CREDIT MANAGEMENT AND PROFITABALITY OF COMMERCIAL BANKS IN NEPAL

A Dissertation Submitted to the office of the Dean, Faculty of Management in partial fulfilment of the requirements for the Master's Degree of Business Management

by

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “Credit Management and profitability of Commercial Banks in Nepal”. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purpose.

Muna Adhikari

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RECOMMENDATION

This is to certify that the dissertation
Submitted by
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Entitled
"CREDIT MANAGEMENT AND PROFITABILITY OF COMMERCIAL BANKS IN NEPAL"
Has been prepared as approved by this department in the prescribed format of the Faculty of management. This dissertation is forward for examination.

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REPORT OF RESEARCH COMMITTEE

Ms. Muna Adhikari has defended research proposal entitled "Credit Management and Profitability of Commercial Banks in Nepal" successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidance of supervisor Mr. Bashu Neupane and submit the dissertation for evaluation and Viva-Voce examination.

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APPROVAL SHEET

We have examined the dissertation entitled "Credit Management and Profitability of Commercial Banks in Nepal" presented by Ms. Muna Adhikari for the degree of Master of Business Studies. We hereby certify that the acceptable for the award of degree.

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Muna Adhikari

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ABBREVIATIONS

AD	:	Annon Domini
ADBL	:	Agricultural Development Bank Limited
ANOVA	:	Analysis of Variances
BOK	:	Bank of Kathmandu
C.V.	:	Coefficient of Variation
CAR	:	Capital Adequacy Ratio
CDR	:	Cash Deposit Ratio
e	:	Error Terms
etc.	:	Etcetera
FEM	:	Fixed Effect Model
F-Value	:	Fishers Value
FY	:	Fiscal Year
LAR	:	Loan and Advance Ratio
M	:	Models
NABIL	:	Nepal Arab Bank Limited
NPL	:	Non-performing Loan Ratio
NRB	:	Nepal Rastra Bank Limited
NSBI	:	Nepal SBI Bank Limited
PCBL	:	Price Commercial Bank Limited
P-Value	:	Probability Value
r	:	Coefficient of correlation
R^2	:	Coefficient of de termination
ROA	:	Return on Assets
ROE	:	Return on Equity
Rs.	:	Rupees
S	:	Firm Size
S.D.	:	Standard deviation
SBL	:	Sanima Bank Limited
SN	:	Serial Number
Std.	:	Standard Deviation
β	:	Beta Value

ABSTRACTS

The study is entitled 'Credit Management and Profitability of Commercial Banks' in Nepal' having five samples such Bank of Kathmandu Limited, Global IME Bank Limited, NABIL Bank Limited, Nepal SBI Bank Limited and Prime Commercial Bank Limited. The major objective of this study is to examine the practices of credit risk management of Nepalese commercial banks. The samples have been chosen randomly 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, non-performing loan ratio, credit deposit ratio and loan and advance ratio), also known as independent variables (predictors) and profitability proxies such as return on equity and return on assets.

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, credit deposit ratio which implies that they lead each other in the opposite direction. When there is positive change in these credit risk factors such as credit deposit 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, non-performing loan ratio and credit deposit ratio thus they lead each other in the same direction. The regression coefficient of capital adequacy ratio in the regression coefficient analysis positive thus, capital adequacy ratio has positive effect on profitability of commercial banks. However, the regression coefficient of non-performing loan ratio in the regression coefficient analysis is positive which indicates that non-performing loan has positive effect on profitability. Further, the regression coefficient of credit deposit ratio in the regression coefficient is negative, thus, credit deposit ratio has negative relationship with profitability. Further, the regression coefficient of loan and advance ratio in the regression coefficient analysis is negative; as a result, loan and advance ratio has negative effect on profitability of banks.

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

Banks are relevant to economic development through the financial services they provide. The efficient and effective performance of the banking industry over time is an index of financial stability in any nation. The extent to which a bank extends credit to the public for productive activities accelerates the pace of a nation's economic growth and its long-term sustainability. The credit function of banks enhances the ability of investors to exploit desired profitable ventures. Credit creation is the main income generating activity of banks (Funso, Kolade, & Ojo, 2012). However, it exposes the banks to credit risk Credit risk is an internal determinant of bank performance; increase in credit risk tends to lower firm performance (Kaaya & Pastory, 2013). Higher the exposure of a bank to credit risk, the higher the tendency of the banks to experience financial crisis and vice-versa.

Among other risks faced by banks, credit risk plays an important role on banks' profitability since a large chunk of bank's revenue accrues from loans from which interest is derived. Due to increasing spate of non-performing loans, the Basel II Accord emphasized on credit risk management practices. Compliance with the Accord means a sound approach to tackling credit risk has been taken and this ultimately improves bank performance. Through the effective management of credit risk exposure, banks not only support the viability and profitability of their own business, they also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki, Tsolas, & Margaritis, 2010). The management of credit in financial institutions is critical for the survival and growth of financial institutions. Commercial bank's performance is a result of multiple predictors of credit management. Capital adequacy ratio, credit deposit ratio, non-performing loan to total loan advances, net interest income to total income and total loan loss provision to total non- performing loan all play significant role towards the contribution of bank's performance.

In Nepalese context also, the credit management has become a greater concern in the banking and financial sector. It is evident from the balance sheet of financial institution

that net interest income is too low in the contribution of the total income. So, a good credit management practice is vital for long term sustainability of banking and financial institutions. The design of credit management system depends among other things, on its size, capital structure, complexity of functions, technical expertise and quality of Management Information System. Credit exposures are the main sources of investment in commercial banks and return on such investment is supposed to be main sources of income.

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

1.2 Problem Statement

Present banking setup is the result of liberalization of economy, economic requirement and globalization However, subsequent development of commercial banks in quality has not been satisfactory. The number of commercial banks and other financial institutions are increasing in recent time. None of commercial banks, in long run can survive without implementing effective lending policy and practices. The issue of credit risk has gained increasing attentions in the last few decades. The immediate consequence of large amount of non-performing loans in the banking system is bank failure. Many researches on the cause of bank failures find that asset quality is a statistically significant predictor of insolvency. (Kunt, 1989) and (Barr & Siems, 1994)

indicated that failing banking institutions always has high level of non-performing loans prior to failure.

Commercial banks in Nepal have been facing various challenges and problem. Some of them arising due to the economic condition of the country, some of them arising due to policy of government and many of them arising due default of borrowers. After liberalization in economy and financial sector, reforms in 1980s there are various opportunities in banking sector.

In banking sector volume of deposit and loan are increased. Due to increasing competition in the market, banks are facing high pressure to reduce the interest margin. Non-performing assets have become a large problem to the commercial banks. Due to NRB rules, commercial banks have to keep certain percent of profit for provision on bad loan and non-performing assets. Due to high provision and economic situation of the country, banks are not able to get high profit. Lending in industries and productive sector is risky project. Banks are investing in house loan, hire purchasing loan, education loan for safety purpose. Lack of good lending opportunities banks are facing problem of over liquidity. Increasing in deposits in fixed and saving accounts and decreasing trend in lending is one of the problems in commercial banks.

Credit management has effect on the company's profitability and liquidity. So it is one of the crucial decisions for the commercial banks. It is encouraging to explore new sector for credit. In Nepal, it has been found that loan approval and credit decisions are made flexible to favor to personal network also. A new customer finds that credit providing process being very complicated and sometimes the documents submitted for loan sanctioning being fraudulent and for formality purpose only.

NRB issues directives to commercial banks to increase their paid-up capital to Rs. 9.8 billion by mid July 2019 A.D. It became the most challenging task for commercial banks; risk associated with credit is clearly pointed out by the following issues which is faced commercial banks.

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

i) What are the most influencing factors that affect credit trend in Nepalese Commercial bank?

ii) How is the position of credit management and profitability of Nepalese commercial banks?

iii) Is there any impact of credit management on bank performance measured by profitability in Nepalese Commercial Bank in terms of ROA and ROE?

iv) Is there statistically positive relationship between the credit risk factors and financial performance in terms of ROE and ROA?

