CHAPTER-ONE

INTRODUCTION

1.1. Background of the study

Bank, a financial institution, is playing vital role in the economic development of the country. The function of banks are not only accepting deposits and granting loans but also includes wide range of services to the different aspects of society, for example, to facilitate the growth of trade, commerce, industry and agriculture of the nation and establish measures and strategies to promote the national economy. In the absence and insufficiency of banking and financial facilities, the growth of the economic development becomes slow. However banks are the resource for economic development which maintains the self –confidence of various segments of society and advances credit to the people.

According to Duffie and Singgleton (2003), Credit risk can be defined as the risk of reductions in market value caused by changes in the credit quality of issuers or counterparties. Conventionally, credit risk arises through lending, investing as well as credit granting activities and concerns the returns of borrowed money or the payment for sold goods. Besides it also appears through the performance of counterparties in contractual agreements such as derivatives (Horcher, 2005). In Nepal financial institutions are growing in the rapid pace every day. Among these financial institutions commercial banks have significant role for the development of the country. They mobilize the idle resources in the very profitable sectors by collecting the scatter resources. Today competitive and advanced technology market is very crucial to become a sound competitor. Hence money is the topic to manage and banks are the manager. The efficiency of commercial bank is measured by the soundness of financial indicator, to provide the capital and technical assistance for the development of commercial sector.

In Nepal, commercial banks (CBs) are established under the provision of commercial bank act 2031 B.S. Currently; there are 32 commercial banks in operation. CBs contribute significantly in the formation and mobilization of internal capital and development effort. They furnish necessary working capital according to the requirements for trade, commerce, industry and agriculture sectors. They perform agency function to make life easier and play an important role in credit creation. Besides, they also provide technical and administrative assistance to industries, traders and business enterprises. The main objective of CBs is to earn reasonable profit as reward for their services by mobilization of idle resources, in particular sectors. CBs help to reduce the probability of inflection by increasing the interest rate while economy is in boom period and reduce the interest rate, so that investors are interested for investment in case of depression period. According to Nepal commercial bank act 2031 B.S. "A commercial bank is that which exchanges money, deposits money, accepts deposits, grants loans and performs commercial banking operation and which is not a bank means for cooperation agriculture, industries or such specific purpose."

When studying the origin of modern banking, we come to know that bank of Venice was established as the first commercial bank of the world in 1157 A.D. and in Nepal, Nepal Bank Limited was established as the first commercial bank in 1994 B.S. Nepal Rastra Bank (NRB) was set up on 2013-01-14 as the central bank under Nepal Rastra Bank Act 2012. Since then, it has been functioning as the government's apex bank and has contributed to the growth of financial sector. Integrated and speedy development of the country is possible only when competitive banking services reaches in every part of rural and urban area of country, keeping this in mind, government set up Rastriya Banijya Bank (RBB) in 2022-10-10 as a fully government owned commercial bank.

Credit is the provision of resources (such as granting loan) by one party to another party. The first party is the debtor (also known as lender) and the next party is called the creditors (known as borrower). A movement of financial capital is normally quite dependent on credit which in turn depends on the reputation or credit worthiness of the entity, who takes the responsibility for the funds. Banks frequently offer credit to their

customer as per the terms of a purchase agreement. In credit lending process bank and financial institution follow various guidelines and credit policies which are provided by NRB as the main directives along with their own credit policies which are made within the boundary of NRB guidelines. The credit policy decision of a bank has two broad dimensions, credit standard and credit analysis.

Credit management strongly refers to analyzing and managing the credit risk. Credit risk is defined as the possibility that a borrower will fail to meet its obligations in accordance with the agreed terms and conditions. The goal of the credit risk management is to maximize bank's risk adjusted rate of return by maintaining the credit risk exposures within acceptable parameters. Banks are increasingly facing credit risk in various financial instruments like interbank transactions, guarantee and settlement of transactions. Financial institution credit risk management is used as a benchmark for evaluating the financial position and performance of organization.

The development of financial institution in Nepal was initiated when the first commercial bank the Nepal Bank Limited was established in 13th Karthik 1994 B.S. as a semi-government organization. Commercial bank has dominant role in development of banking and financial institutions in the country. CBs offer the public deposit and credit services as well as growing list of new and more innovative and advanced services such as investment advice, securities underwriting, and selling insurance and financial planning. Banks are business organizations where several monetary transactions are done. They collect funds from their clients among different deposit and lend the same to the required individual and business companies in terms of loans, advances and investment. Thus proper financial decision making is more important in banking transaction for its efficiency and profitability.

The study will focus on how successfully managed the credit risk, regarding public and private owned commercial banks. Proper management of credit influences the bank overall performance indicators. Thus it will give more emphasis on the position of credit

risk management of both public and private banks. Comparative studies have been analyzed in this thesis assignment.

1.2. Statement of the problem

Trends of bank expansion, operations and establishment are in optimum growth condition in Nepal. Recent political changes are also adding fuel to the growth of financial sector. Daily, news is broadcasted by media in the concern of merge, upgrade, new establishment, branch expansion etc. Recent activities of banking sector are also unique, some of them are busy to introduce new deposit product in high interest rate, some other are trying to catch attention of client by lowering interest rate on loan. So, competition is high enough but Nepal Rastra Bank is lowering various services by adding various circular (restriction on margin lending, gift/prizes distribution, revised capital adequacy etc.). Thus, this study aims to answer following problem and will try to analyze how the banks are performing in credit sector and how they stand in comparison to one another. Looking at the recent one year decreased interest rate on deposit of Commercial Banks; everyone can say that banks are getting sufficient liquidity for their operation.

According to Regling and Watson (2010), there were flaws in several financial institutions in areas such as assessing credit risk and stress-testing. On a similar vein, Lang and Jagtiani (2010) ascertain that there was an overreliance on statistical risk models. Credit risk management is regarded as one of the prime influencing factors in the decision making issues. In our country having small economy, the financial institutions' volume of liquidity is increasing gradually. Hence the banks and financial institutions are competing among themselves to advance credit in limited opportunity sectors. Due to unhealthy competition among the banks, the recovery of the bank credit is going towards negative and nonperforming credit of the banks are not at the satisfactory level. It is necessary to analyze the credit risk management and credit disbursement recovery provision for loss and return of the credit.

There is no debate that high profitable or successful organization can easily fulfill the needs of the organization, customers and the society. To improve the profitability situation of the bank, it is necessary to establish the higher creditability position of the bank. Thus, the creditability is the major source and building better creditability position is the major strategy of every commercial bank.

Credit is the most effective and sincere area in commercial bank. It is regarded as the heart of every commercial bank. But the banking sector is far from this fact. Thus, Credit risk management is considered as the heart issues in Nepalese commercial banking sector. Credit risk management concept has appeared as a major research gap in Nepalese Commercial banking sector. There is lack of such scientific and empirical research that could identify the issues of credit risk management in Nepalese commercial banks. In this regard, the performance of Nepalese commercial banks is to be analyzed in terms of their credit. Some research questions regarding to the credit practices, credit efficiencies, liquidity position, industrial environment, management quality, organization environment, are considered as a clear evident in present situation. Thus, the specific research questions regarding credit risk management in Nepalese commercial banking sector are identified.

So the matter of concern is to find out the movement of bank credit normally, following issues of Commercial Bank will be resolved by this study:

- How Commercial Banks (CBs) are responding on loan and advances in volume during recent five years?
- Which one bank is more consistent in credit risk management on behalf of Government owned bank and private sector bank?
- Do the banks use credit risk analysis before approval of any loan proposal?
- What are the major factors affecting banks and their credit risk management decisions?
- What are the main causes of increasing credit risks in commercial banking sectors?

- Is the credit risk management affected by the external environment of the organization?
- Is the proper investment policies and practices assist to decrease the credit risk and is there any necessity to amend the existing regulation?
- How to bank can manage to make optimal management of credit risk?
- What is their interest pattern on credit lending current last few years?
- Is there any relationship between credit risk and profitability position?

1.3. Objectives of the Study

The prime objective of this study is to examine the credit risk management of selected commercial banks of Nepal. The specific objectives are as follows:

- To examine sector wise loans and advances of selected Commercial Banks.
- To evaluate status of nonperforming loans of selected Commercial Banks.
- To find out the main differences between public and private banks risk management practices.
- To examine the strength and weakness in the credit administration of both banks.
- To evaluate the credit risk management of both RBB and NIC Asia banks.
- To reveal recovery status of credit disbursement of both banks.

1.4. Justification of the study

The research regarding credit risk management have been conducted, but comparative analysis of credit risk management reference to RBB and NIC Asia Bank Ltd has not been studied yet. Credit risk has significant role in overall performance of banks so there is necessity of assessment of credit risk for minimization of bank failure.

In the 21st century the banking and financial market has changed significantly due to the innovation of advanced technology and competitive financial market. That change is the impact of globalizations .In our country still 32 commercial banks are in operation. The

service area and service providing procedure is wide and diversified. However many variables are affecting for proper management of credit risk in financial institutions. Present study will be aimed to find out the credit practices adopted by selected Nepalese commercial banks during the study time period.

Accordingly, this study provides practical information to commercial banks in Nepal as each CB those participates in the survey has an opportunity to receive the findings. The findings may highlight certain gaps in the current credit management process of CBs from which they can revaluate these areas in order to sustain a growing business performance. Academically, this subject area has limited research conducted on it. Consequently the researcher aims to add insight this area and provide the foundation for further research to be performed around this research topic.

Researcher will further explore the area to find out credit risk management and its impact in profitability. The current study will be supplement to overcome the weakness and limitation of the previous studies. All the bankers and businessman will be benefited from this study so that they can develop new strategy in coming days.

1.5. Limitations of the study

As every research has its own limitations, this study is not free from it basically this study is done for the partial fulfillment of MBS level, so it cannot cover all the dimensions of the subject matter and resources. The major limitations of the study are as follows:

1. The accuracy of data is dependent upon the data collected and provided by the banks under study.
2. Data from part time frame i.e., data during previous five years will be used.
3. The research will be concerned with only two commercial banks.
4. Time and financial constraints are the major limitations of the study.

1.6. Organization of the study

This research will be organized in five chapters. The titles of the chapters are discussed in brief under respective headings**:**

Chapter One: Introduction

This chapter will include background information on the subject matter, focus of the study, statement of the problems, objective of the study, significance of the study, justification of the study, limitations of study and organization of study.

Chapter Two: Literature Review

This chapter will include the relevant previous writing and studies to find the existing gap. Review of text book, related journals, and articles, published and unpublished dissertation will be included in this chapter. It will seek to establish the current problems encountered by commercial banks in the credit risk management area. In essence it will provide the foundation for investigating whether the management of credit in commercial banks needs to be revised.

Chapter Three: Research Methodology

This unit will present research methodologies used during the study which includes various tools and techniques of data manipulation. Included in this chapter will be the identification of the research problem, the research objectives along with an illustration of the research design.

Chapter Four: Presentation and analysis of data

This chapter will provide the major findings generated from discussions, analysis and interpretation of the data that were collected by using the various methods of statistical and financial tools. Tables, pie charts etc. will be used according to necessity.

Chapter Five: Summary, Conclusions and recommendation

Finally, the summary and conclusion of this study will be outlined in this chapter along with the recommendations provided by the researcher. Moreover, the limitations of this study will be incorporated. Here the researcher will also present the areas where further research could be conducted on in the future.

1.7. Rastriya Banijya Bank Limited: An Introduction

Rastriya Banijya Bank (RBB) is fully government owned, and the largest commercial bank in Nepal RBB was established on January 23, 1966 (2022 Magh 10 BS) under the RBB Act. Now, the bank is running under bank and financial institute act 2063. RBB has been contributing to socio-economic development of the country for the last four and half decades RBB provides various banking service to a wide range of customers that include elite to poor individuals, institutional customers, and the customers from industry/ business communities.

RBB has Nepal's most extensive banking network with over 140 branches **(140 ABBS Branches)**. Through its widest branch and ABBS network RBB has been catering modern banking services to as many as 1.7 million satisfied/ direct customers. With the figure of around NRs 9 billion, RBB is the second largest bank of the nation in terms of paid-up capital, the first in the list being Agricultural Development Bank.

The head office of the bank is located at Singhdurbar Plaza, Kathmandu. The Board of Directors is responsible for policy making and guidance to the management. The government nominates all board members including the chairman. The executive power is vested in the Chief Executive Officer (CEO). The Bank has 15 departments in its head office and 5 regional offices across the five development regions of the country.

Vision:

Developing RBB as model/ number one financial institution of the country

Mission:

- Contributing towards flourishing industrial, commercial sector of the country
- Contributing for the development of agricultural sector
- Help realizing national goals set by government.

1.8. NIC Asia Bank Limited: An Introduction

NIC Asia Bank is the first commercial bank which has created history in the Nepalese banking sector as the first merger of two "A" class commercial banks namely NIC Bank and Bank of Asia. The bank has started its operation as NIC Asia Bank since Sunday, 30th June 2013. The bank's corporate office is located at Trade Tower, Thapathali, Kathmandu.

Whilst one of the merger partners- "Bank of Asia Nepal" was a relatively younger bank established in the year 2007, the other partner- NIC Bank was established in the year 1998 and has been recognized for many achievements including "Bank of the Year 2007-Nepal" by The Banker, Financial Times, UK.

With this merger, NIC Asia is now amongst the largest private sector commercial banks in the country in terms of capital base, balance-sheet size, branch/ATM network, customer base and employees. With the consolidation, NIC Asia Bank will now have 53 branches and 57 ATMs which will be expanded to a total of 66 branches within 1 year with the re-location of its 13 branches. The Bank has a customer base of 270,000 and an authorized capital of close to 5 billion including reserved and retained earnings for the current year. On a consolidated basis, the Bank's deposit base is now NRs 38 billion with loans and advances of NRs 33 billion. It has a paid-up capital of 2.31 billion.

Vision:

To become one of the most respectable banks in Nepal based on honorable conduct and long term financial performance.

Mission:

To become a leading bank in Nepal by providing complete financial solutions to the customers, superior value to the shareholders and promising growth opportunities to the employees.

CHAPTER-TWO

LITERATURE REVIEW

Review of literature is an essential part of all studies. A literature review is the process of locating, obtaining, reading and evaluating the research literature in the area of the interest of any researcher. It is a way to discover what other research in the area of selected problem has uncovered. The purpose is to develop some expertise in one's area, to see what new contribution can be made, and to receive some idea for developing a research design. It is also a way to avoid investigating problems that have already been definitely answered (Wolff and Pant 2005). In view of these considerations, this study incorporates the basic credit risk management theories and relevant empirical studies in this chapter. "Review of literature means summary and analysis of current knowledge about a particular topic or area of enquiry" (Walkman 2006). It provides the basis for developing a comprehensive framework. In this chapter an emphasis is given to the review of major literature related on the credit risk management and its analysis. This chapter is divided mainly into two parts, which are as follows:

- Conceptual framework
- Review of related studies

2.1. Conceptual Framework

It is a theoretical review that examines the various concepts and theories that have been put forward. This review puts forward and argument as to which is most relevant. This review gives insight the issue being examined. The purpose of the forms of review is that should examine what has been written previously and learn from the earlier research. At the same time can also develop a conceptual or theoretical framework for our study. A careful review of literature can provide us valuable insight to number of aspects of this research. The review of text book and other reference materials such as: newspaper, magazines research articles, journals and past thesis have been included in this topic.

Credit risk management involves the creation and management of risk assets. The process of lending takes into consideration the people and system required for the evaluation and approval of loan requests, negotiation of terms documentation, disbursement,

administration of outstanding loans and work outs, knowledge of the process and awareness of its strength and weakness. These considerations are important in setting objectives, and goals for lending activities and for allocating available funds to various lending functions such as commercial installment and mortgage portfolios. Rajagopal (1996) made an attempt to overview the bank's risk management and suggests a model for pricing the products based on credit risk assessment of the borrowers. Researcher concluded that good risk management is good banking, which ultimately leads to profitable survival of the institution. A proper approach to risk identification, measurement and control will safeguard the interests of banking institution in long run.

Prime objectives of the monetary policy in the Commercial Banks of Nepal are the most active financial intermediary for generating resources in the form of deposit of private sector and providing credit to the investors in different sectors of the economy.

2.1.1. The Credit Risk of Banks

According to the Basel (1999), credit risk is defined as "the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed term". The Monetary Authority of Singapore (2006) has defined it to be the "risk arising from the uncertainty of an obligor's ability to perform its contractual obligations", where the term "obligor" refers to any party that has either direct or indirect obligations under the contract. Regarding the importance of this kind of financial risk, Kandinsky and Reinhart, as cited by Jackson and Parading (1999), thought it to be the largest element of risk in the books of most banks and if not managed in a proper way, can weaken individual banks or even cause many episodes of financial instability by impacting the whole banking system. Thus to the banking sector, credit risk is definitely an inherent and crucial part.

2.1.2. Identifying Credit Risk Exposures in Banks

Generally, credit risk is related to the traditional bank lending activities. Moreover, it also comes from holding bonds and other securities. Basel (1999) reported that for most banks, loans are the largest and most obvious source of credit risk; however, throughout the activities of a bank, which are included in the banking book as well as in the trading book, and both on and off the balance sheet, there are also other sources of credit risk. Various financial instruments including acceptances, interbank transactions, financial futures, guarantees, etc. increase banks' credit risk. Therefore, it is indispensable to identify all the credit exposures the possible sources of credit risk for most banks, which can also serve as a starting point for the following parts of this work.

