio, non-performing loan ratio and credit deposit ratio.

xix) However, credit deposit ratio has positive relationship with supplementary capital and core capital ratio.

xx) The multiple regression model summary, the R Square for this model, which 0.59. This means that 59% of the variation in the dependent variable return on equity can be explained by independent variables such as capital adequacy ratio, supplementary capital ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio.

xxi) The fitness of the model is stated by an F-value of 10.31 at a 0.00 percent level of significance. This implies that the research model is a good-fit in explaining the credit risk management and its effect on profitability of commercial banks of Nepal

xxii) There is statistically positive and significant relationship between capital adequacy ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between capital adequacy ratio and return on equity is accepted.

xxiii) There is statistically negative and insignificant relationship between supplementary capital ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between supplementary capital ratio and return on equity is not accepted.

xxiv) There is statistically negative but significant relationship between core capital ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between core capital ratio and return on equity is accepted.

xxv) There is statistically positive and significant relationship between non-performing loan ratio and return on equity. Thus, the alternative hypothesis;

there is significant relationship between non-performing loan ratio and return on equity is accepted.

xxvi) There is statistically negative and insignificant relationship between credit deposit ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between credit deposit ratio and return on equity is not accepted.

xxvii) There is statistically negative but significant relationship between cash reserve ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between cash reserve ratio and return on equity is accepted.

xxviii) The multiple regression model summary, the R Square for this model, which .627. This means that 62.7 percent of the variation in the dependent variable return on assets can be explained by independent variables such as capital adequacy ratio, supplementary capital ratio, core capital ratio, non-performing loan ratio, credit deposit ratio and cash reserve ratio.

xxix) The fitness of the model is stated by an F-value of 12.06 at a 0.00 percent level of significance. This implies that the research model is also a good-fit in explaining the credit risk management and its effect on profitability of commercial banks of Nepal.

xxx) There is statistically positive and significant relationship between capital adequacy ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between capital adequacy ratio and return on assets is accepted.

xxxi) There is statistically negative and insignificant relationship between supplementary capital ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between supplementary capital ratio and return on assets is not accepted.

xxxii) There is statistically positive but insignificant relationship between core capital ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between core capital ratio and return on assets is not accepted.

xxxiii) There is statistically positive and significant relationship between non-performing loan ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between non-performing loan ratio and return on assets is accepted.

xxxiv) There is statistically positive but insignificant relationship between credit deposit ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between credit deposit ratio and return on assets is not accepted.

xxxv) There is statistically positive but insignificant relationship between cash reserve ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between cash reserve ratio and return on assets is not accepted.

4.6 Discussion

The regression coefficient of capital adequacy ratio in the regression coefficient analysis is positive which indicates that if capital adequacy ratio is increased the average influence on return on equity also increases. There is statistically positive and significant relationship between capital adequacy ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between capital adequacy ratio and return on equity is accepted. This finding is consistent with the findings of Gatuhu (2013),Poudel (2012), Ogboi and Unuafe (2013) as they also revealed that credit risk management and capital adequacy ratio impacted positively on profitability. However, this finding contradicts with the findings of Oduro, Asiedu, and Gadzo (2019), Gadzo, Kportorgbi, and Gatsi (2019),Otieno, Nyagol and Onditi (2016), Shrestha (2017) and Uwuigbe, Oyewo and Uwuigbe (2015) as they all reveled that credit risk has negative correlation with financial performance.

The regression coefficient of supplementary capital ratio in the regression coefficient analysis is negative which indicates that if supplementary capital ratio is increased, the average influence on return on equity will decrease. The regression coefficient of core capital ratio in the regression coefficient analysis is negative which indicates that if core capital ratio is increased, the average influence on return on equity will decrease. This finding contradicts with the findings of Gadzo, Kportorgbi, and Gatsi (2019) as reveled that assets quality has significant relationship with profitability.