1.3 Objectives of the Study

The major objective of this study is to assess the relationship between the predictors of credit management i.e. capital adequacy ratio, credit deposit ratio, non-performing loan to total loan and net profit to loan and advance on the commercial bank's performance which is measured by return on equity (ROE). The research objectives in this study are as follows:

i) To explore the features of ROA, ROE, NPL and to compare their risk.

ii) To examine the position of credit management and profitability of Nepalese commercial banks.

iii) To examine the relationship between the NPL, ROE, ROA and loan and advances.

iv) To analyze the impact of NPL and loan and advances on ROE and ROA.

1.4 Research Hypothesis

The following hypotheses have been formulated to be tasted.

$H_1$1: There is significant relationship between non-performing loan ratio and ROE.

$H_1$2: There is significant relationship between non-performing loan ratio and ROA.

$H_1$3: There is significant relationship between loan and advance ratio and ROE.

$H_1$4: There is significant relationship between loan and advance ratio and ROA.

$H_1$5: There is significant relationship between capital adequacy ratio and ROE.

$H_1$6: There is significant relationship between capital adequacy ratio and ROA.

$H_1$7: There is significant relationship between credit deposit ratio and ROE.

$H_1$8: There is significant relationship between credit deposit ratio and ROA.

1.5 Significance of the Study

Loans and advances are the most profitable of all assets of bank. These assets constitute primary sources of income to the bank. It means interest earned from such loan and advances occupy major space in income statement of the bank. As a business institute, a bank aims at making huge profit. Since, loan and advances are more profitable than any of other assets, the bank is willing to lend as much as its funds as possible. But, it has to be careful about the safety of such loans and advances. So, it is very important to be reminded that most of the banks failures in the world are due to shrinkage on the value of loans and advances.

Hence, loan is known as risky assets. Risk of non-payment of loan is known as credit risk or default risk. Good and better credit management system and practices ensures lower non-performing assets and higher capital adequacy ratio. Therefore, better the credit management, higher the bank performance will be. Among other risks faced by banks, credit risk plays an important role on banks' profitability since a large chunk of banks' revenue accrues from loans from which interest is derived. However, interest rate risk is directly linked to credit risk implying that high or increment in interest rate increases the chances of loan default. Credit risk and interest rate risks are intrinsically related to each other and not separable. Non-performing loan is the percentage of loan values that are not serviced for three months and above. A high level of NPL suggests high probability of a large number of credit defaults that affect the profitability and net-worth of banks and erodes the value of the asset. The NPL growth involves the necessity of provisions, which reduces the overall profits and shareholders' value.

Bank with high credit risk has high bankruptcy risk that puts the depositors in jeopardy. In a bid to survive and maintain adequate profit level in this highly competitive environment, banks have tended to take excessive risks. The theme of credit risk has attracted more attention in recent decades. Several studies examined bank failures and find that asset quality is an indicator of insolvency. Banks still have a high level of impaired loans before the bankruptcy. Therefore, the large amount of bad loans in the banking system generally results in a bank failure. The NPL are among the main causes of the problems of economic stagnation. Each impaired loan in the financial sector increases the possibility to lead company to difficulty and unprofitability. Credit risk could ruin bank's profitability both through a loss of interest income and write off the

principle loan amount. However, increasing credit risk has a direct impact on banks profitability as legally banks are not allowed to book income on such accounts and at the same time, banks are forced to make provision on such assets. Therefore, the study on credit management in bank's performance is significant to various stakeholders.

First stakeholders are the banks themselves; they would find out impact and effect of credit management on bank performance. Secondly, this study will also be useful for other stakeholders of the banks like shareholders, creditors and depositors as it provides the basis for analyzing the performance of the banks. It will help the management of the commercial banks to identify the areas to be improved and will provide basis for formulating appropriate plans and policies to increase the profitability of their banks by uplifting the credit management system. Other stakeholders are the clients; they can take better decision for the loan, they can choose the bank of their own choice and priority. They will take credit from the bank which has the positive expectation about business and the bank which is making profit and has credit worthiness.

Government also gets benefitted from this study, if credit management practices and system is strong then the performance of the bank will be raised, this will ultimately generate tax revenue for the government. Likewise, this study will also help banking regulator i.e. NRB to develop a framework and to formulate policies, rules and regulations for measuring and assessing risk management practices. Since, next important stakeholders are the future researchers who can conduct research in the same area which are not included or have been left out in the present study and this study also provides a guideline to the researcher to conduct further study in same topic.

1.6 Limitations of the Study

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

i) Out of 27 existing commercial banks, only five banks are taken as sample.
ii) The study concentrates only on credit risk management of selected commercial banks.
iii) The study covered the data of ten fiscal year from 2010/11 to 2019/20.
iv) Only limited variables are used for the analysis of the data due to time and financial constraints.

v) This study is only a case study; hence the conclusion drawn from the study does not ensure wide applicability in all type of enterprise running in different situations.

vi) This study is completely based on secondary data i.e. published annual reports by commercial banks.

vii) All the portion of analysis is based on the secondary data and available information. Therefore, the consistency of finding and conclusions are dependent upon the reliability of published data.

viii) In this study, only selected financial and statistical as well as techniques are used.

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

The conceptual review consists of reviews and concept regarding the credit management of banking institutes. Different credit management techniques and concept developed by previous researcher have been discussed below.

2.1.1 Review of Credit Risk Management

Credit is the amount of money lent by the creditor to borrower either on the basis of security or without security. Credit and advances are 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 is financial assets resulting from the delivery of cash or other assets by a lender to a borrower in return of obligation repay on specified date on demand. 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).

Credit refers to the faith placed by a lender (creditor) in a borrower (debtor) by extending loan, usually in form of money, goods or securities to debtors. Essentially, when a loan is made, the lender is said to have extended credit to the borrower, and he automatically accepts the credit of the borrower (Onyeagocha, 2001).

Credit as a process whereby possession of goods or services is allowed without spot payment upon a contractual agreement for later payment (Myers & Brealey, 2003)

Credit management involves a set of practices and methods adopted by a firm to ensure that they maintain an optimal level of credit and its effective management (Myers & Brealey, 2003).

Credit management is a process that starts when a sale is closed and ends when the final payment is received (Aduda & Gitonga, 2011).

Credit management is the process of granting credit, terms and conditions definition, compliance with credit policy, and then payment on the due date. The core business for financial institutions is to improve revenues and profit by facilitating sales and reducing loss and financial risks. This research is to assess the effectiveness of credit management principles and their impact on loan performance for a specific type of loan “microcredit”. The case study is microcredit in East Africa especially provided by commercial banks in partnership with mobile network operators. The purpose of the research will be mainly to assess the applicability of credit management principles to achieve better performance in micro lending. This research's target sample is East Africa commercial banks in conjunction with mobile operators providing online microcredit to mobile money subscribers and commercial banks ‘customers (E Mutabaruka, 2021).

These are the basic components provide a solid foundation for managing value and risk planning, it focuses in just an operating and competing in the financial services industry. The modern strategic approach also includes a framework for risk management and strategic for completing in the component fits for the modern idea of the basic business of banking as 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 several types of risk prevailed in the banking industry, but the major area of the risk are widely recognized, i.e. credit risk, market risk and operating risk etc. 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 risk and trading risk such as potential risk to earnings and capital resulting from changes in 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.

2.2 Review of Previous Study

The section of study consists of mainly review of journal and articles as well as review of previous thesis. Both national and international context articles and journals have been discussed underneath.

2.2.1 Review of Journals and Articles

Zerith (2008) affirmed that to manage the credit portfolios, bankers must understand not only the risk posed by each credit but also how the risks of individual lending and portfolios are interrelated. These interrelationships can multiply risk many times, beyond what it would be if the risks were not related. Until recently, few banks used modern portfolio management concepts to control credit risk. Now, many banks view the credit portfolio in its segments and as a whole and consider the relationships among portfolio segments as well as among loans. These practices provide management with a more complete picture of the bank's credit risk profile and with more tools to analyze and control the risk.