A. On-Balance Sheet Exposure

According to Saunders and Cornett (2006), the major types of bank loans are commercial and industrial (C&I), real estate, consumer and others. Commercial and industrial loans can be made for period ranging from a few weeks to several years for financing firms' working capital needs or credit needs respectively. Real estate loans are primarily mortgage loans whose size, price and maturity differ widely from C&I loans. Consumer loans refer to those such as personal and auto loans while the so called other loans include a wide variety of borrowers such as other banks, non-banking financial institutions and so on. Credit risk is the predominant risk in bank loans. Over the decades the credit quality of many banks' lending has attracted a large amount of attention. Since the default risk is usually present to some degrees in all loans (Saunders and Cornett 2006), the individual loan and loan portfolio management is undoubtedly crucial in banks' credit risk management.

a. Non-performing Loan Portfolio

According to Henie (2003), non-performing loans are those not generating income, and loans are often treated as non-performing when principal or interest is due and left unpaid for 90 days or more. Thus the non-performing loan portfolio is a very important indication of the bank's credit risk exposure and lending decisions quality.

b. Debt Securities

Besides lending, credit risk also exists in banks' traditional area of debt securities investing. Debt securities are debt instruments in the form of bonds, notes, certificates of deposits etc., which are issued by governments, quasi-government bodies or large corporations to raise capital. In general, the issuer promises to pay coupon on regular basis through the life of the instrument and the stated principal will be repaid at maturity time. However, the likelihood that the issuer will default always exists, resulting in the loss of interest or even the principal to banks, which can be a damaging impact.

B. Off-Balance Sheet Exposures

Since the 1980s, off-balance sheet commitments have grown rapidly in major banks, among which there are swaps, forward rate agreements, bankers' acceptances, revolving underwriting facilities, etc. (Hull 1989). Those commitments give rise to new types of credit risk from the possibility of default by the counterparty. In this section, some of the off-balance sheet credit exposures will be introduced.

a. Derivatives Contracts

According to Saunders and Cornett (2006), banks can be dealers of derivatives that act as counterparties in trades with customers for a fee. Contingent credit risk is quite likely to be present when banks expand their positions in derivative contracts. Since the counterparty may default on payment obligations to current and future losses, risk will arise, which leaves the banks unheeded and having to substitute the contract at today's interest rates and prices. This is also more likely to happen when the banks are in the money and the counterparty is losing heavily on the contract. Comparatively, the type of credit (default) risk is more serious for forward contracts and swap contracts, which are nonstandard ones entered bilaterally by negotiating parties. While trading in options, futures or other similar contracts may expose banks to lower credit risk since contracts are held directly with the exchange and there are marginal requirements. However, the credit risk is also not negligible.

b. Guarantees and Acceptances

Bank Guarantee is an undertaking from the bank which ensures that the liabilities of a debtor will be met, while a bankers' acceptance is an obligation by a bank to pay the face value of a bill of exchange on maturity (Basel 1986). It was mentioned by Basel (1986) that since guarantees and acceptances are obligations to stand behind a third party, they should be treated as direct credit substitutes, whose credit risk is equivalent to that of a loan to the ultimate borrower or to the drawer of the instrument. In this sense, it is clear that there is a full risk exposure in these off balance sheet activities.

2.1.3. Proposed tools for lending

The current credit crunch gives rise to new innovative credit management applications in order to further alleviate lending risks (Fatemi and Fooladi, 2006). Accordingly, several tools and models will be discussed that have materialized from the literature, which could be incorporated in the credit unions credit management processes.

a. Affordability

Burton (2008) contemplated why lenders in the past had authorized the distribution of more credit to borrowers who had existing commitments that they were already finding difficult to pay back. He believes that this gave rise to the role of affordability in the decision making process of lending and the approval of credit. At a different perspective, Thomas (2009) stated that when measuring the affordability of a borrower, it is their lack of cash flow and not assets that causes them to default. Accordingly, he derives a borrower structural model based on affordability as follows:

(Realizable assets) t+1 = (Realizable assets) t + (Income level) t – (Expenditure) t – (Loan repayment) t

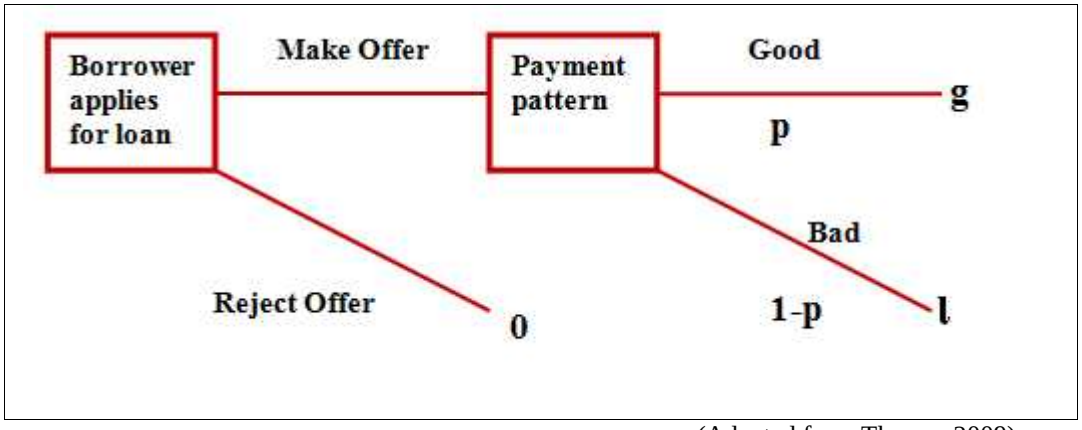
Where, this model computes the variable at time **t+1** by summating and subtracting various variables at time **t**. Hence the affordability of a borrower is negative if (Realizable assets) **t+1< 0**.

In spite of the viability of this method, Wilkinson and Tingay (2004) as discussed by Burton (2008) conducted a study on the effectiveness of affordability tests. The results showed that this method is weak when assessing the default risk of a borrower as there is a high correlation between it and the more conventional information derived from the loan application and credit bureau check. In spite of this, Burton (2008) stated that recently the Financial Regulator and lending institutions have given additional precedence to measuring affordability when assessing borrower risks. However, given the voluntary nature of credit unions do they have the means to incorporate this method of assessment? Middlemiss (2004) considered that the main barrier in updating technology is getting financial institutions to invest in it. Overall, it appears that the use of affordability tools in the context of borrower assessment is a contentious one.

b. Decision tree

Another instrument that could be employed in the credit management process of Commercial Banks is decision tree. Bailey (2004) defined decision trees as the "organization of information by creating a connected graph with nodes branching into other nodes". Moreover, Thomas (2009) described how the repayment probability of a borrower can be assessed using the simple decision tree shown in Figure 1.1

Figure 1.1: Credit management Decision tree



(Adapted from Thomas 2009)

If **g** is the profit made by the financial institution from repaying borrowers, **ι** the loss the financial institution suffers from the borrower defaulting, **p** the probability of the

borrower being good and **1-p** the probability of the borrower defaulting then we get the decision tree above. Thus, under the EMV criterion the bank accepts the applicant providing the output of the equation

$$pg - (1-p)\,1 > 0$$

(Thomas, 2009)

Regarding the use of decision trees, Jepson (2009) conducted a study on North Vancouver B.C. Credit Union. They found that B.C. Credit Union didn't need to exercise their loan loss reserve due to the employment of advanced credit risk assessments like decision trees.

2.1.4. Stress testing

Honohan (2009) defined stress testing as a system that purpose to predict the condition of a financial institution in extreme scenarios. Alexander and Baptista (2006) stated that financial intermediaries frequently employ stress testing to place limits on their risk exposure. Moreover, stress tests compliment conventional models (Hilbers and Jones, 2004). Accordingly, the use of stress tests in commercial banks may highlight underlying problems in their loan books.

Recently the Financial Regulator has regulated all the commercial banks to stress test their loans in order to highlight the extent of their credit problems and to assess their current stance (Tribune, 2010). On the other hand, Honohan (2009) cautioned that while stress testing is useful, they seldom are very informative about systemic risks. Therefore it is questioned whether stress testing will be enough to build a collective picture of the health of commercial bank and credit unions?

a. Types of borrowers

Ayub (2004) considered that the prioritization of accounts is important during the collection process, where they should be organized according to the actions that have to be applied. Hinder (2004) further stated that the type of default borrower must be

identified first in order to decide what action is to be taken. These borrower types are outlined in Table 1.2.

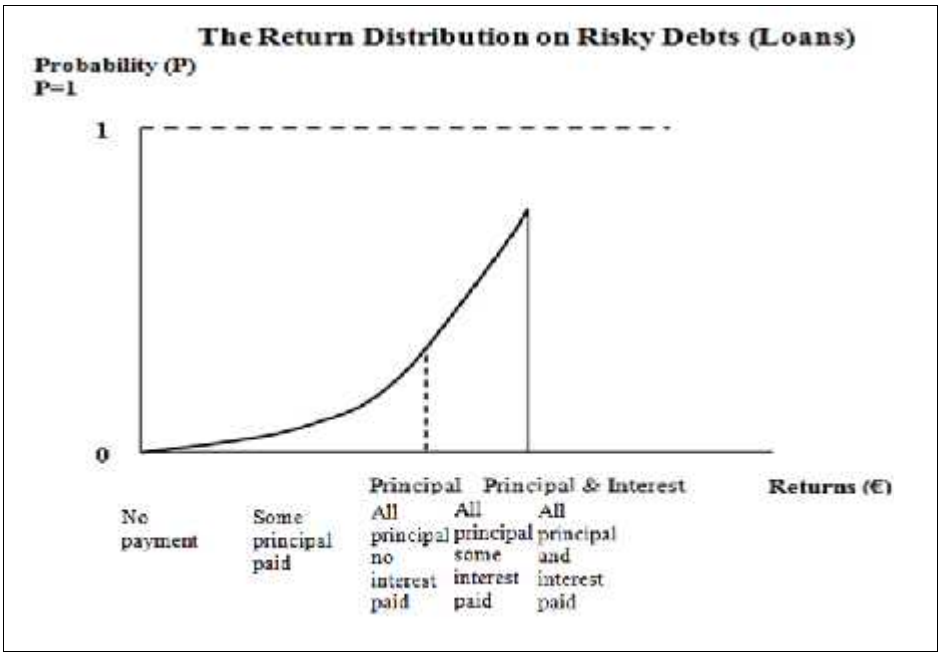
Table 1.1: Type of default borrower

Loss of income through job loss
Customer service issues such as direct debit set up
A mistake/forgotten
Change in circumstances e.g. marital breakdown
Dispute with lender/retailer
Over commitment
No intent to pay (fraudulent)

Source: (Hinder, 2004)

At a different perspective, Saunders (1997) produced a graph illustrating the different types of risky loans. Here the peak shows the high probability of the loan principal and interest been paid from the borrower (Graph 1.1). This is never equal to one; hence it is the financial institutions purpose to get it as close to one as possible. From this, he derives that borrowers can be categorized into five types. These are exemplified in the graph below.

Figure 1.2: The Return distribution on Risky debts



Adapted from: (Saunders, 1997)

In this manner, given the various types of default borrowers, Finlay (2008) urged that "decisions need to be taken about how to manage delinquencies so that the likelihood of the account recovering is maximized and potential future losses due to bad debt are minimized". Hinder (2004) concurred with this view by recognizing that if financial institutions lack action regarding their arrears interventions then the result leads to a larger proportion of borrowers who do not pay. Accordingly this poses the question whether credit unions implement an organized process when recovering arrears?

2.1.5. General Principles of Sound Credit Risk Management in Banking

Henie (2003) stated that despite innovations in the financial services sector over the years, credit risk is still the major single cause of bank failures, for the reason that "more than 80 percent of a bank's balance sheet generally relates to this aspect of risk management". The consultative paper issued by Basel (1999) also pointed out that the major cause of serious banking problems continues to be directly due to the loose credit standards for borrowers and counterparties, poor portfolio risk management and so on. All such evidence proves the extremely vital role credit risk management plays in the

whole banking risk management approach as well as the sustainable success of the organization. In this section, the goal and principles of banking credit risk management will be summarized briefly, which together with this section is based the consultative paper "Principles for the Management of Credit Risk" issued by Basel in 1999.

The above part on the identification of the existing credit risk in banking activities will provide a basic framework for the understanding and discussion of banks' credit risk management practices.

To review the general principles of credit risk management can provide a clearer picture on how banks carry out their credit risk management, despite of the specific approaches that may differ among banks. According to Basel (1999), the sound practices of bank credit risk management should cover the following four areas:

[1] This section is based the consultative paper "Principles for the Management of Credit Risk" issued by Basel in 1999.

a. Establishing an Appropriate Credit Risk Environment

To establish an appropriate credit risk environment mainly depends on a clear identification of credit risk and the development of a comprehensive credit risk strategy as well as policies. The identification of existing and potential credit risk inherent in the products they offer and the activities they engage in is a basis for an effective credit risk management, which requires a careful understanding of both the credit risk characteristics and their credit-granting activities, especially the complicated or newly developed ones. Besides, the design of objective credit risk strategies and policies that guide all credit-granting activities is also the cornerstone in bank credit risk management process. It is stated that a credit risk strategy should clarify the types of credit the bank is willing to grant and its target markets as well as the required characteristics of its credit portfolio. While credit policies express the bank's credit risk management philosophy as well as the parameters within which credit risk is to be controlled, covering topics such as portfolio mix, price terms, rules on asset classification, etc (Henie 2003). Both the strategies and

policies should be designed and implemented well in conducting credit-granting activities, and they help to establish a beneficial credit environment. Moreover, establishing an appropriate credit environment also indicates the establishment of a good credit culture inside the bank, which is the implicit understanding among personnel about the lending environment and behavior that are acceptable to the bank (Strischek 2002).

b. Operating under a Sound Credit Granting Process

A sound credit granting process requires the establishment of well-defined credit granting criteria as well as credit exposure limits in order to assess the creditworthiness of the obligors and to screen out the preferred ones. A bank credit criterion is designed to shape the types and characteristics of its preferred obligors, and bank should set out who are eligible for the credit, the amount of the credit and the relative terms and conditions (Monetary Authority of Singapore 2006). The criteria, together credit exposure limits on single and groups of counterparties that usually base on internal credit rating should help banks to generate sufficient information on credit risk profiles and instruct the safe credit approval process, which are applicable credit extension activities as well. The means for guaranteeing adequate controls over credit risk in banks lay in the establishment of different kinds of credit reviews. Regular credit reviews can verify the accordance between granted credits and the credit policies, and an independent judgment can be provided on the assets qualities.

2.1.6. Fundamentals of Credit Risk Measurement

Generally speaking, measuring risk is about trying to obtain some measures of the dispersion of possible future outcomes, and in practice, the focus is usually on the downside outcomes (Lowe 2002). The credit risk in banks should be measured by size as well as scope of the exposure, and as pointed out by Lowe (2002), all kinds of credit risk measuring approaches comprise of four common building blocks, including the probabilities of borrowers defaulting (PDs), the correlation of PDs across borrowers, the possible loss in the event of default (LGD) and the correlation between PDs and LGD.

2.1.7. Credit Risk Rating

A credit rating is for assessing the credit worthiness of an individual or corporation to predict the probability of default, which is based on the financial history and current assets and liabilities of the subject. As mentioned by the Federal Reserve (1998), credit risk ratings may reflect not only the likelihood or severity of loss but also the variability of loss over time. For banks, both the internal credit rating and the external one are involved in their credit risk assessment.

a. Internal Credit Ratings

The internal credit ratings of banks, as suggested by Jacobson, Linden and Roszbach (2003), are the summary of the risk properties of the bank loan portfolio. They can be treated as monotonic transforms of the probability of default and shape the nature of credit decisions that banks make daily (Tracey and Carey 1998). A consistent and meaningful internal risk rating system can be a useful means for differentiating the degree of credit risk in loans and other sources of exposure (Basel 1999). The internal credit ratings of banks are becoming increasingly important since the recommendations, as per the latest Basel II accord (Basel 2006), emphasize the adoption of robust internal credit rating system for risk assessment and buffer capital calculation, which will certainly encourage and lead banks to further development in this method.