The regression coefficient of non-performing loan ratio in the regression coefficient analysis is positive which indicates that if non-performing loan ratio is increased, the average influence on return on equity will increase. There is statistically positive and significant relationship between non-performing loan ratio and return on equity. Thus,

the alternative hypothesis; there is significant relationship between non-performing loan ratio and return on equity is accepted. This finding is not in-line with the findings of Shrestha (2017) as he found beta coefficient is negative for non-performing loan ratio, cash reserve ratio and leverage ratio and bank performance.

The regression coefficient of cash reserve ratio in the regression coefficient analysis is positivewhich indicates that if cash reserve ratio is increased, the average influence on return on assets will increase. There is statistically positive but insignificant relationship between cash reserve ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between cash reserve ratio and return on assets is not accepted. This finding is consistent with the finding of Kahuthu (2016).

CHAPTER-V
SUMMARY AND CONCLUSION

5.1 Summary

The study is all about liquidity and its effect on profitability of joint venture banks in Nepal. The major objective of the research is to examine the impact of liquidity on profitability of joint venture commercial banks in Nepal. In addition, to examine the effect and relationship of capital adequacy ratio, credit deposit ratio, non-performing loan ratio, core capital ratio, supplementary capital ratio, and liquidity ratio with profitability. Out of total twenty-seven commercial banks, three joint venture banks have been selected as sample. The sample banks are taken under purposive sampling according to their operating history and its data related to profitability are comparatively studied. The data have been employed from fiscal year 2010/11 to 2019/20 (10 years). The total number of observations is ten having thirty years' annual financial data. As per research design, descriptive and correlational research designs have been used. The statistical tools consist of mean, standard deviation and coefficient of variations as well as the inferential statistic consists of mainly Bivariate Pearson's' correlation and linear regression analysis for examining the effect and relationship among variables such as cash reserve ratio (liquidity), return on equity (profitability), credit deposit ratio, non-performing loan ratio, supplementary capital and core capital ratio. The fixed effect model approach has been incorporated to examine the effect of liquidity on profitability of Nepalese joint venture commercial banks.

The major findings and conclusion of this study can be elaborated, as the regression coefficient of cash reserve ratio in the regression coefficient analysis is 0.032 which indicates that if cash reserve ratio is increased by one unit, the average influence on return on equity (profitability) will increase 0.032 percentage. The corresponding p-value is 0.853 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between cash reserve ratio and return on equity. In addition, there is positive correlation between equity on equity and capital adequacy ratio with great strength. Positive correlation between return on equity and capital adequacy ratio implies that when capital adequacy ratio increases, the return on equity

alsoincreases, as they lead one another in the same direction. Similarly, there is positive correlation between return on equity and non-performing loan ratio. Positive correlation between return on equity and non-performing loan ratio implies that when non-performing loan ratio increases, the return on equity also increases, as they lead one another in the same direction. Similarly, it is found that there is positive correlation between credit deposit ratio and return on equity with great strength which implies meaning that they lead one another in the same direction. When credit deposit ratio increases the return on equity increases and vice-versa. Moreover, cash reserve ratio has negative correlation with return on equity ratio and core capital ratio which indicates that they lead each other in the inverse direction. When core capital ratio increases the return on equity decrease and vice-versa.

5.2 Conclusion

In the light of the evidence, this study has reached the following conclusions;

i. As per the present study the most affecting credit factor is capital adequacy ratio for non-performing loan ratio whereas core capital ratio is negatively affecting factor for bank's profitability.
ii. This study reveals that there is positive correlation between non-performing loan ratio, credit deposit ratio and cash reserve ratio thus they lead each other in same direction.
iii. The finding of present study suggest that the capital adequacy ratio and supplementary capital ratio has positive effect on profitability of commercial banks based on regression coefficient analysis whereas core capital ratio has negative effect on profitability.
iv. The regression coefficient of NPLR in the regression coefficient analysis is positive which indicates that NPLR has positive effect on profitability.