Poudel (2012) tried to explore various parameters pertinent to credit risk management as it affects banks financial performance. Such parameters covered in the study were; default rate, cost per loan assets and capital adequacy ratio. The study revealed that all these parameters have an inverse impact on banks financial performance; however, the default rate is the most predictor of bank performance. The general objectives of the study was to establish the impact of credit risk management on financial performance

of banks and specific objectives were to establish impact of default rate, cost per loan assets on banks financial performance. The result showed that the credit risk management is an important predictor of the bank financial performance thus; success of bank performance depends on risk management. The study results also showed that the default rate is one of the most important risk management indictors than that of cost per loan assets. Since risk management in general has very significant contribution to bank performance, the banks are advised to put more emphasize on risk management. In order to reduce risk on loan and achieve maximum performance the bank need to allocate more funds to default rate management and try to maintain just optimal level of capital adequacy.

Singh (2013) explained that credit risk had been and essential factor that needed to be managed well. Credit risk was the possibility that a borrower of counter party would fail to meet its obligations in accordance with agreed term. Credit risk, therefore arise from the banks dealings with or lending to corporate, oldest and biggest risk that ban, by virtue of its very nature of business, inherited. Currently in India, there were many banks in operation. From these some public sector banks are namely State Bank of India, Punjab National Bank, Oriental Bank of Commerce, Bank of India, Indian Bank, Indian Overseas Bank, Syndicate Bank, Bank of Baroda, Canara Bank, Allahabad Bank, UCO Bank, Vijaya Bank and private sector banks are Axis Bank, ICICI Bank, IndusInd Bank, ING Vysya Bank, Dhanlaxmi Bank, HDFC Bank, YES Bank, Kotak Mahindra Bank, Karnataka Bank, ABN Amro Bank, Federal Bank, Laxmi Vilas Bank were selected to examine the impact level of credit risk management towards the profitability of Indian commercial banks. To examine its impact level the researcher had used multiple regression models by taking 11 years return on asset (ROA), non-performing asset (NPA) and capital adequacy ratio (CAR) from each bank. The researcher had collected data from RBI annual report since 2003 to 2013 for regression purpose.

Eva and Jaroslav (2014) showed that advanced methods for credit risk measurement are more flexible on class change of corporate exposures in portfolio. On the one hand, The Standardized approach without assigned external rating is the most used method in the Czech Republic on the other hand the capital requirement at 8 mils. K has been calculated as the highest value. The Standardized approach with assigned external rating

has worked out a much lower capital adequacy than The Standardized approach without assigned external rating. The reason is the fact that after regulator‘s approval banks may use external agency‘s degrees and subsequently the risk weights could be assigned. Method which has calculated the lowest amounts of capital requirement is the Foundation Internal Ratings Based Approach (FIRB), which alone from among examined methods has a possibility to determine the parameters according bank’s own estimates. Based on our research, we concluded that if bank’s portfolio have given exposures with no worse than 0,88 % probability of default, saving capital between FIRB and the most used method in the Czech Republic has been varied from 90 % to 10 % approximately, which give us very surprising results.

Francis (2015) disclosed that commercial banks in Kenya make use of credit risk management practices that include; thorough loan appraisal, asking for collateral and checking the credit history of the borrowers. Additionally, the bankers use covenants, credit rationing, loan securitization, and loan syndication as risk management defensives. The factors that influence effectiveness of credit risk management systems used by commercial banks in Kenya include establishment of a credit policy that clearly outline the scope and allocation of bank credit facilities, maintenance a credit administration system that with adequate controls over credit; top management support; communication of credit guidelines to every officer in the credit department, screening of potential borrowers, employing well trained staff, constant review of the borrowers’ liquidity and the use of supportive technology in credit analysis. The internal performance measures of bank lending used by commercial banks in Kenya include the Basel II criteria and bank profitability, including return on equity, return on assets and return on investment. Other indices are the developed benchmarks that include cost per each completed loan, cost per thousand dollars of loans, non-interest revenue from each loan, loans per employee.

Kahuthu (2016) stated that savings and credit cooperative societies (SACCOS) have granted loans over the years without concentrating on the quality of loans in their portfolios and hence maintained key assets in their books that would not be accounted for. Similarly, they have provided cash to clients without any purposive determination of cash levels. The study therefore sought to ascertain if liquidity and credit management played important roles in determination of revenues of deposit taking

SACCOS in Kenya. To ascertain factually if the two variables had any role, the study chose to examine the coefficients of Beta before statutory management which was implemented in 2015 and the coefficients of Betas after 2015. The vigorous processes of research exercise were undertaken with findings, conclusions and recommendations being made on the basis of analytical manipulation of data. The study findings were that liquidity and credit management had great impact on SACCO's financial performance especially if managed prudently and strengthened by the legal framework as a moderating variable. The study recommends that SACCOS should continuously formulate proper loan products and maintain adequate cash balances for profitability and financial stability of the SACCOS. They should also develop key policies on staff recruitment and retention, liquidity and loan provisioning to enable SACCOS increase financial performance. This study will empower SACCOS with Knowledge on prudential credit and liquidity management that will guarantee sustainability and profitability while using own resources.

Han (2017) found that credit risk has always been the main risk of the banking industry and the financial industry is the main object and the core content of financial institutions and regulatory departments to prevent and control. With the continuous development of international financial market, domestic commercial banks will be under the impact of international and domestic factors more, take more internal and external risk. Therefore, research on prevention of commercial banks credit risk has theoretical and practical value. This paper explores the sources of credit risk in Chinese commercial banks, analyzes Chinese commercial banks credit management experience and their insufficiency, and puts forward some countermeasures to control the credit risk of commercial banks in China under the new situation.

Shrestha (2017) concluded that capital adequacy ratio, cost per loan assets and assets growth ratio are positively related with return on assets and return on equity which indicates that higher the capital adequacy ratio, higher would be the return on assets and return on equity. Similarly, increase in cost per loan assets leads to an increase in return on assets and return on equity. Likewise, higher the assets growth ratio, higher would be the return on assets and return on equity. Cash reserve ratio and leverage ratio are negatively related with return on assets and return on equity which reveals that increase in non-performing loan ratio leads to decrease in return on assets and return on

equity. Similarly, higher the cash reserve ratio, lower would be the return on assets and return on equity. Likewise, increase in leverage ratio leads to a decrease in return on assets and return on equity. The beta coefficient is positive for capital adequacy ratio, cost per loan assets and assets growth ratio and bank performance whereas the beta coefficient is negative for non-performing loan ratio, cash reserve ratio and leverage ratio and bank performance.

Adhikary (2018) had conducted research-having objective to analyze the current situation of Non- performing loans (NPL) in our banking sector and look at the trends of NPL. In addition, to figure out the weather Gross Domestic Product (GDP), Interest Rates and Inflation has a significant effect on the Non-Performing Loans of Bank Asia limited. NPLs are firmly identified with the operational effectiveness of banks so with an end goal to make certain spotless tasks of managing a banking industry, it is fundamental to identify the factors that has a significant impact on the gross amount of NPLs in a positive span of time. This report has been concluded by analyzing the trend of Non- Performing loans and the NPL Ratios of other countries have been shown to compare with Bangladesh. It shows us that the most influential factors that have a significant effect on the NPLs include Inflation Rate, Real Interest Rate and GDP.

Gnawali (2018) examined the impact of non-performing loan on profitability of Nepalese commercial banks. The level of Non-performing asset (NPA) in Nepalese banking system is very alarming. It is well known fact that the bank and financial institution in Nepal have been facing the problem of swelling non-performing assets and the issue of becoming more and more unmanageable day by day. This study examines the impact of non-performing loan on profitability of Nepalese commercial banks. The regression models were estimated to test the significance and impact of non-performing loan on profitability on Nepalese commercial banks.