According to Jackson (2001), there are two possible approaches for slotting interbank exposures. Loans to banks will be slotted according to the rating of their sovereign; and under option 2, according to the bank's own rating. Exposures to borrowers without a credit rating will carry a 100% weight under unrated band.

b. Merton-based Models

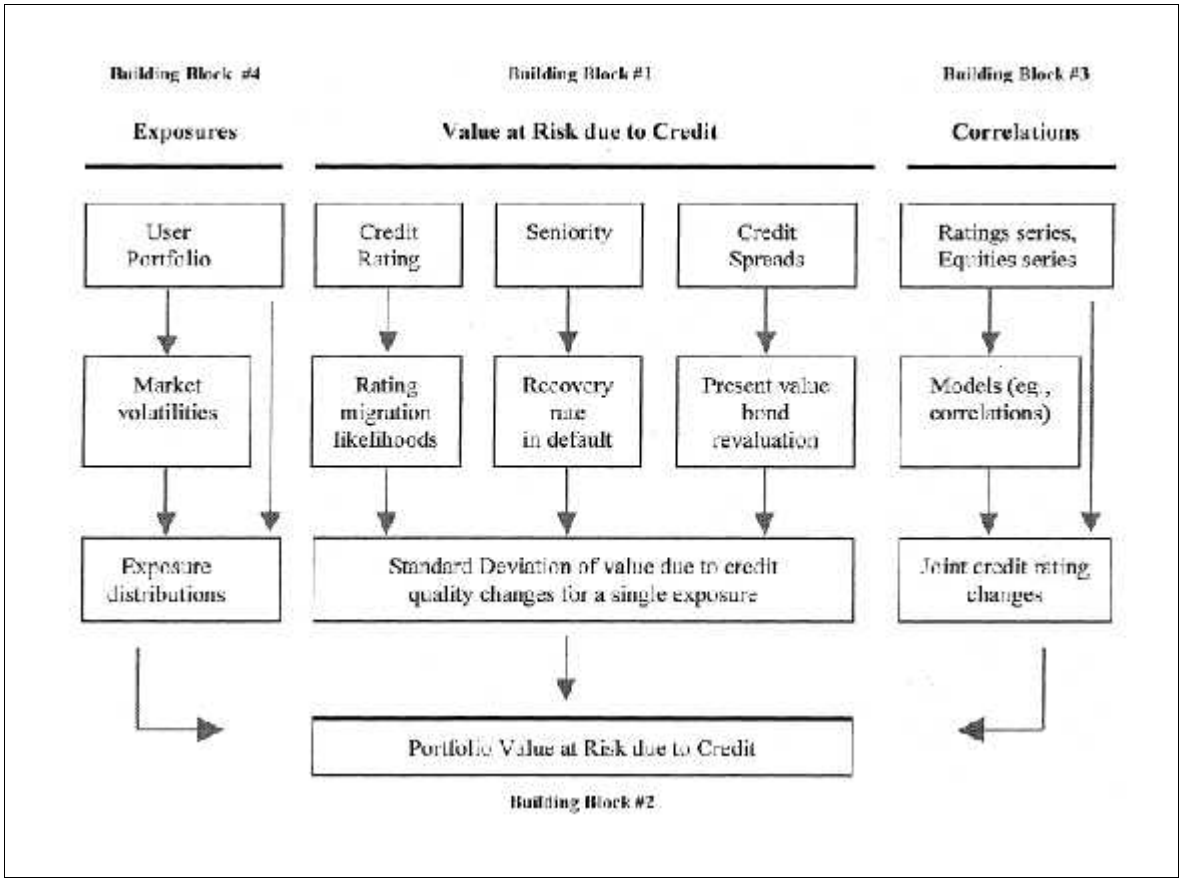
Merton-based models are also referred to as structural models. The basic principle of this category of models, as suggested by Merton (1974) first, is that a firm is considered to be in default when the value of its assets falls below that of its liabilities. Merton has modeled a firm's asset value as lognormal process, with the equity modeled as a call option on the underlying assets, and the default is allowed at only a future time **t** (Arora, Bohn and Zhu

2005). The current value and the volatility of the firm's assets, the outstanding debt and its maturity are required as inputs, from which the borrower's default probability can be determined (Hull, Nelken and White 2004). Based on the Merton model, Moody's KMV model has been developed for providing a term structure of default risk probabilities. The term "Distance-to-default" is proposed in the KMV model, which is calculated from the market assets value of the firm, the volatility as well as the default point term structure, and the model derives the actual probability of default--the Expected Default Frequency for each obligor instead of relying on the average historical transition frequencies produced by the rating agencies (Crouhy, Galai and Mark 2000).

c. Ratings-based Models

One of the most widely used ratings-base models is the Credit Metrics from JP Morgan. It is a tool for assessing portfolio risk that arises from changes in debt value caused by changes in obligor credit quality, and causes of the changes in debt value include possible default events and upgrades as well as downgrades in credit quality (JP Morgan 1997). According to Jackson, Nickell and Perraudin (1999), the obligor credit quality change probability can be expressed as the probability of a standard normal variable falling between various critical values that are calculated from the borrower's current credit rating and historical data of credit rating migrations. The measurement framework of Credit metrics is illustrated in Figure 1.2Credit Metrics suffers from a major problem, as pointed out by Crouhy, Galai and Mark (2000), that this approach relies on transition probabilities based on average historical frequencies of defaults and credit migration, which affects the accuracy of calculations.**Figure**

1.3: Credit metrics framework: The four building blocks



(Source: JP Morgan 1997)

2.1.8. Issues in Credit Risk Management

a. Adverse Selection

It is often the case that in the lending process, a borrower knows more than the bank about his/her own credit risk and the bank, being at an information disadvantage, may attempt to increase a borrower's interest rate for compensating the unknown credit risk. The problem is that the higher interest rate does not prevent riskier borrowers but those with less probability to default, and it is suggested that the more effective way be used to limit access to credit instead. However, what is likewise noticeable is that the quantitative credit exposure limits also deserves careful consideration. Since a smaller limit reduces lending volume as well as profits while a larger one encourages borrowers with low credit quality, the choice of an optimal limit is an important task for banks.

Tier1 capital includes the book value of common stock, non-cumulative perpetual preferred stock and public reserves from post-tax retained earnings, according to Basel (1988).

The discussion on both adverse selection and moral hazard are based on the relative parts in the book of Duffie and Singleton (2003).

b. Moral Hazard

It is said that "if you owe your bank $100 million that you don't have, your bank is in big trouble". For banks, large loan are considered riskier than small ones because they provide incentives for borrowers to undertake riskier behaviors. Also, large borrowers who default have stronger bargaining power, which puts lending bank in a worse position. Therefore banks always have their own limits on credit for certain counterparties, to deal with moral hazard.

Another interesting aspect with moral hazard in the banking system involves central banking, since it is argued that central banks' help will encourage banks to engage in riskier behaviors. The most recent example may be the one about the crisis with American subprime mortgage-backed securities in the last few weeks. As mortgage lending institutions, hedge funds and many banks are seriously affected, worldwide central banks made quick reaction for maintaining the financial stability and public confidence, among which European Central Bank provided $ 131 billion of extra funds to the money market (Anonymous 2007a) and the Federal Reserve cut the rate for emergency lending to banks from 6.25% to 5.75%, with a lengthening term to 30 days (Anonymous 2007b). However, whether such central bank bailout is correct is quite arguable. It is mentioned by Grauwe (2007) that central banks should provide liquidity only against good assets and let the banks which loaned massive amounts of money to hedge funds get their punishment or even collapse. If the irresponsible banks can get away with it cheaply, they will be incited to take such activities again. Therefore, moral hazard at this level may be a dilemma, in which banks need to make decisions considering both current and future financial stability.

According to Heffernan (1996), Toyo Sogo Bank ran in.to problems because of excessive exposure to a local shipbuilder; Johnson Matthey Bankers got into trouble because of a huge amount of bad loans to the third world countries; and the US commercial bank failure is largely because of a concentration of lending in the energy sector.

2.1.9. Nepal Rastra Bank Risk Management Guidelines

a. Overview

Banks always face different types of risks that may have a potentially negative effect on their business. Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking in business. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the safety of a bank's depositors. Risks are considered warranted when they are understandable, measurable, controllable and within a bank's capacity to readily withstand adverse results. Sound risk management systems enable managers of banks to take risks knowingly, reduce risks where appropriate and strive to prepare for a future, which by its nature cannot be predicted.

Nepal Rastra Bank laid significant emphasis on the adequacy of a bank's management of risk. Nepal Rastra Bank put forward this document for the purpose of providing guidelines to all commercial banks on risk management systems that are expected to be in place. This document sets out minimum standards that shall be expected of a risk management framework. Overall risk management is of utmost importance to Banks, and as such, policies and procedures should be endorsed and strictly enforced by the senior management and the board of the Bank.

b. Risk Management Process

For the purpose of these guidelines, risk refers to the possibility that the outcome of an action or event could bring adverse impacts on the bank's capital, earnings or its viability. Such outcomes could either result in direct loss of earnings and erosion of capital or may result in imposition of constraints on a bank's ability to meet its business objectives.

These constraints could hinder a bank's capability to conduct its business or to take advantage of opportunities that would enhance its business. As such, managements of banks are expected to ensure that the risks a bank is taking are warranted.

Risk Management is a discipline at the core of every bank and encompasses all activities that affect its risk profile. It involves identification, measurement; monitoring and controlling risks ensure that:

a) The individuals who take or manage risks clearly understand it.
b) The organization's Risk exposure is within the limits established by Board of Directors.
c) Risk taking Decisions are in line with the business strategy and objectives set by BOD.
d) The expected payoffs compensate for the risks taken.
e) Risk taking decisions are explicit and clear.
f) Sufficient capital as a buffer is available to take risk.

Each situation is unique, in terms of roles and capabilities of individuals and the structure, activities and objectives of the bank. Risk management practices considered suitable for one bank may be unsatisfactory for another. Because of the vast diversity in risk that banks take, there is no single prescribed risk management system that works for all. Moreover, in the context of a particular bank, the definition of a sound or adequate risk management system is ever changing, as new technology accommodates innovation and better information and as market efficiency grows. Each bank should tailor its risk management program to its needs and circumstances. To remain competitive, banks must adapt and constantly improve their process. (Source: NRB Directives 2010)

2.1.10. Risk Assessments and Measurement

Until and unless risks are not assessed and measured, it will not be possible to manage them. Further a true assessment of risk gives management a clear view of bank's standing and helps in deciding future action plan. To adequately capture banks' risk exposure, risk

measurement should represent aggregate exposure of bank to both risk type and business line and encompass short run as well as long run impact on bank. To the maximum possible extent banks should establish systems/models that quantify their risk profile; however, in some risk categories such as operational risk, quantification is quite difficult and complex. Wherever it is not possible to quantify risks, qualitative measures should be adopted to capture those risks.

The importance of staff having relevant knowledge and expertise cannot be undermined. Any risk measurement framework, especially those which employ quantitative techniques/model, is only as good as its underlying assumptions, the rigor and robustness of its analytical methodologies, the controls surrounding data inputs and its appropriate application.

a. Risk Management Framework

In any bank, support for crucial programs must come from the top. Each entity's senior management and governing board must set the bank's risk appetite by establishing appropriate policies, limits and standards and ensuring that they are followed and enforced. Risks must be measured, monitored and reported to key decision-makers. Banks should institute a setup that supervises overall risk management at the bank. Such a setup could be in form of a risk manager, committee or department depending on the size and complexity of the bank. Ideally, overall risk management function should be independent from those who take or accept risk on behalf of the bank. The complexity and formality may vary widely among banks; but they should have clear procedures for assessing risk and evaluating performance regularly. There must also be adequate accountability, clear lines of authority and separation of duties between business functions and those involved in risk management and internal control. Where individuals responsible for overall risk management function are involved in day-to-day operations, then sufficient checks and balances should be established to ensure that risk management is not compromised.

Overall risk management function provides an oversight of the management of risks inherent in the bank's activities. The functions are;

- Identifying current and emerging risks;
- Developing risk assessment and measurement systems;
- Establishing policies, practices and other control mechanisms to manage risks;
- Developing risk tolerance limits for Senior Management and Board approval;
- Monitoring positions against approved risk tolerance limits; and
- Reporting results of risk monitoring to Senior Management and the Board.

An effective Risk management framework includes:

- Clearly defined risk management policies and procedures covering risk identification, acceptance, measurement, monitoring, reporting and control.
- A well constituted organizational structure defining clearly roles and responsibilities of individuals involved in risk taking as well as managing it.
- Banks, in addition to risk management functions for various risk categories may institute a setup that supervises overall risk management at the bank.
- Such a setup could be in the form of a separate department or bank's Risk Management Committee (RMC) could perform such function.

There should be an effective management information system that ensures flow of information from operational level to top management and a system to address any exceptions observed. There should be an explicit procedure regarding measures to be taken to address such deviations. The framework should have a mechanism to ensure an ongoing review of systems, policies and procedures for risk management and procedure to adopt changes.

Each bank should develop a mechanism for assessing and reviewing its risk management policies, processes and procedures for individual risk elements, at a regular interval, based on the main findings of the monitoring reports and the results of analysis of developments arising from external market changes and other environmental factors. The results of such review should be properly documented and reported to the Board for

consideration and approval. Banks should carry out a self-assessment of its risk management framework for each rise element and assign appropriate rating as regards the quality of its systems and procedures.

2.1.11. Managing Credit Risk

Credit risk is the likelihood that a debtor or financial instrument issuer is unwilling or unable to pay interest or repay the principal according to the terms specified in a credit agreement resulting in economic loss to the bank. Credit risk also refers the risk of negative effects on the financial result and capital of the bank caused by borrower's default on its obligations to the bank.

Credit risk is the major risk that banks are exposed during the normal course of lending and credit underwriting. Credit risk arises from non-performance by a borrower. For most banks, loans are the largest and most obvious source of credit risk; however, credit risk could stem from activities both on and off balance sheet. It may arise from either an inability or an unwillingness to perform in the pre-committed contracted manner. In a bank's portfolio, losses arise from outright default due to inability or unwillingness of a customer or counter party to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively losses may result from reduction in portfolio value due to actual or perceived deterioration in credit quality.

Credit risk comes from a bank's dealing with individuals, corporate, banks and financial institutions or a sovereign. Credit risk does not necessarily occur in isolation. The same source that endangers credit risk for the bank may also expose it to other risk. For instance a bad portfolio may attract liquidity problem.

This section presents fundamental credit risk management policies and practices that are recommended for adoption by the banks. The guideline outlines general principles that are designed to govern the implementation of more detailed lending procedures and practices within the banks.

A typical Credit risk management framework in a bank may be broadly categorized into following main components;

- Board and senior Management's Oversight
- Organizational structure
- Systems and procedures for identification, acceptance, measurement
- Monitoring and control risks

2.1.12. Board's Management Oversight

Board Oversight

The Board of directors has a vital role in granting credit as well as managing the credit risk of the bank. It is the overall responsibility of a bank's Board to approve credit risk strategy and significant policies relating to credit risk and its management which should be based on the overall business strategy. Overall strategy as well as significant policies has to be reviewed by the board regularly.

Each bank, depending upon its size, should constitute a Credit Risk Management Committee (CRMC), ideally comprising of head of credit department and treasury. This committee should be empowered to oversee credit risk taking activities and overall credit risk management function. The CRMC should be mainly responsible for;

- The implementation of the credit risk policy/strategy approved by the Board.
- Monitor credit risk and ensure compliance with limits approved by the Board.
- Recommend to the board for its approval, clear policies on standards for presentation of credit proposals, financial covenants, rating standards and benchmarks.
- Recommend delegation of credit approving powers, prudential limits on large credit exposures, standards for loan collateral, portfolio management, loan review mechanism, risk concentrations, risk monitoring and evaluation, pricing of loans, provisioning, regulatory/ legal compliance.

2.1.13. Principles for the Assessment of Banks' Management of Credit Risk

A. Establishing an appropriate credit risk environment

Principle 1:

The board of directors should have responsibility for approving and periodically reviewing the credit risk strategy and significant credit risk policies of the bank. The strategy should reflect the bank's tolerance for risk and the level of profitability the bank expects to achieve for incurring various credit risks.

Principle 2:

Senior management should have responsibility for implementing the credit risk strategy approved by the board of directors and for developing policies and procedures for identifying, measuring, and monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities and at both the individual credit and portfolio levels.

Principle 3:

Banks should identify and manage credit risk inherent in all products and activities. Banks should ensure that the risks of products and activities new to them are subject to adequate procedures and controls before being introduced or undertaken, and approved in advance by the board of directors or its appropriate committee.

2.1.14. Credit Strategy, Policies, Procedures and Limits

Credit Strategy

The primary purpose of bank's credit strategy is to determine the risk appetite. Risk appetite, at the organizational level, is the amount of risk exposure, or potential adverse impact from an event, that the bank is willing to accept. Once it is determined, the bank shall develop a plan to optimize return while keeping credit risk within predetermined limits. The credit risk strategy thus should cover:

- The bank’s plan to grant credit based on various client segments and products,
- Economic sectors, geographical location, currency and maturity;
- Target market within each lending segment and level of diversification/ concentration;
- Pricing strategy.

Credit risk strategy should be developed on the basis of bank's target market and its internal strength. The strategy should provide continuity in approach and take into account cyclic aspect of country’s economy and the resulting shifts in composition and quality of overall credit portfolio. The credit procedures should aim to obtain a deep understanding of the bank’s clients, their credentials and their businesses in order to fully know their customers. These strategies should be reviewed periodically and amended, as deemed necessary; it should be viable in the long run.

Credit Policies

Every bank has to develop Credit Policies Guidelines (CPG) that clearly outline the bank's view of business development priorities and the terms and conditions that should be adhered to for loans to be approved. The CPG should be updated at a regular interval to reflect changes in the economic outlook and the evolution of the bank’s loan portfolio. To make it effective, policies should be communicated timely and should be implemented by all levels of the bank through appropriate procedures. It should be distributed to all lending authorities and credit officers.