5.3 Implications

On the basis of the findings of this particular, study mainly it helps in proper managerial implications, policies implications, quality decision-making by financial managers, show better way of investment to shareholders and academic researchers.

Managerial Implications

The development of good quality institution such as law and order, efficient bureaucracy, and democratic accountability are crucial to accelerate the development

of commercial banks in Nepal. Many of the other variables can be used such as money supply, exchange rate etc. In order to take full advantage of the stock market, microeconomic variables like inflation, interest rate, should be reduced. The number of listed banks is increasing every year but the increase is not proportionate among the various sectors.

Policy Implications

Nepalese commercial banks have suffered from rumor-based market and inadequate knowledge to investors, unavailability of the information. Therefore, programs must be launched o increase awareness. The performance of commercial bank is higher than the other sectors. So it is recommended to invest their investments in this sector. The stock exchange should be investor focused and market oriented along with strong operation with effective management.

Financial Managers

On the basis of findings of this study, it helps formulating the plan and policies regarding the financial decision-making. The financial manager is assisted through the findings of this study in terms of maintaining the quick ratio that finally increases the profitability of life insurance companies. Different plan and policies about boosting up the profitability of life insurance sector can be formulated on the basis of major findings of this study. The financial managers can be assisted through the finding of this study as per efficient conduction of operating task and generating cash and cash equivalent instruments.

Shareholders and Investors

The findings also help to shareholders who are willing to invest money and money instruments in life insurances sectors. Sacrifice of money today for future money is investment. For the purpose of effective and fruitful investment, this study helps to imply better ideas through the findings. Shareholders normally invest money and money instruments such a bond, share, debenture, marketable securities, treasury bill, commercial papers, trade credit, letter of credit, repurchase agreement etc.

Recommendation for future Researchers

The result of the study has uncovered new evidence in Nepalese perspective which is considered valuable to the market participants. The finding of this present study is

obtained from "A" class commercial banks. Thus this study might be helpful for other financial institute such as the insurance companies, development banks and other micro-finance companies. The limitation of this study is that the present study in completely based on secondary data. Therefore the future researchers might use primary data or both primary and secondary data. It is recommended to future researchers to take a large sample size. It is also recommended to use some advance statistical tool for future researcher. The findings of the study seem to be particularly useful for the equity investors and fund managers as they can use the above variables while estimating proper ratios.

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APPENDICES

Models for ROE as Dependent Variables

Model 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	.332	5.02692

a. Predictors: (Constant), CAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	640.554	1	640.554	25.348	.000[b]
	Residual	1212.958	48	25.270		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), CAR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	13.167	1.187		11.095	.000
	CAR	.171	.034	.588	5.035	.000

a. Dependent Variable: ROE

Model 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.111[a]	.012	-.008	6.17568

a. Predictors: (Constant), SC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.840	1	22.840	.599	.443[b]
	Residual	1830.672	48	38.139		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), SC

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	19.210	1.845		10.410	.000
	SC	-.590	.762	-.111	-.774	.443

a. Dependent Variable: ROE

Model 3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499[a]	.249	.234	5.38406

a. Predictors: (Constant), CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	S
1	Regression	462.081	1	462.081	15.940	
	Residual	1391.431	48	28.988		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), CC

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	28.562	2.764		10.332	.000
	CC	-.856	.214	-.499	-3.993	.000

a. Dependent Variable: ROE

Model 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.476[a]	.226	.210	5.46579

a. Predictors: (Constant), NPLR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	419.520	1	419.520	14.043	.000[b]
	Residual	1433.992	48	29.875		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), NPLR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	15.321	1.044		14.671	.000
	NPLR	.245	.065	.476	3.747	.000

a. Dependent Variable: ROE

Model 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.133[a]	.018	-.003	6.15898

a. Predictors: (Constant), CDR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.727	1	32.727	.863	.358[b]
	Residual	1820.785	48	37.933		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), CDR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	19.700	2.073		9.501	.000
	CDR	-.026	.028	-.133	-.929	.358