Panta (2018) investigated the bank-specific and macroeconomic determinants of non-performing loans as well as its impact on profitability. The study finds the net interest margin and bank size as the determinants of the non-performing loan and suggest that net interest margin has a positive and significant effect while the bank size has a negative and significant relationship. However, the macroeconomic variables do not relate. Furthermore, when the net interest margin, bank size and non-performing loan are used as an independent variable, its significant effect is seen with the profitability.

An insignificant relationship is seen with the return on equity in terms of only bank size. Three conclusions derived from this study are: firstly, as the net interest margin rises for the banks so does the bankability to earn from the interest income which increases the profitability. Secondly, the increase in the non-performing loan erodes the interest income reducing the profitability and finally, as the asset size increases so do the bad management practices as there are huge operations to be handled by the bank, therefore hindering the profitability.

Dhungana and Upadhaya (2019) investigated that bank's lending policy, efficiency and optimum portfolio management are significantly reduced of non-performing loan. The trend of non-performing loans is decreasing each year. The current scenarios of non-performing loan and efficiency of Nepalese financial intuitions can be taken as satisfactory. The level of nonperforming loan in current scenarios is around at 5 percent and it is able to maintain the international standard.

Patwary and Tasneem (2019) aimed to discover the impact of non-performing loan ratio, capital adequacy ratio and provision maintenance ratio on the return on asset (ROA) of all banks based on the last twenty-one years data. This study also investigates the root causes and adverse effects of the non-performing loan. The results of the study reveal that there is different directional short-run causality exist between variables and the OLS regression analysis confirms that two independent variables; non-performing loan ratio and provision maintenance ratio are statistically significant to the dependent variable; return on asset (ROA).

Oduro, Asiedu, and Gadzo (2020) studied on impact of credit risk on corporate financial performance: Evidence from listed banks on the Ghana stock exchange. A bank’s financial performance and survival can be threatened when there is an increased exposure to credit risk. On this basis, this study seeks to identify the factors that determine the level of bank credit risk and further estimates the effects of bank credit risk on corporate financial performance using financial data from banks on the Ghana Stock Exchange over a 15-year period from 2003 to 2017. Using the method of 2SLS, it was observed variables such as capital adequacy, operating efficiency, profitability, and net interest margin are inversely related to credit risk. Conversely, bank size and financing gap tend to relate positively with credit risk. In addition, annualized changes in inflation tend to positively affect credit risk. Again, it was observed that, increase in bank credit risk negatively affects corporate financial performance which is consistent

with Basel accord. Thus, for banks to survive in their industry, critical attention needs to be paid to management of its credit risk exposure.

Gadzo, Kportorgbi, and Gatsi (2021) 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. In recent years, financial institutions especially universal/commercial banks across Africa have been faced with forceful mergers and acquisitions. These occurrences impede the level of financial inclusion and reduce public confidence in the financial system as a whole. This study assessed the effect of credit and operational risk on the financial performance of universal banks in the context of the structural equation model (SEM). Data were collected from all the 24 universal banks in Ghana without missing variables and using the PLS-SEM, the results showed that credit risk influences financial performance negatively contrary to the empirical study but in line with the information asymmetry tenant of the lemon theory. It was also found that operational risk influences the financial performance of the universal banks in Ghana negatively. Furthermore, the study indicated that bank specific variables measured by (asset quality, bank leverage, cost to income ratio and liquidity) significantly influence credit risk, operational risk as well as the financial performance of the universal banks positively. We recommend that banks be encouraged to cut-down their lending rates in other to decrease credit risk and subsequently boost profitability. Regarding operational risk, banks should reduce leverage and have their portfolio more concentrated on liquid investment income to boost profitability.

2.2.2 Review of Thesis

Basnet (2019) shows that NIBL seems to be strong to mobilize its total deposit as loan and advance. Non- performing loan seriously affects banking sector. If non-performing loan increase, the overall banking business has affected. NIBL has lowest non-performing loan to total loan and advance, thus NIBL is best performer than the BOK. Interest expenses to total interest income ratio is increasing trend throughout the study period. The higher ratio shows unfavorable profitability situation of the bank. The non- performing loan and Loan and advance are increasing trend. The bank ratio shows healthy; however, seems to be good on overall progress of the bank.

Karki (2019) found NIC has lowest non-performing loan to total loan and advance, Thus NIC is best performer than the NMB. If non-performing loan increases, the overall banking business will be affected. Average loan and advances to total assets of NIC is greater which indicates the good lending performance. NMB should focus to increase loan and advance to total assets ratio to increase lending performance. Increase ratio indicates the increased volume of non-performing loans and vice versa. Loan loss provision of NMB is decreasing trend. The decreasing loan loss ratio indicates efficient credit policy and gradual increment on the performance of the company. Average interest expenses to total expenses ratio of NMB is higher. NIC has low interest expenses to total expenses ratio, it shows the decrease in cost on deposit as decrease in interest expenses to total expenses ratio decrease. Non-performing loan and loans were negatively related with each other. Effective loans management helps to decrease the non-performing loans.

Poudel (2019) revealed that Garima Bank is mobilizing its total deposit in loan and advances adequately and it has efficiently utilized its total deposits for loan and advances. If loan loss provision is equals to non-performing loan, then there is no more other non-performing assets in Development banks. The non-performing loan holds only the portion of loan loss provision. There is positive effect of the credit management indicators of non-performing loans and deposit. From the analysis of Garima Bank, it seems to maintain liquidity position somehow in good condition through the study. The problems in credit processing include lack of through credit assessment, absence of testing and validation of new lending techniques, lack of effective credit management process. Overall performance of Garima Bank shows their high credit standard position among the other Development banks. Development banks give the first priority to manufacturing sector and hire purchase whereas the agriculture sector has been kept on the least priority by Development bank and same Garima Bank.

Saud (2019) found that BOK has maintained higher loan and advances to total deposit which shows that BOK seems to be strong to mobilize its total deposit as loan and advances. NIB has lowest non-performing loan to total loan and advances, this NIB is the best performance than BOK. If non-performing loan increases, the overall banking business will be affected. So, provision amount will increase and profit will decrease. Correlation coefficient between non-performing loan and loans of NIB is moderate, negative correlation. It indicates that non-performing loan and loans were moderately,

negatively related with each other. That means decreasing on performance in loan management helps to decrease the non-performing loans.

Pathak (2017) showed NABIL has maintained higher credit and advances to total deposit. Fixed deposit is the main source of granting credit for both NABIL and NIBL banks. Credit loss provisioning is in decreasing trend so, it indicates efficient credit policy. Interest rate effects amount of deposit which is turn affect credit.

Silwal (2018) found that the current ratio of GIBL is slightly higher than NIBL. This indicates the GIBL ability to meet its obligation due in one year is better than NIBL. NIBL has always maintained a slightly higher CRR than the NRB requirements. This has resulted NIBL higher levels of CRR than compared to GIBL. This indicates that liquidity maintained by NIBL is sounder than GIBL. The higher SD of NIBL indicates that more CRR always come with more risk which decreases the profitability of banks. The higher cash and bank balance to current assets ratio and cash & balance to current liabilities ratio also signifies the same things that NIBL has greater capability of meeting its demand for cash as and when required and also has a greater ability of meeting its obligation. The total loans and advances to total fixed assets of GIBL are higher than of NIBL.

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 period 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. But 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. And there is also less research made in this topic especially in banking sector.

This study provides empirical evidence in confirming the validity of the theories to assist the bank’s management in determining the best credit risk management that

enhance bank performance. Moreover, the fact that the banking industry in Nepal is still growing and it should ensure that effective strategies are put in place to minimize risk and maximize loan performance at any particular point while in operation. Thus, this study aims to analyze the effect of non-performing assets on profitability of commercial banks in Nepal. Bhattarai (2015) has tried to examine, in Nepalese context, non-performing loans of the main issues of financial intuitions. This paper's main objective is to find out the impact of macroeconomics variables (GDP, Inflation, and Real effective Exchange rate) and bank specific variable (size, change in loan, real of lending rate of interest and share of loan to total assets.) on the Non-performing loan of commercial bank in Nepal. However, in this study the macroeconomics variables have not been taken into consideration having variables such as loan and advance ratio, non-performing loan ratio, capital adequacy ratio and credit deposit ratio which is a major gap.