Credit policies establish framework for making investment and lending decisions and reflect bank’s tolerance for credit risk. Any significant deviation to these policies must be communicated to the Senior Management/Board and corrective measures should be taken. At a minimum, credit policies should include:

The credit policy should spell out the process to ensure appropriate reporting and approval of credit extension beyond prescribed limits. The policy should also spell out approvals of disbursements of excess over limits, and other exceptions to credit policy. In order to be effective, credit policies must be communicated throughout the bank,

implemented through appropriate procedures, and periodically revised to take into account changing internal and external circumstances. (Source: NRB Directives 2010)

Credit Procedures

The credit procedures should aim to obtain a deep understanding of the bank's clients and their businesses in order to fully know their customers. Banks should develop procedures that adequately capture salient issues regarding the borrower's industry; macro-economic factors; the purpose of credit; source of repayment; track record and repayment history of the borrower; repayment capacity of the borrower; the proposed terms and conditions and covenants; adequacy and enforceability of collaterals; and appropriate authorization for the loan.

Credit Limits

An important element of credit risk management is to establish exposure limits covering on balance sheet and off-balance sheet credit exposures for single counter party and group of connected counter parties. The objective of setting credit limit is to prevent banks from relying excessively on a large borrower or group of borrowers. Banks are expected to develop their own stringent limit structure while remaining within the exposure limits set by the Nepal Rasta Bank. The size of the limits should be based on the credit strength of the counterparty, purpose of credit, economic conditions and the bank's risk appetite. Limits should also be set for respective products, activities, specific industry, economic sectors and/or geographic regions to avoid concentration risk. Credit limits should be reviewed regularly at least annually or more frequently if counter party's credit quality deteriorates. All requests of increase in credit limits should be substantiated.

2.1.15. Approving New Credits and Extension of Existing Credits

In case of new relationships consideration should be given to the integrity and reputation of the borrowers or counter party as well as its legal capacity to assume the liability. Prior to entering into any new credit relationship the banks must become familiar with the

borrower or counter party and be confident that they are dealing with individual or organization of sound reputation and credit worthiness. However, a bank must not grant credit simply on the basis of the fact that the borrower is perceived to be highly reputable i.e. name lending should be discouraged.

Operating under a sound credit granting process

Principle 4: Banks must operate under sound, well-defined credit-granting criteria. These criteria should include a thorough understanding of the borrower or counter party, as well as the purpose and structure of the credit, and its source of repayment.

Principle 5: Banks should establish overall credit limits at the level of individual borrowers and counter parties, and group of connected counter parties that aggregate different types of exposures, both in the banking and trading book and on and off balance sheet.

Principle 6: Banks should have a clearly established process in place for approving new credits as well as the extension of existing credits.

Principle 7: All extensions of credit must be made on an arm's-length basis. In particular, credits to related companies and individuals must be monitored with particular care and other appropriate steps taken to control or mitigate the risks of connected lending.

2.1.16. Credit Administration

Credit administration is a critical function in maintaining the safety and soundness of a bank. The credit administration function is basically a back office activity that supports and controls extension and maintenance of credit. A typical credit administration unit should perform the functions of credit documentation, disbursement and monitoring; loan repayment; and maintenance of credit files, collateral and security documents. Once a credit is granted, it is the responsibility of Credit Administration to ensure that the credit

is properly maintained. It is the responsibility of credit administration to ensure completeness of documentation (loan agreements, guarantees, transfer of title of collaterals etc) in accordance with approved terms and conditions. This includes keeping the credit file up to date, obtaining current financial information, sending out renewal notices and preparing various documents such as loan agreements. While developing credit administration areas, banks should ensure:

For the various components of credit administration to function appropriately, senior management must understand and demonstrate that it recognizes the importance of this element of monitoring and controlling credit risk.

2.1.17. Internal Credit Risk Rating System

Banks should develop an internal credit risk rating system for its loans and advances. The risk rating should categorize all credits into various classes on the basis of underlying credit quality. Risk rating is a key measurement of a bank's asset quality, and as such, it is essential that rating is a robust process. All facilities should be assigned a risk grade. In case of deterioration in risk is noted, the Risk Grade assigned to a borrower and its facilities should be immediately changed. NRB does not advocate any particular credit risk rating system; it should be bank's own choice. But the rating system should be consistent with the nature, size and complexity of a bank's activities and should have at least the following parameters:

- covers a broad range of the bank's credit exposure, including off-balance sheet exposures;
- covers both performing and non-performing assets;
- has several grades covering exposures, with the lowest rating accorded to those where losses are expected;
- has risk ratings for "performing" credits with several grades (including the grades like "watch list" or "special mention");

- has regulatory classifications (performing, substandard, doubtful & bad) should be incorporated within the risk rating systems; and
- has the credit risk rating system detailed in the credit policy and procedures developed for the determination and periodic review of the credit grades.

The rating system, which has been endorsed by the board, has to be submitted to Nepal Rastra Bank. For banks, which are yet to implement the rating system, a plan, endorsed by the board, must be submitted to Nepal Rasta Bank specifying the timeframe, persons responsible and steps taken for the implementation of a credit grading system.

2.1.18. Credit Risk Monitoring and Control

Credit risk monitoring refers to the continuous monitoring of individual credits inclusive of off-balance sheet exposures to obligors as well as overall credit portfolio of the bank. Banks need to develop and implement comprehensive procedures and information systems to monitor the condition of individual credits and single borrowers across the bank's various portfolios. Banks need to enunciate a system that enables them to monitor quality of the credit portfolio on day-to-day basis and take remedial measures as and when any deterioration occurs. These procedures need to define criteria for identifying and reporting potential problem credits and other transactions to ensure that they are subject to more frequent monitoring as well as possible corrective action, classification and/or provisioning. Establishing an efficient and effective credit monitoring system would help senior management to monitor the overall quality of the total credit portfolio and its trends. As a result the management could reassess its credit strategy /policy accordingly before encountering any major setback. The banks credit policy should explicitly provide procedural guideline relating to credit risk monitoring. At the minimum it should lay down procedure relating to:

- The roles and responsibilities of individuals responsible for credit risk monitoring
- The assessment procedures and analysis techniques (for individual loans & overall portfolio)
- The frequency of monitoring

- The periodic examination of collaterals and loan covenants
- The frequency of site visits
- The identification of deterioration in any loan

Such a system would enable a bank to ascertain whether loans are being serviced as per facility terms, the adequacy of provisions, the overall risk profile is within limits established by management and compliance of regulatory limits. An effective credit monitoring system includes, measures to:

- ensure that the bank understands the current financial condition of the borrower or counter party;
- ensure that all credits are in compliance with existing covenants;
- follow the use customers make of approved credit lines;
- ensure that projected cash flows on major credits meet debt servicing requirements;
- ensure that, where applicable, collateral provides adequate coverage relative to the obligor's current condition; and
- identify and classify potential problem credits on a timely basis.

Given below are some key indicators that depict the credit quality of a loan:

a. Financial Position and Business Conditions

The most important aspect about an obligor is its financial health, as it would determine its repayment capacity. Business/industry risk, borrower's position within the industry and external factors such as economic condition, government policies, and regulations should be taken into consideration. The key financial performance indicators on profitability, equity, leverage and liquidity should be analyzed on a regular basis.

b. Conduct of Accounts

In case of existing obligor the operation in the account would give a fair idea about the quality of credit facility. Banks should monitor the obligor's account activity, repayment history and instances of excesses over credit limits. For trade financing, banks should monitor cases of repeat in extensions of due dates for trust receipts and bills.

c. Loan Covenants

Bank should regularly review the credit in terms of the obligor's ability to adhere to financial covenants stated in the loan agreement, and any breach detected should be addressed promptly.

d. **Collateral valuation**

Banks need to reassess value of collaterals on periodic basis. The frequency of such valuation depends upon nature of collaterals. Appropriate inspection should be conducted to verify the existence and valuation of the collateral.

2.1.19. Credit Risk Review & Stress Testing

The bank must establish a mechanism of independent, ongoing assessment of credit risk management process. All facilities except those managed on a portfolio basis should be subjected to individual risk review at least once in a year. The results of such review should be properly documented and reported directly to the board. The purpose of such reviews is to assess the credit administration process, the accuracy of credit rating and overall quality of loan portfolio independent of relationship with the obligor. Banks should conduct credit review with updated information on the counter party's financial and business conditions, as well as conduct of account. An important element of sound credit risk management is analyzing what could potentially go wrong with individual credits and the overall credit portfolio if conditions/environment, in which borrowers operate, change significantly. The results of this analysis should then be factored into the assessment of the adequacy of provisioning and capital of the bank. Such stress analysis can reveal previously undetected areas of potential credit risk exposure that could arise in times of crisis. Possible scenarios that banks should consider in carrying out stress testing include:

- Significant economic or industry sector downturns;
- Adverse market-risk events; and
- Unfavorable liquidity conditions.

Banks should have industry profiles in respect of all industries where they have significant exposures. Such profiles must be reviewed /updated on a regular basis. Each stress test should be followed by a contingency plan as regards recommended corrective actions. Senior management must regularly review the results of stress tests and contingency plans. The results must serve as an important input into a review of credit risk management framework and setting limits and provisioning levels.

2.1.20. Managing Problem Credits

Bank should establish a system that helps identify problem loan ahead of time when there may be more options available for remedial measures. Banks should clearly set out how they will manage their problem credits. Once the loan is identified as problem, it should be managed under a dedicated remedial process. Responsibility for such credits may be assigned to the originating business function, a specialized workout section, or a combination of both, depending upon the size and nature of the credit and the reason for its problems. When a bank has significant credit-related problems, it is important to segregate the workout function from the credit origination function. The additional resources, expertise and more concentrated focus of a specialized workout section normally improve collection results. In such case, the Recovery Unit (RU), as a separate unit, shall manage accounts with sustained deterioration (a risk rating of sub Standard or worse).The RU's primary functions can be to:

i. Negotiation and follow-up

Proactive effort should be taken in dealing with counter parties to implement remedial plans, by maintaining frequent contact and internal records of follow-up actions. Often rigorous efforts made at an early stage prevent banks from litigations and loan losses.

ii. Remedial strategies

Sometimes appropriate remedial strategies such as restructuring of loan facility, enhancement in credit limits or reduction in interest rates help improve obligor's

repayment capacity. However it depends upon business condition, the nature of problems being faced and most importantly borrower's commitment and willingness to repay the loan. If timely action is not taken to address problem loans, opportunities to strengthen or collect on these poor-quality assets may be missed and losses may accumulate to a point where they threaten a bank's solvency. An assessment of workout procedures should consider the organization of this function, including departments and responsible staff, and assess what the performance of the workout units has been by reviewing attempted and successful recoveries (in terms of both number and volume) and the average time for recovery. The work out methods utilized and the involvement of senior management should also be evaluated.

iii. Collateral and security document

Banks have to ascertain the loan recoverable amount by updating the values of available collateral with formal valuation. Security documents should also be reviewed to ensure the completeness as well as enforceability of contracts and collateral/guarantee.

iv. Reporting and Reviewing

Problem credits should be subject to more frequent review and monitoring. The review should update the status and development of the loan accounts and progress of the remedial plans. Progress made on problem loan should be reported to the senior managemen

2.1.21. Management Information System (MIS)

Bank's quality of risk management is based on the accuracy, validity, reliability and timeliness of information available. Bank's credit risk measurement process is highly dependent on the quality of management information systems. The information thus generated enables the board and all levels of management to fulfill their respective oversight roles, including determining the adequate level of capital that the bank should be holding. Banks should have a management information system in place to ensure that exposures approaching risk limits are brought to the attention of senior management. All

exposures should be included in a risk limit measurement system. The information system should be able to aggregate credit exposures to individual borrowers and counter parties and report on exceptions to credit risk limits on a meaningful and timely basis.

2.1.22. Provision of NRB for Extending Advances & Investment in Productive, Priority and Deprived Sector

Productive Sector

Merchandise, processing, assembling, packaging etc.; export bill financing, advances for purchase of public transport like truck, bus, tempo etc. and agricultural/farm equipment; investments on shares and debentures of government/semi-government or private sector agricultural insurance, go down, banking or like companies etc.

As per NRB regulation, commercial banks are required to extend 40% of the total advances to productive sector, which also includes 12% to priority sector including deprived sector.

Priority Sector Credit Program

"Priority sector" is defined to include micro and small enterprises which help increase production, employment and income as prioritized under the national development plans with an objective to uplift the living standard of general public particularly the deprived and low income people by progressively reducing the prevalent unemployment, poverty, economic inequality and backwardness. Micro and small enterprises are classified into agricultural enterprises, cottage and small industries and services. In addition, other businesses as specified by NRB from time to time are also included under Micro and small enterprises. All credits extended to priority sector up to the limit specified by NRB are termed as "Priority Sector Credit."

NRB has provided the requisite proportion of Priority Sector lending as follows:

Table No.1.2: **NRB Requirement of Priority Sector Investment**

Fiscal Year	Minimum percent of Total Credit to be invested in Priority Sector
2006/07	7%
2007/08	6%
2008/09	4%
2009/10	2%
2010/11	2%

(Source: NRB Directives 2010)

Deprived Sector Lending

"Deprived Sector" includes low income and particularly socially backward women, tribes, lower caste, blind, hearing impaired and physically handicapped persons and squatters (sukumbasi) family. All credits extended for the operation of self-employment oriented micro-enterprises for the upliftment of economic and social status of deprived sector up to the limit specified by NRB is termed as "Deprived Sector Credit". "Deprived Sector Credit" is considered as integral part of priority sector credit and this credit comprise micro-credit programs and projects also. The businesses under the Priority Sector Credit Program have been classified under the following four major heads:

- Agriculture and Agro-bases business
- Cottage and small industries
- Services
- Other business

2.1.23. Regulation relating to Loan Classification and Loan Loss Provisioning

With an objective to minimize the possible loss of credits extended by commercial banks as provided under section 23(1) of Nepal Rasta Bank Act 2012 (with amendment) relating to development and regulation and banking system . This directive in respect of loan classification & provisioning has been issued in exercised of authority under section 56 of bank and financial institutions act 2063.

Classification of Outstanding Loan and Advances on the Basis of Aging

PASS

Loans and Advances whose principal amount are not past due for a period up to three months shall be included in this category. These are classified and defined as **performing Loans.**

Substandard

All loans and advances that are past due for a period of 3 month to 6 month shall be included in this category.

Doubtful

All loans and advance which are past due for a period of 6 month to one year shall be included in this category.

Loss

All loans and advances which are past due for a period of more than one year as well as advances which have least possibility of recovery or considered unrecoverable and those having thin possibility of even partial recovery in future shall be included in this category.

Loans and advances failing in the category of sub-standard doubtful and loss are classified and defined as **Non-Performing Loan**.

Note:

- If it is appropriate in the views of the bank management there is not restriction in classifying the loan and advances from low risk category. For instance, loan falling under sub-standard may be classified into doubtful or loss and loans falling under doubtful may be classified into loss category.
- The term loan and advances also includes bills purchased and discounted.

2.1.24. Loan Loss Provisioning

The Loan loss provisioning, on the basis of the outstanding loans & advances and purchase classified as per this Directives, shall be provided as follows:

Classification of Loan Loan Loss Provision	
Pass	1 percent
Substandard	25 percent
Doubtful	50 percent
Loss	100 percent

Note: Loss loan provision set aside for performing loan is defined as "general loan loss provision" and loan loss provision set aside for Non-performing loan is defined as "Specific Loan Loss Provision".

2.2. Review From Related Studies

2.2.1. Review from major literature

The various studies have been conducted in the field of credit risk management. They are reviewed in the following sections.

a. Meir Kohn's Study

"The gain to borrower is obvious, if these investments are sufficiently productive, and will be happy to pay interest on the loan to pay back in the future more purchasing power than you received. Lending is to gain from trade. The interest you pay gives lender a better return than they could achieve otherwise, what are their alternatives? They could make productive investment themselves. But finding productive investment is difficult .Some people are much better at it than others. Typically savers do better by lending their money to that highly productive use for it than by making investment themselves."(Meir, 1996:49)

The committee examined the existing system of lending and recommended the following broad changes in the credit system:

- The credit needs of borrowers are assessed on the basis of their business plans.
- Bank credit only is supplementary to the borrower's resources and not is replacement of them, i.e. banks not to finance one hundred percentage of borrower's requirement.
- Borrowers are required to hold inventory and receives according to norms prescribed by reserve bank of India from time to time.
- Credit be made available in different components only, depending upon the nature of holding of various current assets.

In order to facilitate a close watch on the operations of borrowers, banks are required to submit at regular intervals, the data regarding their business and financial operations both for past and future period.

b. H.D Crosse's Study

"Lending is the essences of commercial banking, consequently the formulation and implementation of sound policies are among the most important responsibilities of bank directors and management. Well-conceived lending policies and careful lending practices are essential if a bank is to perform its credit creating function effectively and minimize the risk inherent in any extension of credit." (Crosse, 1993:60)

Credit creating function or lending is very important for all commercial banks. But doing credit function without applying policies and practices is not enough to lead the success. To manage the different kind of credit function, maximize return and minimize credit risk, every bank should be conscious about formulation and implementation of credit policies and practices.

c. Peter S. Rose's Study

Peter S. Rose has emphasized on the factors affecting default risk and interest rates. Researcher opines that "Another important factor causing one interest rate to differ from

another in the global market place is the degree of default risk carried by individual assets. Investors in financial assets face many different kinds of risk, but one of the most important is default risk the risk that a borrower will but make all promised payments at the agreed upon times. All debts except some government securities, subject to varying degrees of default risk." (Rose, 2003:206) Default risk is one kind of investment risk, which is created from nonpayment of interest and principal by the security issuer at the fixed future date. A bank management should have awareness about such risk. Approving authority should consider that the loan will be repaid together with interest, for this loan approval process should conduct in better way.