a. Dependent Variable: ROE

Model 6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.323[a]	.104	.085	5.88172

a. Predictors: (Constant), CRR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	192.968	1	192.968	5.578	.022[b]
	Residual	1660.545	48	34.595		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), CRR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	22.053	1.925		11.455	.000
	CRR	-.204	.086	-.323	-2.362	.022

a. Dependent Variable: ROE

Model 7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.768[a]	.590	.533	4.20413

a. Predictors: (Constant), CRR, SC, CC, CAR, CDR, NPLR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1093.501	6	182.250	10.311	.000[b]
	Residual	760.011	43	17.675		
	Total	1853.512	49			

a. Dependent Variable: ROE
b. Predictors: (Constant), CRR, SC, CC, CAR, CDR, NPLR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	19.537	3.736		5.229	.000
	CAR	.156	.068	.539	2.312	.026
	SC	-.663	.561	-.125	-1.182	.244
	CC	-.922	.193	-.538	-4.774	.000
	NPLR	.087	.135	.168	.640	.526
	CDR	.060	.049	.306	1.220	.229
	CRR	.095	.185	.150	.514	.610

a. Dependent Variable: ROE

Models for ROA as Dependent Va[r]

Model 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.442[a]	.195	.178	.65739

a. Predictors: (Constant), CAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.026	1	5.026	11.631	.001[b]
	Residual	20.744	48	.432		
	Total	25.770	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), CAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.550	.155		9.985	.000
	CAR	.015	.004	.442	3.410	.001

a. Dependent Variable: ROA

Model 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.203[a]	.041	.021	.71752

a. Predictors: (Constant), SC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.058	1	1.058	2.055	.158[b]
	Residual	24.712	48	.515		
	Total	25.770	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), SC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.244	.214		10.468	.000
	SC	-.127	.089	-.203	-1.433	.158

a. Dependent Variable: ROA

Model 3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.142[a]	.020	.000	.72531

a. Predictors: (Constant), CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.518	1	.518	.985	.326[b]
	Residual	25.252	48	.526		
	Total	25.770	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), CC

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.618	.372		4.345	.000
	CC	.029	.029	.142	.993	.326

a. Dependent Variable: ROA

Model 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.349[a]	.122	.104	.68664

a. Predictors: (Constant), NPLR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.140	1	3.140	6.659	.013[b]
	Residual	22.631	48	.471		
	Total	25.770	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), NPLR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.746	.131		13.309	.000
	NPLR	.021	.008	.349	2.580	.013

a. Dependent Variable: ROA

Model 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.262[a]	.069	.049	.70707

a. Predictors: (Constant), CDR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Si
1	Regression	1.773	1	1.773	3.545	.066[b]
	Residual	23.998	48	.500		
	Total	25.770	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), CDR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.567	.238		6.583	.000
	CDR	.006	.003	.262	1.883	.066

a. Dependent Variable: ROA

Model 6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.021[a]	.000	-.020	.73256

a. Predictors: (Constant), CRR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.011	1	.011	.021	.884[b]
	Residual	25.759	48	.537		
	Total	25.770	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), CRR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.942	.240		8.099	.000
	CRR	.002	.011	.021	.146	.884

a. Dependent Variable: ROA

Model 7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792[a]	.627	.575	.47262

a. Predictors: (Constant), CRR, SC, CC, CAR, CDR, NPLR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.165	6	2.694	12.062	.000[b]
	Residual	9.605	43	.223		
	Total	25.770	49			

a. Dependent Variable: ROA
b. Predictors: (Constant), CRR, SC, CC, CAR, CDR, NPLR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.057	.420		.135	.893
	CAR	-.003	.008	-.087	-.392	.697
	SC	-.097	.063	-.155	-1.537	.132
	CC	.010	.022	.051	.472	.639
	NPLR	.061	.015	1.013	4.041	.000
	CDR	.024	.006	1.055	4.412	.000
	CRR	-.011	.021	-.144	-.517	.608

a. Dependent Variable: ROA