CHAPTER-III
RESEARCH METHODOLOGY

Research as the name implies means to search or study about a phenomenon. It is a repeated action to find or investigate something in a scientific manner. It seeks to find out facts about non-performing assets and relationships by defining and redefining problems, collecting, organizing and evaluating data, making deductions and conclusions to determine whether they fit the formulated hypothesis (Adhikari, 2018).

3.1 Research Design

In this particular study the descriptive and causal comparative research design have been used. Research design is the plan, structure, and strategy of investigation conceived so as to obtain answers to research questions and to control variance. The plan is the overall scheme or program of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data. The structure of the research is more specific. It is the outline, the scheme, and the paradigm of the operation of the variables.

3.2 Population and Sample

There are 27 commercial banks operating in Nepal which is the population of the study and out of them five banks are selected for sample with random sampling technique where the chances of selecting the banks are even.

Table 1: Population and Sample

SN	Name of Commercial Banks	Abbreviations	Sample Period	No. of Observations
1	Bank of Kathmandu Limited	BOK	2010/11-2019/20	10
2	Global IME Bank Limited	GIME	2010/11-2019/20	10
3	NABIL Bank Limited	NABIL	2010/11-2019/20	10
4	Nepal SBI Bank Limited	NSBI	2010/11-2019/20	10
5	Prime Commercial Bank Limited	PCBL	2010/11-2019/20	10
			Total No. of Observations	50

3.3 Sources of Data

This particular study has used secondary sources of data. There are two types of source of data. They are primary and secondary data. The secondary data are those which have already been collected by someone and used by any other for their statistical enquiry. In other words, data which are originally collected but obtain from some published unpublished source are collected secondary data.

3.4 Data Collection Procedures

Almost secondary data has been taken in this study. The data needed are collected from Balance Sheet, Profit & Loss Account, other related books of account of the concerned bank, stock exchange board and Nepal Rastra Bank. The annual reports of the concerned banks were obtained from their head office and their websites. The main sources of data are annual report of concern financial institute.

3.5 Data Analysis Tools

For the analysis of the data the financial and statistical tools relevant to the topic are used.

3.5.1 Statistical Tools

The statistical tools consist of descriptive and inferential statistical tools.

3.5.1.1 Descriptive Statistical Tools

Descriptive statistical tools help to find out the trend of financial position of the sample banks. It also analyzes the relationship between variables and helps banks to take appropriate decisions regarding the fulfillment of organization goals. Descriptive analytical tools such as mean (arithmetic), variance and standard deviation have been used in this research.

i) Mean

Arithmetic mean of a given set of observations is their sum divided by the number of observations. In general, if X_1, X_2.....X_n are the given N observations, then their arithmetic mean, denoted by $\overline{X}$ is given by,

$$\overline{X} = \frac{x_1 + x_2 + ...+ x_n}{N} = \frac{\sum x}{N}$$

Where,

$\sum X$ = Sum of the observations, and

N = Number of Years

ii) Standard Deviation

Standard deviation is the square root of the sum of the squares of the deviations measured from the mean. Thus, in the calculation of standard deviation, first the arithmetic average is calculated and the deviation of various items from the arithmetic average are squared. The squared deviations are totaled and the sum is divided by the number of items. The square root of the resulting figure is the standard deviation of the series (Elhance & Agarwal, 2000). The Greek letter sigma conventionally represents the standard deviation. If X1, X2… Xn is a set of N observations then, standard deviation is given by,

$$\sigma = \sqrt{\frac{\sum (X - \overline{X})^2}{N}}$$

$\sum (X - \overline{X})$ = Sum of the squares of the deviations measured from mean N = Number of Observations.

iii) Coefficient of Variation (C.V.)

Coefficient of variation is computed for comparing the variability of two distributions. A distribution with smaller C.V. is said to be more homogeneous or uniform or less variable than-the other, and the series with greater C.V. is said to be more heterogeneous or more variable than the other. It is computed as under.

$$C.V. = \frac{\sigma}{\overline{X}} \times 100\%$$

3.5.1.2 Inferential Statistical Tools

Unlike with the data description which have the focus of describing the sample data, while the focus of inferential analysis is on estimation or hypothesis testing, by using sample purely to make inferences about the population. This process is formally known as inferential statistics. In this research, parametric test such as correlation Analysis has been used.

i) Coefficient of Correlation

The correlation is a statistical tool which studies the relationship between two variables and correlation analysis involves methods and techniques used for studying and measuring the extent of the relationship between the two variables. Correlation analysis enables to have an idea about the degree and direction of the relationship between the two variables under study. However, it fails to reflect upon the cause and effect relationship between the variables. The coefficient of correlation, denoted by r is computed as under:

$$r = \frac{N\sum XY - \sum X.\sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$

ii) Regression Analysis

The literal or dictionary meaning of the regression is moving backward or 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. Thus, regression is the estimation of unknown values or prediction of one variable from known values of other variables.

The Regression Model,

$$ROA_{it} = \alpha_0 + \alpha_1 LAR_{it} + \alpha_2 CAR_{it} + \alpha_3 NPLR_{it} + \alpha_4 CDR_{it} + \varepsilon_{it}$$

$$ROE_{it} = {}_0 + \alpha_1 LAR_{it} + \alpha_2 CAR_{it} + \alpha_3 NPLR_{it} + \alpha_4 CDR_{it} + \varepsilon_{it}$$

Where,

α_0	=	Constant Value
$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$	=	Coefficient of Independent Variables
ROA_{it}	=	Return on Assets Ratio during the period t,
ROE_{it}	=	Return on Equity during the period t,
LAR_{it}	=	Loan and Advance Ratio during the period t,
CAR_{it}	=	Capital Adequacy Ratio during the period t,
$NPLR_{it}$	=	Non-performing loan ratio during the period t,
CDR_{it}	=	Credit Deposit Ratio during the period t,
ε_{it}	=	Error Terms during the period t

3.6 Research Framework

The conceptual framework section reviews the theoretical perspective of credit analysis and its effect on profitability of Nepalese commercial banks. The research framework has been constructed form literature analysis of previous studies if (Pandey, 2010 and Hosna et al., 2009).

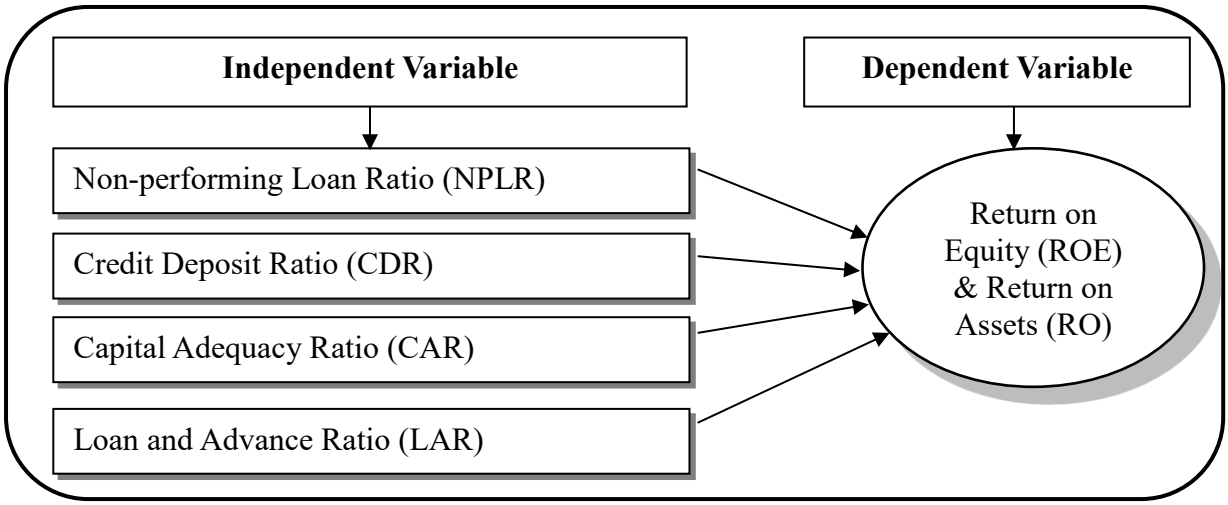

Figure 1: Research Framework

3.7 Definition of Variables

Return on Assets (ROA)