2.2.2. Review of Major Nepali Studies

Shrestha (1998) carried out a study on "Lending operations of commercial banks in Nepal and its impact on GDP". The study aimed at an analyzing of contribution of commercial banks' lending in the Gross Domestic Product (GDP) of Nepal. The study has set a hypothesis that there has been a positive impact of lending of commercial banks to the GDP. In research methodology, it considered GDP as the dependent variable and various sectors of lending viz. agriculture, industrial, commercial, service, general and social sectors as independent variables. A multiple regression technique was applied to analyze the contribution.

The multiple analyses have shown that all the variables except service sector lending have positive impact on GDP. Thus in conclusion, Shrestha has accepted the hypothesis, that. There has been positive impact on GDP by the lending of commercial banks in various sectors of economy, except service sector investment."

Gautam (2000) has submitted thesis entitled to, "Investment Analysis of Finance Company of Nepal". Researcher's major objectives relevant to in this research are to analyze the interest rate structure of credit and analyze the repayment of the credits. Researcher's finding is that the use of funds towards the hire purchase credit is decreasing rapidly. As the direct data of good and bad credit was not available, the credit

loss provision was used to analyze the credit quality. Credit loss is increasing every year significantly and should be controlled. The loss provision of some company is more alarming on individual analysis. The company having above average credit loss provision should rethink on their investment and repayment policy

Chand (1998) has submitted his thesis entitled "Credit Disbursement and Repayment of Agriculture Development Bank Nepal". His research's statement of problem was the bank does not benefit small farmers (i.e. problem of balance development). The collection of credit is slow, so it hinders the flow of capital required for the development of economic growth. Objectives of the study were to see the repayment situation, to find out the growth rate of investment, to explain the possible causes of none and delay repayment. He finds that there is systematic relationship between credit disbursement and repayment. The coefficient of correlation value as calculated was 0.94 which shows significant relationship. Repayment situation is satisfactory on production and agro-based industry, warehouse and farm mechanization, irrigation, tea horticulture, livestock, poultry and fisheries is satisfactory. As a recommendation given by Chand, ADB/N should play a significant role in such direction as to fulfill the credit demands of rural areas. For effective credit recovery from the borrowers or clients, credit should be channeled through the borrower groups

Joshi (1999) has studied on "Lending policy of Commercial Banks in Nepal". The main objectives of this study was to examine the role of commercial bank in its functions as well as performance, to show the relationship between deposit and loan advance, to identify major weakness of lending policy of the commercial banks and to suggest lending policy to process the utilization of the resources. He recommended that Nepal Rastra Bank have significant role in the overall economic policy of the country. NRB must take the initiatives to ensure the safe lending policy and role to solve various problems which have been arising in the banking development.

Pant (2001) "A study of Deposit and its utilization by Commercial Bank in Nepal." The main objective of the study was to test whether lending process is significant and to find

out the way to encourage lending by increasing bank deposit. The findings of the study were:

- Commercial Banks in Nepal are not able to satisfy the financial need of the economy.
- Commercial Banks in Nepal are not playing an active role to utilize their resources collected from different sector according to the need of the economy.

He has recommended that the new branches should be open.

In all, researchers recommended banks to mobilize excess idle cash and bank balance in some profitable and productive sector. Researchers also emphasized on investing more on shares and debentures as it encourages financial and economic development of the country. Researchers have suggested the bank to make continuous efforts to explore new, competitive high yielding investment opportunity to optimize their investment portfolio. Researchers have also recommended bank to adopt innovative approach to marketing. In the light of growing competition in the banking sectors, the business of bank should be customer oriented. The bank should develop an innovative approach to bank marketing and formulate new strategies of serving customers in a more convenient and satisfactory way by optimally utilizing the modern technology and offering new facilities to the customers at competitive price. Thus, the previous studies can't be ignored because they provide the foundation to the present study. In other words, there has to be continuity in research. This continuity in research is ensured by linking the present study with the past research studies.

In Nepalese context, here are some independent studies which are presented in the following ways:

- Review of relevant studies from report and articles
- Review from unpublished thesis

In the first section, effort has been made to examine and review some related articles and reports published in different journals, magazines, newspaper and books while in second section, unpublished thesis work conducted by various students have been presented.

"Deposit is the life blood of any financial institution i.e. commercial banks, financial companies and co-operative or non-government organization." (Pradhan, 2053:24)**.** In consideration of ten commercial banks, nearly three dozens of finance companies, the latest figure produce a strong feeling that a serious review must be made on problems and prospects of deposit sector .Beside few joint venture banks, other organizations rely heavily on the business deposits receiving and credit disbursement.

In the light of this, Pradhan (2053) has pointed out following problems of deposits mobilization in Nepalese perspective.

- Due to lack of education, most of Nepalese people do not go for saving in institutional manner, however they have saving as from cash and ornament. Their reluctance to deal with institutions system are governed by their lower level of understanding about financial organization, process requirement, office hour withdrawals system, availability of depositing facilities and so on.
- Due to the lesser office hour of banking system people prefer for holding the cash in the personal possession.
- Unavailability of the institutional services in the rural area.
- No more mobilization and improvement of the employment of deposits in the loan sectors.

Lastly, Pradhan mentioned deposit mobilization is carried out effectively in the interest of depositors, society, financial sector and the nation. Lower level of deposit rising allows squeezed level of loan delivery leaving more room to informal sectors. That is why higher priority to deposit mobilization has all the relevance.

In an article, Mahesh Bhattarai (2065) was trying to indicate the problems of bank bad debt and non-performing assets. According to him, "If a bank cannot recover its loan lending, banks cash flow will be badly affected. Similarly it can affect the close relationship between depositors." (Bhattarai, 2065:62)

"Why does loan become defaulter"? This study finds out the causes that makes loan default. "When the due date is over the loans become default. But why do the due dates be over?

"Generally increase in interest rates; decrease in economic activities cause decrease in the capacity of debtor and sometimes the debtor knowingly do not pay back the loan. Other than these reasons in the context of Nepal lack of credit policy, lack of information about the loan holder (three c's: capacity, character, and capital), unhealthy competition and small market area, causes loan defaults. Default loan increases the resources mobilization cost and reduces the profit earning capacity of a bank. Therefore increases in default loans are the indicator of problematic situations to the bank." (Neupane, 2062:87)

In an article, "Challenges of non-performing loan management in Nepal", Uma Karki (2053) has mentioned the causes of increasing trend of non-performing loan. She identifies "the major causes such as poor loan analysis, guarantee oriented loan system, depreciation of valued assets, misuse of loan, lack of regular supervision of loan." **(**Karki, 2053:87)

In Nepalese context, when interest rate is increased it causes the decrease in economic activities as well as capacity of borrower. Sometimes debtors knowingly do not pay back the loan, and invest the loan in unproductive sector. Such kind of activities occurs continuously, if there is lack of sound credit policy, improper credit analysis, lack of information about loan holders and lack of regular supervision. So banks should formulate and implement sound credit policy. Loan approval and disbursement process

should be conducted in better way. Proper credit analysis and regular supervision can control the credit risk.

"The bank gives loan to various sectors. This is necessary for long term survival of the bank. Even if any sector is doing very well, the bank does not put its total money in that sector. If the bank concentrates its lending only in one sector, failure of the sector may cause bankruptcy of the bank."**(**Dahal, 2002:116)

Loan mix is components of established credit policy. It is a kind of strategy in credit management for banks to be success. In context of Nepal, here are different sectors in economy such as priority sector, deprived sector, productive sector, government sector etc. So, there should be diversification in investment of every commercial bank. Making investment or lending to various sectors is necessary for the long term survival of banks.

2.3. Concluding remarks

This chapter provides a conceptual framework of extent literature on the practices and processes that could be implemented to ensure that a commercial bank credit risk management process is more financially sound. In addition to this, the theory suggests that commercial banks must obtain comprehensive technology and skills in order to appreciate the risks that they are managing. However it further emphasizes that several barriers may impact the capacity of commercial banks to do so. Overall, the literature provides the foundation on what credit risk management processes are used by commercial bank in order for them to sustain their business performance. This will now be investigated with empirical researcher.

In the context of Nepal several researches have been conducted in the financial area. There is no latest advanced research regarding in the subject of credit risk management. Above the theoretical and conceptual framework of literature review it can be says that credit risk management is emerging issues in the overall financial institutions. Every bank and financial organization should depth assessment of current and future credit risk management procedure. In order to be effective, credit policies must be communicated

throughout the bank, implemented through appropriate procedures, and periodically revised to take into account changing internal and external circumstances.

(Source: NRB directives 2010)

Henie (2003) stated that despite innovations in the financial services sector over the years, credit risk is still the major single cause of bank failures, for the reason that "more than 80 percent of a bank's balance sheet generally relates to this aspect of risk management". Moreover, establishing an appropriate credit environment also indicates the establishment of a good credit culture inside the bank, which is the implicit understanding among personnel about the lending environment and behavior that are acceptable to the bank (Strischek 2002).

CHAPTER-THREE

RESEARCH METHODOLOGY

Research simply means to search again and again. It is a systematic activity to achieve truth or finding solution to a problem. It is a process of a systematic and in-depth study or research of any particular topic, subject or area of investigation backed by the collection, compilation, presentation and interpretation of relevant details or data. Methodology is the research method used to test the hypothesis. So the research methodology refers to the overall research process, which a researcher conducts during study. “Research is an organized, systematic, data-based, critical scientific enquiry or investigation into a specific problem, undertaken with the objective of finding answers or solutions to it” (Sekaran 2000). The word “research “can thus be legitimately applied to vary many contexts, and can be used to refer to both a specialized of knowledge and a much more general, everyday problem solving situation.

The main purpose of this chapter is to depict and justify the methods by which data and information were assembled for this research. From the theories of relevant literature, the research problem is identified and the research question and objectives are formulated. Subsequently, a description of the research design is presented which includes the methodology chosen and the rationale for selecting this specific method of data collection and analysis.

The basic framework of this study is descriptive as well as exploratory. In order to reach and accomplish the objectives of this study, different activities are carried out and different stages are crossed during the study period. For this purpose, the chapter aims to present and reflect the methods and techniques those are carried out and followed during the study period.

3.1. Research Design

Research Design is the plan; structure and strategy of investigation conceived so as to obtain answers to research questions and to control variances. Ryman and Bell (2003) argued that research design offers a framework for the collection and analysis of data. However, Wailes (1999) warned that selecting the appropriate methodology can be relatively challenging. There are many methods of research design and this study will be based on recent historical data. Mostly, secondary data and information are to be collected, evaluated, verified and synthesized to reach conclusion. To achieve the objective of this study, different journals and articles relevant with the study, annual reports of different fiscal years of concerned banks, NRB Directives, banking and financial statistics report published by NRB and other related materials are collected and studied. With the help of descriptor and research design, the study evaluates the Credit Risk Management of Commercials Banks.

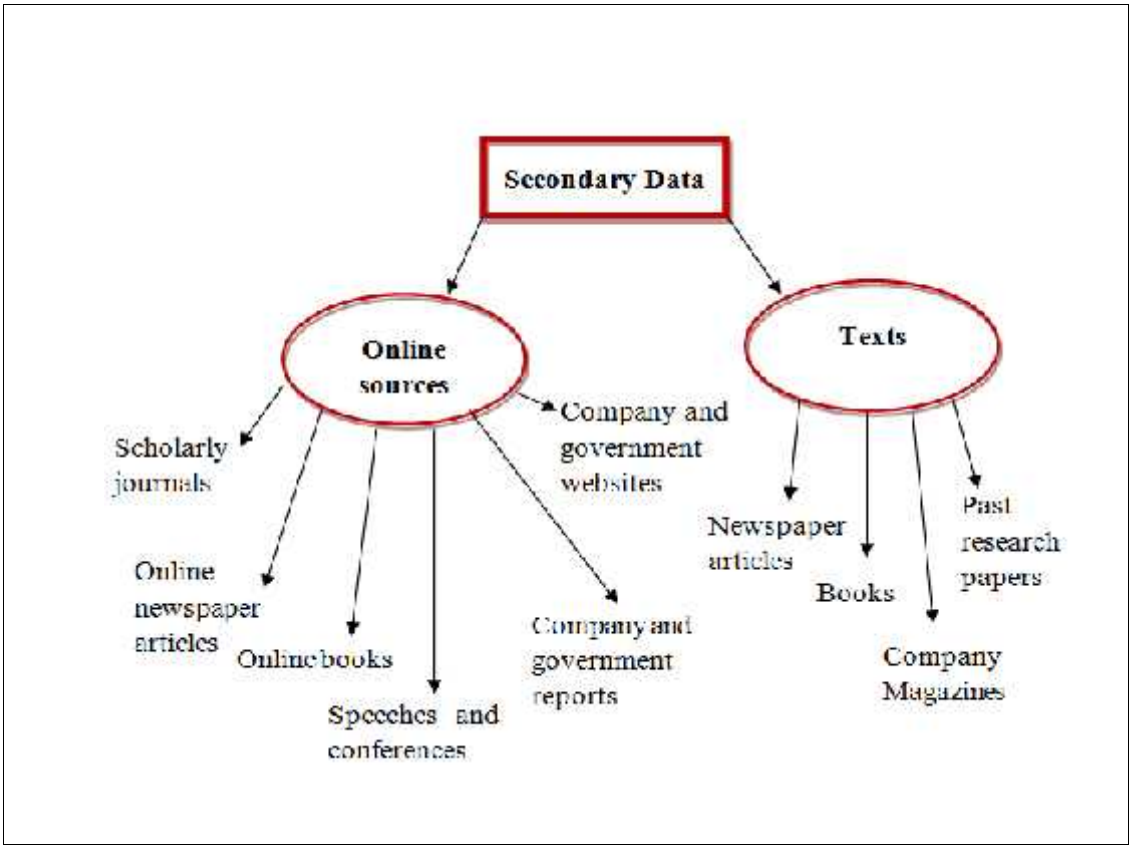
3.2. Sources of Data

This study is mainly based on **secondary data**. Secondary data are collected from respective annual report especially from profit and loss account, balance sheet and other publications made by the banks.

The various sources for data collection are listed below:

- Financial documents provided by the companies under study.
- Trading report published by Nepal Stock Exchange Limited.
- Related websites.
- Materials published in papers, magazines, journals, bank bulletins, previous research report etc.
- Other related books and booklets.

Figure 1.4: Sources of Secondary data



3.3. Population and Sample

The population in most studies usually consists of large groups. Because of its large size, it is fairly difficult to collect detailed information from each member of population. Rather than collecting information from each member, a sub-group is chosen which is believed to be representative of population. This sub group is called as sample. The total commercial banks shall constitute the population of the data. Among the various commercial banks in the banking industry-RBB and NIC Asia Bank are taken as sample for the study.

3.4. Method of Data Analysis and Presentation

Data itself give no meaning. They should be analyzed and interpreted by using different tools and techniques. These tools and techniques may either be statistical or may be other. Various financial ratios and statistical tools are used to draw conclusion of the study. Besides, some charts and tables have been presented to analyze and interpret the finding of the study.

3.4.1. Financial Tools

Financial tools basically help to analyze the financial strength and weakness of a firm. Ratio analysis is a part of the whole process of analysis of financial statements of any business or industrial concerns especially to take output and credit decisions. Ratio analysis is used to compare firm's financial performance and status with that of other firms. Though there are many ratios to analyze and interpret the financial statement, following ratios are calculated and analyzed under this study.

3.4.1.1. Credit /Loan related ratios

a) Loan and advances to total assets ratio

Loan and advances is an important part of total assets (total working fund). Total working fund play important role in profit earning through fund mobilization. So bank should carefully mobilize the total assets. The ratio of loan and advances to total assets measures the volume of loan and advances in the structure of total assets. A high ratio indicates better mobilization of funds as loan and advances and vice-versa.

$$\text{Loan and advances to total assets } X \frac{\text{Loan and advances}}{\text{Total assets}}$$

b) Total investment to total deposit ratio

Commercial banks can mobilize its deposit by investing its fund in different securities issued by government and other financial and non-financial companies. Efforts have been made to measure the extent to which the banks are successful in mobilizing the total deposit on investment. A high ratio is the indicator of high success to mobilize the banking fund as investment and vice-versa.

$$\text{Total investment to total deposit ratio X} \frac{\text{Total investment}}{\text{Total deposit}}$$

c) Loan and advances to total deposit ratio

This ratio is calculated to find out how successfully the banks are utilizing their deposit on loan and advances for profit generating activities. Greater ratio indicates the better utilization of total deposits.

$$\text{Loan and advances to total deposit ratio X} \frac{\text{Loan and advances}}{\text{Total deposit}}$$

d) Investment to loan and advances ratio

This ratio measures the contribution made by investment in total amount of loan and advances and investment. The proportion between investment and loan measures the management attitude towards risky assets and safety assets. Investment and loan and advances in whole do not provide the quality of assets that a bank has created. The ratio indicates the mobilization of funds in safe area and vice-versa.

$$\text{Investment to loan and advances and investment ratio X} \frac{\text{Investment}}{\text{Loan and advances and investment}}$$

e) Liquid Fund to Loan and Advances Ratio

This ratio is calculated by dividing loan and advances to liquid ratio. The liquid fund includes-cash balance, money at call, etc whereas Loan and advances includes short term loan and advances, overdraft, cash credit etc.

$$\text{Liquid fund to Loan and advances ratio} = \frac{\text{Loan and advances}}{\text{Liquid assets}}$$

3.4.1.2. Credit Efficiency Ratio

It measures the performance efficiency of an organization from various angles of its operations. This ratio indicates the efficiency of activity of an enterprise to utilize available funds, particularly short term funds. This ratio is used to determine the efficiency, quality, and the contribution of loan and advances in the total profitability. The efficiency of a firm depends upon large extent on the efficiency at which its assets are managed and utilized. This ratio also shows the utilization of available fund. The following ratio measures the performance efficiency of the bank to utilize funds.

a) Loan Loss Provision to total loans and advances ratio

NRB has directed the commercial banks to classify its loan and advances into the category of pass, substandard, doubtful, and loss. NRB has classified the pass and substandard loan as performing loan and other two types of loan as non-performing loans. The provision created against the pass and substandard loan is called the general loan loss provision and provision created against the doubtful and loss loan is called specific loan loss provision. The provision of loan loss reflects the increasing probability of non-performing loan. The provision of loan means the net profit of the banks will come down by such amount. Increase in loan loss provision decreases profit that result to the decrease in dividends but its positive impact is that it strengthens the financial conditions of the banks by controlling the credit risk and reduces the risks related to deposits. Loan loss provision to total loan and advances ratio is calculated by dividing loan loss provision by total loan and advances. The low ratio indicates the good quality of assets in total volume

of loan and advances. High ratio indicates more risky assets in total volume of loan advances.

$$\text{Loan loss provision to total loan and advances X} \frac{\text{Loan loss provision}}{\text{Total loan and advances}}$$

b) Non-Performing loan to total loan and advances ratio

Non-performing loans to total loan and advances ratio shows the percentage of non-recovery loan in total loan and advances. This ratio is calculated as dividing non-performing loan by total loan and advances.

$$\text{Non - performing loan to total loan and advances X} \frac{\text{Non - performing loan}}{\text{Total loan and advances}}$$

3.4.1.3. Loan and Advance Portfolio

a) Sector wise credit to total credit ratio

Sector wise credit to total credit ratio can be calculated by dividing sector wise credit by total credit of selected commercial banks. Mainly following heading are found in the sector wise credit-Agriculture, Mining, Productions, Construction, Metal Productions, Machinery and Electrical, Tools and Fittings, Transportation, Equipment Production and Fitting, Communications and Public Service, Wholesalers and Retailers, Finance, Insurance and Fixed Assets, Service Industries, Consumable Loan, Local Government, Others.

$$\text{Sector wise credit to total credit ratio} = \frac{\text{Sector wise credit}}{\text{Total credit}}$$

3.4.1.4. Profitability Ratio

a) Operating Profit to loan and advances ratio

Operating profit to loan and advances ratio measures the earning capacity of commercial banks. This ratio is calculated dividing operating profit by loan and advances.

$$\text{Operating profit to loan and advances ratio X} \frac{\text{Operating profit}}{\text{Loan and advances}}$$

b) Net profit to Loan and Advances ratio

This ratio measures the earning capacity of commercial banks through its fund mobilization as loan and advances. Higher ratio indicates greater success to mobilize fund as loan and advances and vice-versa. Mostly loan and advances includes loan cash credit, overdraft, bill purchased and discounted.

$$\text{Return on loan and advances X} \frac{\text{Net profit}}{\text{Loan and advances}}$$

c) Interest Income to Total Loan and Advances Ratio

Interest income is the major source of bank revenue. Interest incomes are the functions of mobilized loan and advances which are mobilized under the different headings of credit. Higher interest income shows higher revenue for the bank.

d) Interest Expenses to Deposit ratio

Interest expenses are the functions of deposit products under the various headings, which is corporate, individuals, saving, fixed deposit, call etc. Bank pays interest on the deposit fund; it is the cost or expenses of the bank which is a major part of the total expenses of

the bank. But the cost of deposit and interest income of a loan is determined by market movement. So, bank does not have strong control over interest expenses.

e) Spread rate Analysis

Gap between interest income and interest expenses is known as spread rate. Generally, banks are trying to maintain high spread either collecting lower costing deposit or lending high interest earning credits. In aggregate widening spread is the indicator of banks profitability and vice versa.

f) Loan to public Enterprise ratio

Commercial banks grant various types of loan to different corporation. These corporations include industrial, trading, financial, service and other government corporations. This ratio is calculated as dividing corporation wise loan by total loan.

$$\text{Loan to public Enterprise ratio} = \frac{\text{Corporation wise loan}}{\text{Total loan}}$$

3.1.4.2. Statistical Tools

For supporting the study, statistical tools such as Risk index, Mean, Standard Deviation, Coefficient of Variation, and Regression analysis are used.

a. Risk Index

Basically credit risk management is reviewed by two approaches. First approach is micro approach which is generally carried out by bank employee, internal auditor who can collect all and every related information to credit management. Another is macro approach which is faster but less accurate way of estimating risk and loss exposure of banks.

Risk index is based on macro approach to review and appraised the credit management process. It measures the bank risk exposure related to credit based on the financial information. This index is widely used and practiced in the banks for review and appraisal. It was first propounded by Hannen Hanwack in 1998. It has been applied by Liang and Savage in 1990, Sinkey and Nash in 1993. Risk index can be computed by using following formulae.

$$\textbf{Risk Index.} = \frac{[E(ROA) + CAP]}{S.D.(ROA)}$$

where,

E (ROA) = expected return on assets.

C.A.P. = inverse of equity multiplier.

S.D. (ROA) = standard deviation of R.O.A.

Lower risk index implies riskier bank whereas higher implies safer banks. The resultant figure as per group average, or above or below the average shows the strength and the weakness of the banks' credit and administrative policies and practices.

b. Arithmetic Mean

Averages are measures that condense a huge mass of data into single value representing whole data. Average is statistical constant which enable us to comprehend in a single effort the significance of the whole. It is calculated as,

$$\overline{X} = \frac{\phi x}{N}$$

where,

$\overline{X}$ = Mean value or Arithmetic mean

ϕx = Sum of the Observation

N = Number of Observations

c. Standard Deviation

The standard deviation is the square root of mean squared deviations from the arithmetic mean and is denoted by standard deviation .It is calculated as

$$\exists = \sqrt{\frac{\phi x^2}{N} - \frac{\phi x}{N}^2}$$

Where ,

$\exists|$= Standard Deviation

$\frac{\phi x^2}{N}$ = Sum of Squares of Observation

$\frac{\phi x}{N}^2$ = Sum of Square of mean

|

d. Coefficient of Variation

The Coefficient of Variation (C.V) is the relative measure based on standard deviation and is defined as the ratio of standard deviation to mean expressed in percent. It is calculated as

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

where,

C. V. = Coefficient of Variation, $\exists||$= Standard Deviation, $\overline{X}$ = Mean

It is independent of units. Hence, it is suitable measure for comparing variability of two series with same or different units. A series with smaller coefficient of variation is said to be less variable or more consistent or more homogenous or more uniform or more stable than others and vice-versa.

3.4.3. Coefficient of Correlation

Correlation can be defined as a degree of linear relationship existing between two or more variables. Correlation is of three types. They are simple, partial and multiple correlations. Correlation may be positive, negative and zero. Correlation can be classified as linear and nonlinear.

Coefficient of correlation is an important measure to describe how one variable explains another. It is the simplest of ascertaining the correlation between two variables. It is not influenced by the size of the extreme items. Karl Pearson coefficient of correlation is usually denoted by '**r**'.

$$\mathbf{r} = \frac{n \sum XY - (X)(Y)}{\sqrt{[\{n \sum X^2 - (\sum X)^2\} \{n \sum Y^2 - (\sum Y)^2\}]}}$$

where,

n = no. of observation of X and Y.

$\sum XY$ = sum of the product of the observations in series X and Y.

$\sum X$ = sum of the observations in series X.

$\sum Y$ = sum of the observations in series Y.

$\sum X^2$ = sum of the square of the observations in series X.

$\sum Y^2$ = sum of the square of the observations in series Y.

3.4.4. Probable Error

Probable error of the correlation coefficient denoted by P.E. is the measure of testing the reliability of the calculated value of correlation coefficient. With the help of P.E, it is possible to determine the reliability of the value of coefficient. Decision rules for

significant tests are; if **r < P.E**, it is insignificant. So, perhaps there is the evidence of correlation. If **r > P.E** it is significant. If '**r**' does not satisfy either of the above two conditions, the relation is inconclusive.

$$\textbf{P.E.} = \frac{[0.6745(1-r^2)]}{\sqrt{n}}$$

3.4.5. Regression Analysis

Regression analysis is used as a tool of determining the strength of relationship between two variables. Thus, it is a statistical value of one variable when the value of other variable is known. The unknown variable which has to be predicted is called dependent variable and the known variable is independent variable. (Shrestha and Silwal, 2057, 249-250) The general form of simple regression line is **Y = a + bx.**

where,

Y- Dependent variable

X- Independent variable,

a - Intercept of y on x

b - Slope of the regression line.

In this study, simple regression analysis has been used to study the influences of P.L.L. to R.O.A. as well as R.O.E. Therefore, P.L.L. is the dependent variable while R.O.A. and R.O.E. are concerned as independent variables.

CHAPTER-FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with the presentation and analysis of relevant data of the selected commercial banks of Nepal in order to fulfill the objectives of the study. To obtain best result, the data have been analyzed according to the research methodology as mentioned in third chapter.

The purpose of this chapter is to introduce to the mechanics of data analysis and interpretation. Data analysis is the relationship or differences supporting or conflicting the original hypothesis or new hypothesis should be subjected to statistical test of significance to determine with what validity data can be served to indicate any conclusion. Credit risk management is one of the most important factors that have been developed to facilitate effective performance of bank management. Credit risk management is the formal expression of the commercial banks goals and objectives stated in financial term for specific future period of time. Credit is the very basic indicator for determining profit.

The main purpose of the study is to assess the credit risk management in selected commercial banks. Present chapter will discuss the various aspects of credit risk management and their actual accomplishment. Actually, credit risk management is a fundamental managerial tool which is applied in commercial banks. For this respect, it will analyze the data by using various financial and statistical tools to meet the stated objectives of the study. It also compares the data between selected banks. Besides, it also presents the various finding generated from data analysis.

4.1. Credit Practices in Rastriya Banijya Bank and NIC Asia Bank

Credit practices show the lending policies and practices adopted by the selected commercial banks during the study period. It measures the ability of the organization in terms of credit practices by using historical data.

4.1.1. Total loans to deposit ratio

The prime source of bank's lending depends on its deposit. This ratio is calculated to find out how successfully the banks are utilizing their deposits on loan and advances for profit generating activities, greater ratio indicates the better utilization of total deposits. The ratios are presented in the table 4.1.

Table 4.1: Total loans to deposit ratio

Bank/ F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.479	0.476	0.543	0.501	0.553	0.510	0.0358	7.019
NIC Asia	0.916	0.876	0.893	0.809	0.824	0.863	0.0456	5.277

(Source: Annual reports of the companies)

Table 4.1 shows that the ratio of credit to deposit ratio of RBB is 0.479, 0.476, 0.543, 0.501 & 0.553 respectively. Similarly the ratio of NIC Asia is 0.916, 0.876, 0.893 0.809 & 0.824. In overall comparison, RBB has the highest ratio in F/Y 2008/09 i.e. 0.543 and NIC Asia has observed the lowest ratio in F/Y 2009/10 with 0.809.

From average point of view, NIC Asia has maintained higher loan & advances to total deposit. In this way, it shows that NIC Asia seems to be strong to mobilize its total deposit as loan & advances. The standard deviation and coefficient of variance of RBB and NIC Asia is 0.0358&7.019 and 0.0456&5.277. It shows that there is no higher variation in loan and deposit ratio every year. However higher ratio does not indicate it is always better from the point of liquidity. Both banks are capable of using more than 50%

of deposit on loan and advances. Comparatively RBB has very lower ability to mobilize its deposits. If maintained this, it does not help to make consistency on the profitability of the banks.

4.1.2. Interest income to loans & advances ratio

Interest income to loan & advances is one of the major sources of income for a commercial bank. The high volume of interest income is indicator of good performance of lending activities. This is shown in table 4.2.

Table 4.2: Interest income to loan & advances ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.129	0.131	0.133	0.154	0.146	0.138	0.0109	7.86
NIC Asia	0.125	0.0781	0.0831	0.0846	0.106	0.095	0.0197	20.73

(Source: Annual reports of the companies)

Table 4.2 shows the ratio of interest income to loan and advances of the selected banks over the study period. Interest income to loan and advances ratio of RBB ranges from the highest of 0.154 to the lowest of 0.129 in the fiscal year 2009/10 and 2006/07 respectively. The mean ratio is 0.138, first two years are below the average and the ratio of fiscal year 2009/10 and 2010/11 are above the average. The average interest income to loan and the advances of the RBB is 0.138. Ratio of NIC Asia does not show clear direction. Highest ratio is in the fiscal year 2006/07 0.125 and lowest in the F.Y 2007/08 is 0.0781. The average interest income to loan and advances ratio of RBB is better than that of NIC Asia. Standard deviation and coefficient of variation of RBB and NIC Asia is 0.0109 & 7.86 and 0.0197 & 20.73. Table shows that there is no higher variation on interest income to loan and advances of both bank but the NIC Asia has higher C.V. so NIC Asia has lower consistency in interest income to total loan and advances in the study period.

4.1.3. Non-Performing Loans to Total Loan and Advances Ratio

NRB has directed all the commercial banks to create loan loss provision against the doubtful and bad debts. To measure the volume of non-performing loan to total loan & advances, the main indicator of RBB and NIC Asia has been used. This ratio shows the percentage on non-recovery loans in total loan & advances, which is shown in table 4.3.

Table 4.3: Non-performing loan to total loan and advances (in %)

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.214	0.156	0.0981	0.0935	0.0544	0.123	0.062	50.73
NIC Asia	0.0111	0.0086	0.0093	0.0072	0.0060	0.0084	0.001	22.62

(Source: Annual reports of the companies)

Table 4.3 presents the non-performing loan to total loan and advance over the study period. Highest ratio of RBB is 0.214 and lowest is 0.0544, it shows decreasing trend in subsequent year. On the other hand the highest ratio of NIC Asia is 0.0111 and lowest 0.0060 which is also in decreasing trend. The average non-performing loan to loan and advances of RBB and NIC Asia is 0.123 and 0.0060 respectively. The ratio of RBB in first two year is above the average while the average in the last three F.Y, the ratio is below the average value. Ratio of NIC Asia in the first two year is above the average and that in last two years is below the average. NIC Asia has the lower non-performing loan to total loan and advances which concludes that NIC Asia is best performer than the RBB.

Banking sector is seriously affected by the non-performing loan. Both banks are not far from this above fact. If non-performing loan increases, the overall banking business will be affected. So, provision amount will increase and profit will decrease. The above table presents that RBB has higher non performing ratio. So, the RBB has higher credit risk because of higher ratio of non-performing loan. RBB has higher standard deviation and coefficient of variation, so it is said that bank has higher variation and lower consistency in non-performing loan to total loan and advances.

4.1.4. Loans and Advances to Total Assets Ratio

Loan and advance is the major part of total assets for the bank. This ratio indicates the volume of loans & advance out of the total assets. A high degree of the ratio indicates that the bank has been able to mobilize its fund through lending function. However, lending always carries out certain risk of default. Therefore a high ratio represents lower liquidity. The effect on productivity and safety in terms of liquidity is shown in table 4.4.

Table 4.4: Loans & advances to total assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.397	0.381	0.462	0.435	0.402	0.415	0.0326	7.86
NIC Asia	0.765	0.739	0.729	0.626	0.676	0.707	0.0556	7.86

(Source: Annual reports of the companies)

Table 4.4 shows that loans & advance to total assets of five year of the selected banks. Loan and advances to total assets ratio of RBB ranges from the highest of 0.462 in the fiscal year 2008/09 to the lowest in the fiscal year 2007/08. Here this ratio does not show any clear direction, ratio of NIC Asia is highest in the F.Y 2006/07 which is 0.765 and lowest is 0.626 in the F.Y 2009/10. From the mean point of view, it can be said that average ratio of NIC Asia is higher than RBB. It can be concluded that the higher mean ratio indicates good lending performance. Standard deviation and coefficient of variance of RBB is 0.0326 & 7.86 and NIC Asia is 0.0556 & 7.86 respectively. The result of S.D. and C.V. has not higher variation on loan and advances to total asset ratio.

4.1.5. Loan and advances to current assets ratio

Loans and advances is the major component in total assets, which indicates the ability of banks to canalize its current assets in the form of loan & advance to earn high return. If sufficient loan and advances cannot be granted, it should pay interest in utilized current assets funds and may lose earnings. So commercial banks provide loan & advances in

appropriate level to find out portion of current assets, which is granted as loan & advances. This is shown in table 4.5.