Financial performance measures how well a firm is generating value for the owners. It can be measured through various financial measures such as profit after tax, return on assets, return on equity, earnings per share and any market value ration that is generally accepted (Pandey, 2010). It refers to a relation between net profit and assets. The rise in the ratio refers to an effectiveness of the employment of assets by the company (Robinson et al., 2015). Return on Assets = $\frac{\text{Net Profit After Tax}}{\text{Total Assets}}$

Return on Equity (ROE)

ROE is what the shareholders look in return for their investment. It represents the rate of return earned on the funds invested in the bank by its shareholders. It is expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income (Pandey, 2010). Return on Equity Ratio $= \frac{\text{Net Profit After Tax}}{\text{Total Shareholders'Equity}}$

Non-performing Loan/Assets Ratio (NPLR)

Non-performing loans/assets ratio (NPLR) reflects the bank's credit quality and is considered as an indicator of credit risk management. NPLR, in particular, indicates how banks manage their credit risk because it defines the proportion of loan losses amount in relation to total loan amount (Hosna et al., 2009). Non- Performing Loans to Loan and advance Ratio = $\frac{\text{Non-performing Loans}}{\text{Loan and advances}}$

Capital Adequacy Ratio (CAR)

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

Credit to Deposit Ratio (CDR)

The credit deposit ratio is the relative measure between total credit flows out of total deposit by the banks. The total deposit inflows the cash out of which on the many title the allocation is made. The lower credit deposit ratio is supposed to be beneficial to the banks and financial institutions (Miccolis, 2002). Non- Credit Deposit Ratio = $\frac{\text{Total Credit}}{\text{Total Deposit}}$

Loan and Advance Ratio (LAR)

Here in this study net income to total loan and advance ratio has been taken into considerations. In order to ascertain how much cash has been flown out of total income generated to loan and advance. The loan and advance ratio is used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period. The loan and advance ratio is expressed as a percentage. If the ratio is too high, it means that the bank may not have enough liquidity to cover any unforeseen fund requirements. Conversely, if the ratio is too low, the bank may not be earning as much as it could be (Robinson et al., 2015). $LAR = \frac{Loan\ and\ Advances}{Total\ Deposits}$

CHAPTER-IV

RESULTS AND DISCUSSION

4.1 Descriptive Statistic

The major objective 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. It provides systematic presentation, interpretation and analysis of secondary data in order to deal with various issues associated with determination of market price per share and its determinants or various factors such as credit deposit ratio, non-performing loan ratio, loan and advance ratio, capital adequacy ratio, return on assets and return on equity.

4.1.1 Retune on assets

Financial performance measures how well a firm is generating value for the owners. It can be measured through various financial measures such as profit after tax, return on assets (ROA), net profit margin (NPM), earnings per share and any market value ratio that is generally accepted (Pandey, 2010). It refers to a relation between net profit and assets. The rise in the ratio refers to an effectiveness of the employment of assets by the company (Robinson et al., 2015).

Table 2: Return on Assets (ROA)

Year	Return on Assets (ROA)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	1.01	2.43	1.63	2.44	1.28
2011/12	0.82	2.80	0.99	2.1	0.87
2012/13	1.19	3.25	1.47	1.9	1.15
2013/14	1.51	2.89	1.46	0.65	1.62
2014/15	1.64	2.06	1.63	0.74	1.39
2015/16	1.59	2.32	2.05	0.84	1.58
2016/17	1.57	2.69	1.89	1.57	1.75
2017/18	1.97	2.61	1.82	1.45	1.63
2018/19	1.94	2.11	2.15	1.88	1.82
2019/20	1.17	1.58	1.48	1.33	1.06
Mean	1.44	2.47	1.66	1.49	1.42
SD	0.38	0.48	0.34	0.61	0.32
CV	26.58	19.41	20.41	40.76	22.40

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

Based on table 2, the average value of ROA for NSBI, NABIL, PCBL, BOK and GIME were 1.44, 2.47, 1.66, 1.49 and 1.42 percent respectively which depicted that NABIL return on assets in average was higher among the banks. Commercial banks effectively utilized the available assets. Thus, mobilization and utilization of available assets found to be efficiently utilized in Nepalese commercial banks. The standard deviation for ROA were 0.38, 0.48, 0.34, 0.61 and 0.32 percent for NSBI, NABIL, PCBL, BOK and GIME respectively which depicted the fluctuation and inconsistency in return on assets during the ten-year period. The coefficient of variation for NSBI, NABIL, PCBL, BOK and GIME were 26.58, 19.41, 20.41, 40.76 and 22.40 percent respectively reflected per year changes in terms of fluctuation and inconsistency over return on assets for ten years period. Thus, in Nepalese commercial banks there was absolute inconsistency over return on assets for the study period.

4.1.2 Return on Equity

Return on equity is the ratio of net income after taxes divided by total equity capital. ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment. It represents the rate of return earned on the funds invested in the bank by its shareholders. ROE reflects how effectively a bank management is using shareholder funds (Khrawish, 2011).

Table 3: Return on Equity (ROE)

Year	Return on Equity (ROE)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	16.19	29.02	16.04	30.43	25.7
2011/12	15.02	30.25	11.54	28.36	20.1
2012/13	20.31	32.78	18.55	26.38	31.7
2013/14	22.85	27.97	17.63	26.27	27.6
2014/15	17.08	22.73	20.12	21.69	24.8
2015/16	17.46	25.61	24.48	17.18	15.7
2016/17	14.85	22.41	15.46	11.98	15.6
2017/18	15.81	20.94	15.4	18.66	14.7
2018/19	16.20	17.76	16.4	19.49	13
2019/20	10.44	13.61	10.97	15.15	8.9
Mean	16.62	24.31	16.66	21.56	19.78
SD	3.30	5.95	3.94	6.10	7.36
CV	19.88	24.50	23.65	28.30	37.22

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

Based on table 3, the average value of ROE for NSBI, NABIL, PCBL, BOK and NIBL were 16.62, 24.31, 16.66, 21.56 and 19.78 percent respectively which depicted that NABIL return on equity in average was higher among the banks. Commercial banks maximized the shareholders wealth. The standard deviation for ROE were 3.30, 5.95, 3.94, 6.10 and 7.36 percent for NSBI, NABIL, PCBL, BOK and GIME respectively which depicted the fluctuation and inconsistency in return on equity during the ten-year period. Thus, it was found that there was absolute inconsistency over the return on equity in Nepalese commercial banks. The coefficient of variation for NSBI, NABIL, PCBL, BOK and GIME were 19.88, 24.50, 23.65, 28.30 and 37.22 percent respectively reflected per year changes in terms of fluctuation and inconsistency over return on equity for ten years period. Thus, in Nepalese commercial banks there was absolute inconsistency over return on equity for the period.

4.1.3 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.

Table 4: Non-performing Loan Ratio

Year	Non-Performing Loan Ratio (NPLR)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	1.1	1.77	0.57	1.82	2.52
2011/12	0.54	2.33	0.76	2.3	1.64
2012/13	0.37	2.13	2.23	1.5	2.27
2013/14	0.26	2.23	2.43	1.06	2.55
2014/15	0.19	1.82	1.83	3.47	2.23
2015/16	0.14	1.14	1.23	2.51	1.89
2016/17	0.1	0.8	0.88	1.29	1.6
2017/18	0.2	0.55	0.85	3.04	0.77
2018/19	0.2	0.74	1	1.54	0.55
2019/20	0.23	0.98	1.48	2.28	1.76
Mean	0.33	1.45	1.33	2.08	1.78
SD	0.30	0.68	0.65	0.78	0.68
CV	89.30	46.80	48.66	37.52	38.33

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

Based on table 4, the average value of NPLR for NSBI, NABIL, PCBL, BOK and GIME were 0.33, 1.45, 1.33, 2.08 and 1.78 percent respectively which depicted that

BOK non-performing loan ratio in average was higher among the banks which indicated debtors had not made scheduled payments for specified period (usually within 90 or 180 days). The credit risk seemed higher in BOK. In other words, the debtors had not made scheduled payments timely in commercial banks. The standard deviation for NPLR were 0.30, 0.68, 0.65, 0.78 and 0.68 percent for NSBI, NABIL, PCBL, BOK and GIME respectively which depicted the fluctuation and inconsistency in non-performing loan ratio during the ten-year period. Thus, it was found that there was absolute inconsistency over the non-performing loan ratio in Nepalese commercial banks. The coefficient of variation for NSBI, NABIL, PCBL, BOK and GIME were 89.30, 46.80, 48.66, 37.52 and 38.33 percent respectively reflected per year changes in terms of fluctuation and inconsistency over non-performing loan ratio for ten years period. Thus, in Nepalese commercial banks there was absolute inconsistency over non-performing loan ratio for the period.

4.1.4 Credit to 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.

Table 5: Credit Deposit Ratio Status

Year	Credit Deposit Ratio (CDR)				
	NSBI	NABIL	PCBL	BOK	GIME
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
CV	8.72	31.12	30.46	6.74	9.41

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

The table 5 shows the status of credit deposit ratio over ten fiscal year. It is found that in average, the credit deposit ratio in commercial banks such as NSBI, NABIL, PCBL, BOK and GIME has 97.43, 19.35, 45.11, 88.97 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 ratio over ten year in all commercial banks because of aggressive standard deviation. In addition, per year inconsistency and fluctuation over CDR has been observed.

4.1.5 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).

Table 6: Capital Adequacy Ratio Status

Year	Capital Adequacy Ratio (CAR)				
	NSBI	NABIL	PCBL	BOK	GIME
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
CV	12.93	22.12	27.97	34.44	6.93

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

Table 6 shows the capital adequacy ratio for commercial banks, in average, such as NSBI, NABIL, PCBL, BOK and GIME has 18.15, 28.96, 64.77, 15.42 and 12.89 percentage 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 ratio over ten year in all commercial banks because of aggressive standard deviation. In addition, per year inconsistency and fluctuation over CAR has been observed.

4.1.6 Loan and Advance Ratio

Loan and advances ratio (LAR) is a ratio that indicates the ability of banks to withstand deposit withdrawals and willingness of banks to meet loan demand by reducing their cash assets. When the banks are more liquid, they can reduce the risk of insolvency (Basel, 1999).

Table 7: Loan and Advance Ratio Status

Year	Loan and advance Ratio (LAR)				
	NSBI	NABIL	PCBL	BOK	GIME
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
CV	16.59	13.88	9.71	40.04	15.14

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

Table 7 shows the loan and advance ratio for commercial banks, in average, such as NSBI, NABIL, PCBL, BOK and GIME have 15.83, 11.34, 10.41, 13.98 and 10.42 percentage respectively. Thus, all commercial banks have moderately supplied loan and advance to customers and BFIs. However, there is moderately inconsistency and fluctuation of loan and advance ratio over ten years in all commercial banks because of aggressive standard deviation. In addition, per year inconsistency and fluctuation over LAR has been observed.

4.2 Correlation Analysis

The correlation analysis among independent variables such as capital adequacy ratio (CAR), supplementary capital ratio (SC), non-performing loan ratio (NPLR), credit deposit ratio (CDR), return on equity (ROE) and return on assets (ROA) as dependent variables.

Table 8: Correlation Analysis with ROE as dependent variable

Variables	Correlations				
	CAR	LAR	NPLR	CDR	ROE
CAR	1	-.207	.865**	-.448**	.588**
		.148	.000	.001	.000
LAR		1	-.274	.361**	-.499**
			.054	.010	.000
NPLR			1	-.687**	.476**
				.000	.000
CDR				1	-.133
					.358
ROE					1

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

The table 8 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, loan and advance ratio has 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 consequence 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, loan and advance 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 loan and advance ratio which indicate that they lead each other in the same direction.

Table 9: Correlation Analysis with ROA as dependent variable

Variables	Correlations				
	CAR	LAR	NPLR	CDR	ROA
CAR	1	-.207	.865**	-.448**	.442**
		.148	.000	.001	.001
LAR		1	-.274	.361**	.142
			.054	.010	.326
NPLR			1	-.687**	.349*
				.000	.013
CDR				1	.262
					.066
ROA					1

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

The table 9 depicts correlation analysis with ROA. Study also reveals that there is positive correlation between return on assets, capital adequacy ratio, loan and advance ratio, non-performing loan ratio and credit deposit ratio thus they lead each other in the same direction. Thus, as a result, when there is increment over capital adequacy ratio, loan and advance ratio, non-performing loan ratio and credit deposit ratio there would also be increment over return on assets.

4.3 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), loan and advance ratio (LAR), non-performing loan ratio (NPLR), credit deposit ratio (CDR) and return on equity (ROE) and return on assets (ROA) as dependent variables. The major two equations are $ROE_{it} = \beta_0+\beta_1 CAR +\beta_2 LAR +\beta_3 NPLR + \beta_4 CDR + \varepsilon_{it}$ and $ROA_{it} = \beta_0+\beta_1 CAR +\beta_2 LAR +\beta_3 NPLR + \beta_4 CDR + \varepsilon_{it}$

Table 10: Regression Analysis of CAR, LAR, NPLR, CDR on ROE

M	Intercept	Regression Coefficients				R^2	F-Value	P-Value
		CAR	LAR	NPLR	CDR			
1	13.167	0.171				.35	25.35	0.00**
	(11.095)	(5.035)						
2	28.562		-.856			.249	15.94	0.00**
	(10.332)		(-.993)					
3	15.321			.245		.226	14.04	0.00**
	(14.671)			(3.747)				
4	19.700				-.026	.018	.863	.358
	(9.501)				(-.929)			
5	19.537	.156	-.922	.087	.060	.59	10.31	0.00**
	(5.229)	(2.312)	(-4.774)	(.640)	(1.220)			

(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 10 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 stated by an F-value of 10.31 at a 0.00 percent level of significance is significant. 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 loan and advance ratio in the regression coefficient analysis is -0.856 which indicates that if loan and advance 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 loan and advance ratio.

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

Table 11: Regression Analysis of CAR, SC, CC, NPLR, CDR, CRR on ROA

M	Intercept	Regression Coefficients				R^2	F-Value	P-Value
		CAR	LAR	NPLR	CDR			
1	1.550 (9.985)	.015 (3.410)				.195	11.63	0.01**
2	1.618 (4.345)		.029 (.993)			.020	.985	.326
3	1.746 (13.309)			.021 (2.580)		.122	6.659	0.013*
4	1.567 (6.583)				.006 (1.883)	.069	3.545	.066
5	.057 (.135)	-.003 (-.392)	.010 (.472)	.061 (4.041)	.024 (4.412)	.627	12.06	0.00**

(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 11 deals with regression analysis with ROA. It also depicts 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 stated by an F-value of 12.06 at a 0.00 percent level of significance is significant. 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 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 loan and advance ratio in the regression coefficient analysis is .029 which indicates that if loan and advance 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 loan and advance ratio. The corresponding p-value is .326 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between loan and advance ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between loan and advance 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.