Table 4.5: Loan & advances to current assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.0129	0.0144	0.0188	0.0149	0.0106	0.0143	0.0030	20.97
NIC Asia	0.0768	0.0712	0.0548	0.0643	0.0609	0.0656	0.0086	13.10

(Source: Annual reports of the companies)

Table 4.4 shows the loan and advances to current assets of selected banks over the study period. Loans and advances to current assets ratio of RBB ranges highest of 1.88 times in the F.Y 2008/09 and lowest 1.06 in the F.Y 2010/11. Loan and advances to current assets ratio of RBB in the F.Y 2006/07 is below the average and is above the average in the remaining year. Table shows the increasing trend on loan and advances to current assets ratio of RBB. The Ratio of NIC Asia is the highest in the F.Y 2006/07 is 7.68 and lowest 5.48 in the F.Y 2008/09.s.d and C.V. shows that the C.V. of RBB is higher than NIC Asia, so RBB is less uniform and consistent in maintaining loan and advances to current asset ratio. From the mean point of view, it can be said that mean ratio of NIC Asia is higher than RBB. It can be concluded that the higher mean ratio indicates the good short term lending performance. RBB should focus to increase loan and advances to current assets ratio to increase short term lending performance.

4.1.6. Loans loss provision to total loan and advances ratio

The provision for loan loss reflects the increasing probability of non-performing loan. Increase in loan loss provision results in decrease in profit as a result decrease in dividends. But its positive impact is that it strengthens the financial conditions of banks by controlling the credit risk and reduces the risks related issues to deposits. The lower ratio indicates the good quality of assets in total volume of loan & advances. High ratio indicates move risky assets in total volume of loan and advances. This is shown in table 4.6.

Table 4.6: Loan loss provision to total loan and advances

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.0156	0.0137	0.008	0.0113	0.0158	0.012	0.0032	25.3
NIC Asia	0.0205	0.0175	0.0170	0.0164	0.0152	0.017	0.0019	11.38

(Source: Annual reports of the companies)

Above table shows the loan loss provision to total loan and advances of selected banks over the study period. Ratio of RBB ranges from highest of 0.0158 in the F.Y 2010/11 to lowest of 0.008 in the F.Y 2008/09. Average ratio of RBB is 0.0129; F.Y 2008/09 and 2009/10 is below the average and F.Y 2006/07, 2007/08 and 2010/11 is above the average. The ratio does not give the any clear trend of loan loss provision to total loan and advances. Ratio of NIC Asia ranges from the highest of 0.0205 in the F.Y 2006/07 to the lowest 0.0152 in the F.Y 2010/11. Here, average loan loss provision to loan and advances ratio of NIC Asia is higher than that of RBB. Higher ratio indicates the increased volume of non-performing loans and vice versa. Loan loss provision of RBB is in a decreasing trend in the F.Y 2008/09, so the decreasing loan loss ratio indicates efficient credit policy and gradual increment on the performance of the bank. The S.D. and C.V. of RBB is 0.00327 & 25.34 and those of NIC Asia are 0.00197 & 11.38 respectively. RBB has more variation on loan loss provision in every F.Y than NIC Asia. On the other hand, RBB has higher C.V. ratio which indicate RBB is less consistent than NIC Asia in terms of loan loss provision. Here loan loss provision to total loan and advances of NIC Asia is in decreasing trend, which indicates decreased volume of non-performing loans of NIC Asia. It concludes that it is due to the effective credit policy and good performance of the company.

4.1.7. Non-banking assets to total assets ratio

Non-banking assets to total assets ratio indicates that bank's overall performance on loan recovery ratio from the bank total loan and assets. When the bank fails to minimize its loan recovery ratio, the non-banking assets goes on increasing, so the higher non-banking assets ratio is riskier in credit risk management which is shown in table 4.7.

Table 4.7: Non-banking Assets to total Assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.51	0.34	0.26	0.12	0.17	0.280	0.1537	54.89
NIC Asia	0.0096	0.0044	0.0021	0.0020	0.0025	0.00412	0.0032	77.67

(Sources: Annual report of the companies)

Table 4.7 shows the non-banking assets to total assets ratio of selected banks over the study period. Ratio of RBB ranges from the highest of 0.51 in the F.Y 2006/07 to the lowest of 0.12 in the F.Y 2009/10. Average ratio of RBB is 0.28; the last three years ratio is below the average and first two years ratio is above the average. The above table concludes that comparatively, RBB has the higher non-banking assets than NIC Asia which shows that RBB is not good performer in terms of loan recovery. So it has higher credit risk if the bank does not minimize the non-banking asset over the coming years. On the other hand, the NIC Asia has lowest non-banking assets in the F.Y 2009/10 with the value of 0.0020 and highest in the year 2006/07 with 0.0096. The first two years' ratio is higher than the average and last three years' ratio is lower than the average ratio. Standard deviation and coefficient of variation of RBB and NIC Asia is 0.1537 & 54.89 and 0.0032 & 77.67 respectively. The result indicates that RBB has higher S.D. which implies higher variation in every year's non-banking asset to total asset ratio. On the other hand, NIC Asia has lower S.D. which indicates lower variation on NIC Asia's non-banking assets to total ratio but from the view point of C.V., NIC Asia has higher C.V. ratio which inform that NIC Asia has lower uniformity and consistency in non-banking asset to total asset ratio. Here average non-banking assets to total assets ratio of RBB is higher than that of NIC Asia. Higher non-banking ratio indicates the increased volume of

non-performing loans and vice versa. Non-banking assets of RBB is in decreasing trend, so the decreasing non-banking assets ratio reflect efficient credit policy and gradual increment in performance of the bank. Here loan loss provision to total loan and advances of NIC Asia is in decreasing trend, which indicates decreased volume of non-performing loans of NIC Asia. It can be concluded from the effective credit policy and good performance of the bank.

4.1.8. Loan portfolio of RBB and NIC Asia

Table 4.8: Loan portfolio of RBB and NIC Asia **Amount Rs .000**

Loan portfolio	F.Y 066/067		F.Y 067/068		F.Y 068/069	
	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia
Real estate loan	1780073	1470317	1790233	1736670	1945889	2010732
Housing loan	3110961	1025626	3151612	1396761	3275898	1568732
Margin type loan	794694	648227	563473	252215	331111	230218
Term loan	1941329	1011576	2027049	848784	1937645	948748
Overdraft loan	16339326	4516395	17583013	5959393	19524331	7053935
Other loan	11726131	4059874	11750724	3542650	13433988	3934733
Total	**35692514**	**12732014**	**36866104**	**14933940**	**40448863**	**15747098**

(Sources: Annual report of the companies**)**

The above table shows the sector wise loan portfolio of RBB and NIC Asia bank. The last three years' loan portfolio presents the bank credit risk analysis. The total loan volume of RBB is higher than that of NIC Asia every three years. The NIC Asia bank has higher real estate loan than RBB, on the other hand housing loan is nearly equal in each of the years in both RBB and NIC Asia. Margin type loan of NIC Asia in F.Y 066/067 is higher than RBB and in the next two years, there are fewer gaps in distribution. Term loan of both bank RBB and NIC Asia is equally invested every three F.Y. Both banks are

highly lending their loan portfolio in overdraft loan, higher ratio of OD loan indicates both banks have minimized their risk for mitigating their future difficulties. OD loan is short term loan, so it will be very beneficial to maintain liquidity management. Around 30% loan is distributed by both the banks. Other types of loan are higher portion on total loan portfolio. This table shows that both banks are lending higher ratio of loan in short term loan then long term loan. In Nepalese current scenario, real estate and housing loan is more risky according to NRB. NRB directed that every bank and financial institutions should minimize their real estate and housing loan less than 10% until coming year. This NRB directive suggested that there is higher credit risk in that sector so that NIC Asia has higher portion of credit lending on housing and real estate. According to NRB directive NIC Asia is in higher credit risk in terms of real estate and housing loan portfolio than RBB.

4.1.9. Total loan to portfolio loan ratio of RBB and NIC Asia

Total loan to portfolio loan ratio provides the information about how much banks are consistent in loan portfolio management and credit risk mitigating performance, i.e, depending upon their loan portfolio. Portfolio refers to the diversification of risk into the different sector other than single sector. Proper managing of portfolio minimizes the level of risk on the credit recovery ratio.

Table 4.9: Total loan to portfolio loan ratio of RBB and NIC Asia

Loan portfolio	F.Y 066/067		F.Y 067/068		F.Y 068/069		Mean		S.D		C.V	
	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia	RB	NIC Asia	RB	NIC Asia	RB	NIC Asia
Real estate loan	0.049	0.115	0.048	0.126	0.048	0.127	0.048	0.123	0.008	0.006	16.6	4.87
Housing loan	0.087	0.080	0.085	0.101	0.080	0.099	0.084	0.093	0.003	0.011	3.57	11.8
Margin loan	0.023	0.051	0.015	0.018	0.081	0.014	0.039	0.027	0.003	0.020	9.23	7.04
Term loan	0.054	0.079	0.053	0.061	0.047	0.060	0.051	0.066	0.004	0.010	7.84	15.1
Overdraft loan	0.458	0.355	0.476	0.439	0.482	0.447	0.472	0.413	0.012	0.050	2.54	12.1
Other loan	0.329	0.319	0.318	0.257	0.332	0.249	0.326	0.275	0.007	0.038	2.14	13.8

(Sources: Annual report of the companies)

The above table represents the total loan to portfolio loan ratio of RBB and NIC Asia over last three fiscal years. Real estate loan of RBB and NIC Asia in the F.Y 066/67 is 0.049 and 0.115 , in 067/068 is 0.048 and 0.126 and 068/069 is 0.048 and 0.127 respectively implying that NIC Asia has higher portion every economic year. Mean ratio of RBB and NIC Asia is 0.084 & 0.093 respectively. The NIC Asia bank's coefficient of variance is 11.8 and that of RBB is 3.57. From this, we can we conclude that NIC Asia is less consistent in housing lending in comparison to RBB. Margin type loan of both bank is approximately lending the mean ratio of this loan is 0.039 & 0.027 respectively, for RBB and NIC Asia. Standard deviation is 0.003 & 0.020, result indicates that there is no higher variation on margin type loan on every F.Y. Term loan represents the long term lending portfolio which is very valuable role in credit risk measurement of the financial institutions. The mean ratio of term loan is 0.051 & 0.066 respectively. From the standard deviation and coefficient of variation we analyze that the NIC Asia has higher variation and less consistency than RBB. Mean ratio of overdraft loan is 0.472 & 0.413 which shows that they are lending higher portion of loan in overdraft loan which is lending on short time period. Standard deviation and coefficient of variation of NIC Asia shows less variation and higher consistency in overdraft loan risk involved and service cost of such credit is less and it is easier to liquefy financial assets than physical assets. Other type loan generally informs that it is also short term loan. Consumable loan, auto loan credit card loan and other installment and single payment loan is categorized in other type loan; the mean value of other type loan is 0.326 & 0.275 respectively. One third loan is distributed in this loan so it concludes that both banks are in safe side in terms of liquidity crises and defaulting of recovery. Standard deviation and coefficient of variation result shows that NIC Asia is less consistent in other type loan portfolio.

Figure 4.10: Trend analysis of NPC to total credit and advances of RBB

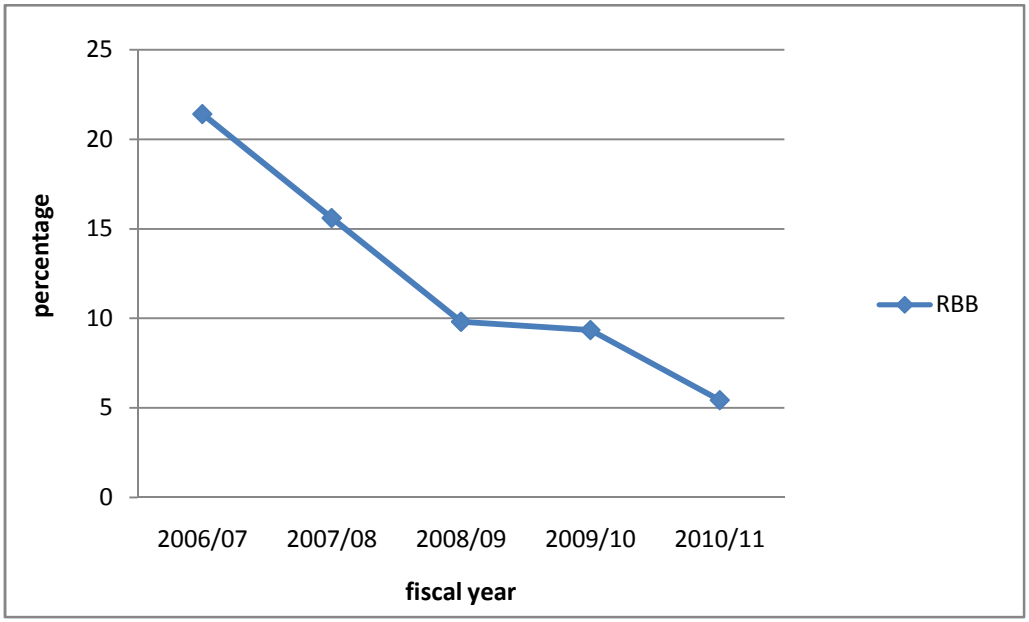
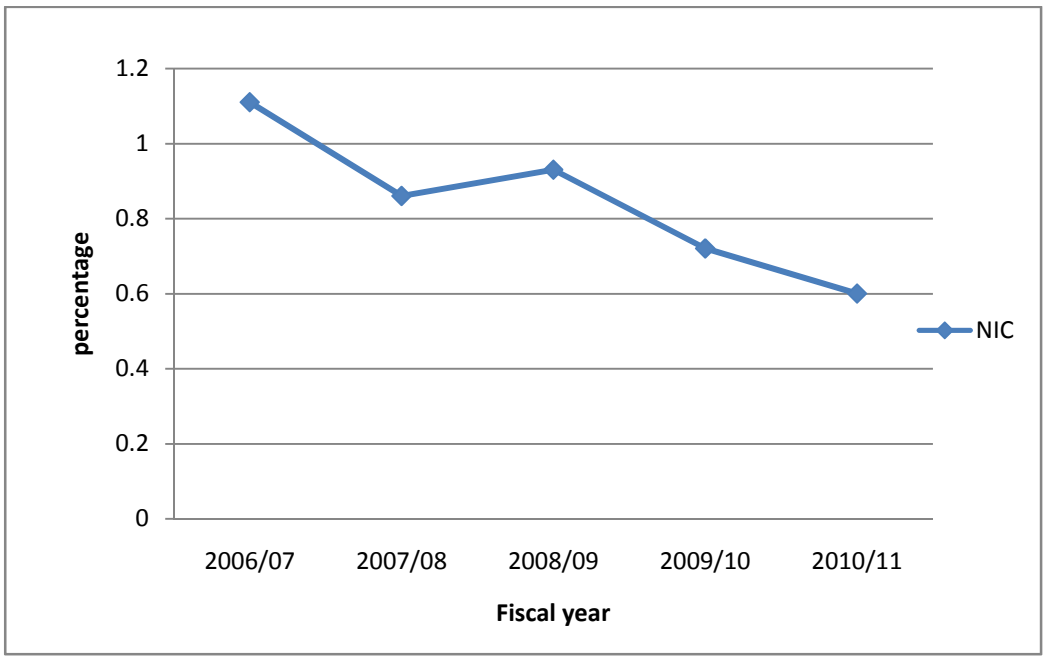


Figure 4.11: Trend analysis of NPC to total credit and advances of NIC Asia



Generally trend analysis determines the present scenario of certain subject matter. Trend analysis is computed value of variables collected in different period of time. Trend

analysis helps to evaluate the change in variable with respect to the change of time. In this research work, analysis is done on non-performing credit to total credit and advances of RBB and NIC Asia on behalf of credit risk management.

Non-performing credit ratio is the suitable measure ratio on credit risk efficiency in certain time period analysis. From the above trend line presentation of RBB shows the F.Y 2006/07 non-performing credit is 0.215 which is very high comparative to 0.0111 of NIC Asia. This ratio provides evidence that the bank is very poor in credit recovery performance. Although the bank is trying to minimize that, non-performing ratio is decreasing over the last four years, so we conclude that non performing credit of RBB is in decreasing trend. Fiscal year 2007/08 NPC is 0.156 and in F.Y 2008/09 0.0981, F.Y 2009/2010 is 0.0935, F.Y 2010/2011 is 0.0544. The RBB trend line shows that it has been applying the credit mitigating tools and technique which has the positive result in credit risk minimization. The last five year trend presents that the RBB is going to succeed in credit risk management.

The NIC Asia non-performing credit is also in decreasing trend; in F.Y. 2007/08 the figure was 0.0086, in F.Y. 2008/09 came to 0.0093, F.Y 2009/10 decreased to 0.0072, and F.Y 2010/11 it became 0.0060, which is very lower when compared with RBB. This credit ratio indicates that the NIC Asia is more efficient high in credit risk management. The bank non-performing credit is in decreasing trend in every fiscal year except 2007/08, no bank has the zero level of non-performing credit so the NIC Asia represents ratio on NPC as usual ratio. The NIC Asia trend line last five year ratio evaluates that the bank has efficient performance in credit risk management.