Table 12: Hypothesis Summary

	Hypotheses	Results
$H_1$1:	There is significant relationship between non-performing loan ratio and ROE.	Accept $H_1$1
$H_1$2:	There is significant relationship between non-performing loan ratio and ROA.	Accept $H_1$2
$H_1$3:	There is significant relationship between advance ratio and ROE.	Accept $H_1$3
$H_1$4:	There is significant relationship between loan and advance ratio and ROA.	Reject $H_1$4
$H_1$5:	There is significant relationship between capital adequacy ratio and ROE.	Accept $H_1$5
$H_1$6:	There is significant relationship between capital adequacy ratio and ROA.	Accept $H_1$6
$H_1$7:	There is significant relationship between credit deposit ratio and ROE.	Reject $H_1$7
$H_1$8:	There is significant relationship between credit deposit ratio and ROA.	Reject $H_1$8

4.4 Major Findings

i) 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 CDR is 11.01 and 95.14 percentage. Thus, the range for CDR is 84.13 percentage.

ii) 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 LAR is 8.24 and 27.54 percentage. Thus, the range for LAR is 19.30 percentage.

iii) 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.

iv) 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.

v) 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 ROE is 0.83 and 3.99 percentage. Thus, the range for ROE is 3.16 percentage.

vi) 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.

vii) 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 percent 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.

viii) The fitness of the model stated by an F-value of 10.31 at a 0.00 percent level of significance is significant. 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.

ix) 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.

x) 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.

xi) The regression coefficient of loan and advance ratio in the regression coefficient analysis is -0.856 which indicates that if loan and advance 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 loan and advance ratio.

xii) The corresponding p-value is 0.00 which is less than 0.05; hence, there is statistically negative but significant relationship between loan and advance ratio and return on equity. Thus, the alternative hypothesis; there is significant relationship between loan and advance ratio and return on equity is accepted.

xiii) 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.

xiv) 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.

xv) 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.

xvi) 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.

xvii) It also depicts 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.

xviii) The fitness of the model stated by an F-value of 12.06 at a 0.00 percent level of significance is significant. 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.

xix) 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.

xx) The corresponding p-value is .01 which is less than 0.05; hence, 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.

xxi) The regression coefficient of loan and advance ratio in the regression coefficient analysis is .029 which indicates that if loan and advance ratio is increased by one percent, the average influence on return on assets will increase by 2.9

percentage. The R-square value of 0.20 indicates that return on assets i.e. profitability is explained 20 percent by loan and advance ratio.

xxii) The corresponding p-value is .326 which is greater than 0.05; hence, there is statistically positive but insignificant relationship between loan and advance ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between loan and advance ratio and return on assets is not accepted.

xxiii) 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.

xxiv) 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.

xxv) 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.

xxvi) The corresponding p-value is 0.066 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.

4.5 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 Eva and Jaroslav (2014), Francis (2015) and Kahuthu (2016) as they also revealed that credit risk management and capital adequacy ratio impacted positively on profitability. However, this finding contradicts with the findings of Singh (2013), Eva and Jaroslav (2014), Francis (2015), Kahuthu (2016), Han (2017), Shrestha (2017), Adhikary (2018), Gnawali (2018) and Panta (2018) as they all reveled that credit risk has negative correlation with financial performance.

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 Dhungana and Upadhaya (2019) 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 loan and advance ratio in the regression coefficient analysis is positive which indicates that if loan and advance ratio is increased, the average influence on return on assets will increase. There is statistically positive but insignificant relationship between loan and advance ratio and return on assets. Thus, the alternative hypothesis; there is significant relationship between loan and advance ratio and return on assets is not accepted. This finding is consistent with the finding of Patwary and Tasneem (2019).

CHAPTER-V

SUMMARY AND CONCLUSION

5.1 Summary

The study is concerned with credit risk management and profitability of Nepalese commercial banks having five samples such as Nepal SBI, Nabil, Prime Commercial, Bank of Kathmandu and Global IME 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, non-performing loan ratio, credit deposit ratio and loan and advance ratio), also known as independent variables (predictors) and profitability proxies such as return on equity and return on assets.

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, loan and advance ratio has 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 consequence 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, loan and advance 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 loan and advance ratio which indicate that they lead each other in the same direction.

Study also reveals that there is positive correlation between return on assets, capital adequacy ratio, loan and advance ratio, non-performing loan ratio and credit deposit ratio thus they lead each other in the same direction. Thus, as a result, when there is increment over capital adequacy ratio, loan and advance ratio, non-performing loan ratio and credit deposit ratio there would also be increment over return on assets.

5.2 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, credit deposit ratio which implies that they lead each other in the opposite direction. When there is positive change in these credit risk factors such as credit deposit 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, non-performing loan ratio and credit deposit ratio thus they lead each other in the same direction.

The regression coefficient of capital adequacy ratio in the regression coefficient analysis positive thus, capital adequacy ratio has positive effect on profitability of commercial banks. However, the regression coefficient of non-performing loan ratio in the regression coefficient analysis is positive which indicates that non-performing loan has positive effect on profitability. Further, the regression coefficient of credit deposit ratio in the regression coefficient is negative, thus, credit deposit ratio has negative relationship with profitability. Further, the regression coefficient of loan and advance ratio in the regression coefficient analysis is negative; as a result, loan and advance ratio has negative effect on profitability of banks.

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.

Future Scope

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

As per the findings of this study besides having variables as credit risk proxies such as loan and advance ratio, credit deposit ratio, non-performing loan ratio and capital adequacy ratio the credit risk representative variables like cost per loan, loan loss provision ratio and bank size could also be incorporated for further effective findings.

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APPENDIX

Year	Return on Assets (ROA)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	1.01	2.43	1.63	2.44	1.28
2011/12	0.82	2.80	0.99	2.1	0.87
2012/13	1.19	3.25	1.47	1.9	1.15
2013/14	1.51	2.89	1.46	0.65	1.62
2014/15	1.64	2.06	1.63	0.74	1.39
2015/16	1.59	2.32	2.05	0.84	1.58
2016/17	1.57	2.69	1.89	1.57	1.75
2017/18	1.97	2.61	1.82	1.45	1.63
2018/19	1.94	2.11	2.15	1.88	1.82
2019/20	1.17	1.58	1.48	1.33	1.06

Year	Return on Equity (ROE)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	16.19	29.02	16.04	30.43	25.7
2011/12	15.02	30.25	11.54	28.36	20.1
2012/13	20.31	32.78	18.55	26.38	31.7
2013/14	22.85	27.97	17.63	26.27	27.6
2014/15	17.08	22.73	20.12	21.69	24.8
2015/16	17.46	25.61	24.48	17.18	15.7
2016/17	14.85	22.41	15.46	11.98	15.6
2017/18	15.81	20.94	15.4	18.66	14.7
2018/19	16.20	17.76	16.4	19.49	13
2019/20	10.44	13.61	10.97	15.15	8.9

Year	Non-Performing Loan Ratio (NPLR)				
	NSBI	NABIL	PCBL	BOK	GIME
2010/11	1.1	1.77	0.57	1.82	2.52
2011/12	0.54	2.33	0.76	2.3	1.64
2012/13	0.37	2.13	2.23	1.5	2.27
2013/14	0.26	2.23	2.43	1.06	2.55
2014/15	0.19	1.82	1.83	3.47	2.23
2015/16	0.14	1.14	1.23	2.51	1.89
2016/17	0.1	0.8	0.88	1.29	1.6
2017/18	0.2	0.55	0.85	3.04	0.77
2018/19	0.2	0.74	1	1.54	0.55
2019/20	0.23	0.98	1.48	2.28	1.76

Year	Credit Deposit Ratio (CDR)				
	NSBI	NABIL	PCBL	BOK	GIME
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

Year	Capital Adequacy Ratio (CAR)				
	NSBI	NABIL	PCBL	BOK	GIME
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

Year	Loan and advance Ratio (LAR)				
	NSBI	NABIL	PCBL	BOK	GIME
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