4.2. Statistical Analysis.

A. Rastriya Banijya Bank Limited.

The data related to overall credit risk management is given below. Table presented below shows that the financial model is risk index and probability of book value insolvency. Risk index indicates that, the higher the risk the better the performance of the bank. Book value insolvency relates to the thickness of the book value cushion available to absorb accounting losses. All the calculations are based on accounting data of the bank. Risk

index and book value insolvency is based on the financial data of last five years starting from financial year 2006/07 up to 2010/011.

Table 4.10 (A_1) Risk Index and Book Value Insolvency of R.B.B.

S. No.	Description	Figure
1.	Risk Index	27.80
2.	Probability of Book Value Insolvency (%)	0.038

(Source: Annex 10)

Table 4.10 (A_1) indicates the following decisions:

- Bank has the moderate level of risk.
- Probability of the book value insolvency is less than 1 percent.

The entire figure suggests that the bank's total credit management is moderate and reasonable. Medium level of risk index attribute of the bank has a lower expected R.O.A., Its current position shows that it has a moderate level of cushion to absorb accounting losses.

Table 4.11: (A_2) Correlation Coefficient of R.B.B

S. No.	P.L.L.	Correlation	P.E.	Conclusion	Remarks
1.	R.O.A.	-0.296	0.2752	Insignificant.	r < P.E.
2.	R.O.E.	0.00339	0.674	Insignificant.	r < P.E.

(Source: Annex 11)

Table 4.11 (A_2) shows the correlation between loan and loan loss provision to R.O.A. and R.O.E. but the result is too small and considered as insignificant.

Table 4.12 : (A_3) Regression Coefficient of RBB

S. No.	Independent Variable	Dependent Variable	Beta (b) Coefficient	Constant. (a)	T-Value	Remarks
1.	P.L.L.	R.O.A.	-0.6863	3.39	0.9090	Insignificant.

2.	P.L.L.	R.O.E.	0.1460	15.72	0.8157	Insignificant.

(Source: Annex 11)

Table 4.12 (A_3) reveals that the regression coefficient of provision of loan loss for R.O.A. is negative and R.O.E. is positive but the value is not significant at 5 % level of significance, which indicates very low association between the independent variable P.L.L. and dependent variable R.O.A. and R.O.E. Thus null hypothesis of no relationship between P.L.L. on R.O.A. and P.L.L. on R.O.E. was accepted.

B. NIC Asia Bank limited.

The data related to overall credit risk management is given below. Table presented below shows the financial model i.e. risks index and probability of book value insolvency for NIC Asia Bank. Risk index indicates the higher the risk better the performance of the bank. Book value insolvency relates to the thickness of the book value cushion available absorb accounting losses. All the calculation based on accounting data of the bank. Risk index and book value insolvency is based on the financial data of last five years starting from fiscal year 2003/04 up to 2007/08.

Table 4.13: (B_1) Risk Index and Book Value Insolvency of NIC Asia

S. No.	Description	Figure
1.	Risk Index	32.65
2.	Probability of Book Value Insolvency (%)	0.0533

(Source: Annex 10)

Table 4.13(B_1) indicates the following decisions:

- Bank has the higher risk that shows high return.
- Probability of the book value insolvency is less than 1 percent.

The entire figure suggests that the bank's total credit management is good and reasonable. Higher risk index attribute of the bank has a higher expected R.O.A., strong capital position and stable earning R.O.A. Its current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.14: (B_2) Correlation Coefficient of NIC Asia

S. No.	P.L.L.	Correlation	P.E.	Conclusion	Remarks
1.	R.O.A.	-1.088	-0.0555	Insignificant.	r < P.E.
2.	R.O.E.	-1.0025	-0.00151	Insignificant.	r < P.E.

(Source: Annex 11)

Table 4.14 (B_2) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. but result is too small and considered as insignificant.

Table 4.15: (B_3) Regression Coefficient of NIC Asia

S. No.	Independent Variable	Dependent Variable	Beta (b) Coefficient	Constant. (a)	T- Value	Remarks
1.	P.L.L.	R.O.A.	-2.11	5.625	1.3763	Significant.
2.	P.L.L.	R.O.E.	-15.6	51.56	-0.5470	Insignificant.

(Source: Annex 11)

Table 4.15(B_3) reveals that the regression coefficient of provision of loan loss for R.O.E. and R.O.A. is negative but the value is not significant at 5 % level of significance, which indicates very low association between the independent variable P.L.L. and dependent variable R.O.A. and R.O.E. Thus null hypothesis of no relationship between P.L.L. on R.O.A. and P.L.L. on R.O.E. was accepted.

4.3. Major Findings

This is very important part of the study. All people, investor, bankers, researcher and other who are related to the credit risk management in one way or the other may gain advantage from the findings of this study. The major findings of this study are summarized below:

- Average loan to deposit ratio of RBB and NIC Asia is 0.510 and 0.863 respectively. NIC Asia has maintained higher total to deposit ratio. In this way, it

shows that NIC Asia seems to be strong to mobilize its total deposit as loan and advances. However higher ratio does not mean it is always better from the point of liquidity. Both banks are capable to use more than 50% of deposit on loan and advances. If maintained this, it help make consistency on the profitability of the banks.

- The Average interest income to loan and advances of the RBB is 0.138. Ratio of RBB does not show clear direction. Average interest income to loan and advances ratio of NIC Asia is 0.095. In terms of the average interest income to loan and advances ratio, RBB has best performance.

- NIC Asia has lower non-performing loan to total loan and advances ratio. Thus, NIC Asia is the better performer than RBB. Banking sector is seriously affected by the non-performing loan. Both banks are not far from this above fact. If non-performing loan increases, the overall banking business will be affected. So provision amount will increase and profit will decrease. So, (RBB) is suggested to be sincere while granting loan and to do effective follow up for recovery of non-performing loan.

- Average loan and advances to total assets of RBB and NIC Asia 0.415 and 0.707 respectively. It can be concluded that the higher mean ratio indicates the good lending performance. Here RBB should focus to increase loan and advances to total asset ratio to increase lending performance.

- Loan and advances to current assets ratio of RBB is in an increasing trend. Average ratio of RBB and NIC Asia is 1.43 and 6.56 respectively. From the mean point of view, it can be said that mean ratio of NIC Asia is higher than RBB. It can be concluded that the higher mean ratio indicates the good short term lending performance. Here, RBB should focus to increase loan and advances to current assets ratio to increase short term lending performance.

- Increased ratio of loan loss provision indicates the increased volume of non-performing loans and vice versa. Loan loss provision of RBB is in decreasing trend in the fiscal year 2007/08, so the decreasing loan loss ratio indicates efficient credit policy and gradual increment on the performance of the company. Here loan loss provision to total loan and advances of RBB and NIC Asia is in decreasing trend, which indicates both bank are going to minimize their credit risk so, we can say this is due to the effective credit policy and good performance of the company.

- Average interest expenses to total expenses ratio of RBB is higher. NIC Asia has lower interest expenses to total expenses ratio which shows the decrease in cost of deposit.

- Non-banking assets to total assets ratio indicates the performing loan ratio of the bank. The average ratio of RBB and NIC Asia is 28% and 0.41% respectively, which has great differences in non-banking asset to total asset ratio. The highest ratio of RBB shows bank has higher past non-performing credit.

- The last three years loan portfolio presents the bank credit risk analysis. The total loan volume of RBB is higher than the NIC Asia every three years. The NIC Asia bank has higher real estate loan than RBB. It shows that NIC Asia is lending in that sector as per the rules behind the NRB.

- Both bank RBB and NIC Asia has lending their higher portion of loan in the short term lending i.e. overdraft and other type loan. It shows that their long run consistency in credit lending is not satisfactory.

- Correlation coefficient between loan loss provision to Return on assets and Return on equity of RBB is -0.296 & 0.00339 respectively, which implies that there is positive correlation between loan loss provision to Return on equity and negative correlation with Return on assets. Correlation analysis indicates that when the

bank increases its loan loss provision, the return on assets will decrease and return on equity will increase in small percentage.

- Correlation coefficient of NIC Asia is calculated to be -1.088 & -1.0025 on return on assets and return on equity respectively. Results indicates that there is negative correlation between loan loss provision to Return on equity and Return on assets so when the bank increases the loan loss provision ROA and ROE will decrease.

- Regression analysis of RBB on loan loss provision to ROA is negative and ROE is positive but the value not significant at 5% level of significance which indicates there is very low association between the independent variable P.L.L and dependent variable R.O.A and R.O.E.

- Regression analysis of NIC Asia on loan loss provision to ROA and ROE is negative but the value is not significant at 5% level of significance which indicates very low association between dependent variable and independent variable.

CHAPTER –FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

As the final chapter of the study, this chapter briefly explains the summary of the study, tries to fetch out findings and conclusions and attempts to offer suggestions and recommendations for strengthening the credit risk management of the sample banks.

5.1. Summary

This study has been undertaken to evaluate the comparative credit risk management of commercial banks. Two banks viz, Rastriya Banijya Bank Limited and NIC Asia Bank limited were selected and five year financial statements of respective banks were used for the study. The study was divided into five chapters which include introduction, review of literature, research methodology, data presentation and analysis and summary, conclusion and recommendation. This study mainly based in secondary data, which includes published annual report and other publication of banks. Other related information was gathered from the concerned banks, Nepal Rastra Bank, Nepal Stock Exchange, Securities Board of Nepal and different websites. The data was analyzed by using financial and statistical tools like ratio analysis, correlation coefficient, regression analysis and trend analysis etc.

Credit risk management is one of the challenging issues of the financial institutions. No bank can sustain in the market without proper management of credit risk. This study is trying to find out the issues relating credit risk management in current market scenario and remedial measures for future safeguard in the context of Nepal. Credit risk management is considered as one of the influencing factors in the decision making activities. Some research questions regarding credit practices, credit efficiencies, liquidity position, and management quality are considered as clear evidence in present situation. Hence, the specific research questions related to credit risk management in Nepalese commercial banking sector has been identified.

The prime objective of this study is to examine the comparative credit risk management of selected commercial bank of Nepal. Objectives are determined according to targeted

goals. So this study aims to investigate the sector wise loan and advances, status of non-performing loan, and differentiate between public and private sector banks in terms of credit risk management practices. SWOT analysis, loan recovery ratio, lending performance is also analyzed under this study.

This study has been conducted considering several literature review to be familiar with the credit risk management. A bank exists not only to accept deposit but also to grant credit facilities. Therefore it is inevitably exposed to credit risk. According to Chen and Pan (2012), “Credit risk is the degree of value fluctuations in debt instruments and derivatives due to changes in the underlying credit quality of borrower’s counterparties.” Credit risk management maximizes bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable limit in order to provide frame work for understanding the impact of credit risk management on bank's profitability (Kargi 2011). In essence from the depth study of literature review related with credit risk management, it is found that the main source of credit risk include limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity level, direct lending, massive licensing of banks, and inadequate supervision by the central bank.

Analyzing the issues related to credit risk management has undertaken the following methodology. The descriptive research design has been followed for conceptualization of the problem. To explain the relationship between dependent and independent variables by determining variables on banks’ credit risk management. The financial and statistical methods were used for the data analysis. Financial method of data analysis used in credit risk management were credit/loan related ratios, credit efficiency ratios, profitability ratio, sector wise credit portfolio disbursement and so on. Besides, the statistical analysis includes the calculation of mean, standard deviation, coefficient of variation, risk index, correlation coefficient, and regression analysis.

Due to the boundary of financial and non-financial difficulties, only secondary data base analysis was performed in this study. Until coming to the conclusion step of the study researcher has benefited from the massive knowledge about credit risk management. This study will be most important to obtain the degree of post-graduation in Business Studies

from Tribhuvan University. Conducting the research is very important, crucial and interesting subject, so proper study of any research topic is a responsible assignment which the researcher has done with full dedication, effort and sincerity.

5.2. Conclusion

After analyzing the credit portfolio of RBB and NIC Asia from both financial and statistical aspect, we can draw some major conclusion from the study which is as follows.

RBB have insufficient liquidity in comparison with NIC Asia. It shows that banks have not got proper investment sector to utilize their liquid money. Now, in Nepal, many banks and other financial institutions are functioning to collect deposit and invest money somewhere. Therefore, monetization has been increased since liberalization policy taken by the government. Heavy remittances have also helped to increase the amount of deposits of the banks. On the other hand, due to political instability and crises, economic sectors have been damaged. Most of the projects have been withdrawn due to security problems. Therefore, banks have maximum liquidity due to lack of safety investment sectors. The entire joint venture banks have utilized most of funds in the form of credit and advances; therefore, it is the major part of utilizing deposits for income generating purpose. For that, banks are attracting deposits to the needy areas to make profit for themselves. Due to economic condition in the country, creditors are not getting good return from their investment. Because of this situation, credit customers do not return money of the bank in the stipulated time period. Therefore, the risk of default credit has increases. That's why the bank should increase its provision for credit loss.

Development of any nation depends on capital vested and mobilized in productive sectors like industries, trade and business of every nook and corners of the country. In fact, the development of economy of the world is the result of substantial investment in such productive sectors. In order to boost up the economy and the social life of any country, it is extremely essential to have a mechanism through which small amount of saving can be

collected and transferred into efficient uses. Hence, finance plays a vital role and thus contributes in the economic development of nation and the banks provide such financial services.

At present, 32 commercial banks have been operating in Nepal. After the adaptation of liberal policy by the government in 1990 number of banks and financial institutions are increasing day by day. They have been rendering high quality banking services to the people. There is cut throat competition between banks and financial intuitions.

5.3. Recommendation

The findings of the study reflect both positive and negative results with respect to the financial performance of the sampled banks. But the recommendations have been presented for the improvement of the negative result of the banks. As per the above conclusion the following suggestions can be concluded for the banks:

- Both banks should try to increase the loan and advances to deposit; here they have maintained more than 50%. High ratio shows the capability of bank on mobilizing its total deposit as loan and advances.
- Banking sector is seriously affected by the non-performing loan. Both banks are not far from this above fact. If non-performing loan increases, the overall banking business will be affected. Thus, RBB should be sincere while granting loan and to do effective follow up for recovery of high ratio non- performing loan.
- Average loan and advances to total assets of RBB is below 50%. So, RBB should focus to increase loan and advances to total asset ratio to increase lending performance.
- Banks should do lot exercise in more credit creation and reducing the interest rate for loan and advances. This will help them to maintain more healthy competition among themselves.

- Bank should not extend credit policy merely based on oral information presented at the credit interview. Historical, financial and trade records as well as realistic cash flow projections should be obtained for proper arrangement of the proposal.

- Banks could do better by offering modern banking facilities and new product for the development of banking industry.

- NIC Asia has higher real estate loan comparative to RBB. Higher portion of real estate and housing loan may be riskier in terms of liquidity management and credit recovery ratio. So, NIC Asia should focus to minimize the real estate loan.

- Both banks, RBB and NIC Asia have high ratio of lending in overdraft and other type loan. Such type of loan is only beneficial in short term liquidity management, but they are not concerned with long term investment. In this portfolio disbursement, we could see that neither bank have long run vision in terms of credit risk assessment. Therefore, banks should focus on long run lending activities.

- Provision on loan loss and doubtful loan should be maintained as per the directives of Nepal Rastra Bank.

- Banks should be sensitive towards adverse movements in external factors such as interest rates, exchange rate and commodity prices as it has direct disruptions on cash trends of the bank.

- Non-banking assets are the non-productive assets of the bank. Higher portion of these assets indicates that the bank has higher non-performing loan. RBB has higher (28%) non-banking assets ratio which is very high as per credit risk. So, the bank should immediately implement the tools and technique to minimize their non-banking assets.

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APPENDICES

Table 4.1

Annex 1 Total loans of deposit ratio

Bank/F.Y	2006/7	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.479	0.476	0.543	0.501	0.553	0.510	0.035	7.01
NIC Asia	0.916	0.876	0.893	0.809	0.824	0.863	0.045	5.27

Source: Annual reports of the companies

Table 4.2

Annex 2 Interest income to loan & advances ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.129	0.131	0.133	0.154	0.146	0.138	0.0109	7.86
NIC Asia	0.125	0.0781	0.0831	0.0846	0.106	0.095	0.0197	20.73

(Source: Annual reports of the companies)

Table 4.3

Annex 3 Non-performing loan to total loan and advances (in %)

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.214	0.156	0.0981	0.0935	0.0544	0.123	0.0624	50.73
NIC Asia	0.0111	0.0086	0.0093	0.0072	0.0060	0.0084	0.0019	22.62

(Source: Annual reports of the companies)

Table 4.4

Annex 4 Loans & advances to total assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.397	0.381	0.462	0.435	0.402	0.415	0.0326	7.86
NIC Asia	0.765	0.739	0.729	0.626	0.676	0.707	0.0556	7.86

(Source: Annual reports of the companies)

Table 4.5

Annex 5 Loan & advances to current assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.0129	0.0144	0.0188	0.0149	0.0106	0.0143	0.0030	20.97
NIC Asia	0.0768	0.0712	0.0548	0.0643	0.0609	0.0656	0.0086	13.10

(Source: Annual reports of the companies)

Table 4.6

Annex 6 Loan loss provision to total loan & advances

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.0156	0.0137	0.008	0.0113	0.0158	0.0129	0.00327	25.34
NIC Asia	0.0205	0.0175	0.0170	0.0164	0.0152	0.0173	0.00197	11.38

(Source: Annual reports of the companies)

Table 4.7

Annex 7 Non-banking Assets to total Assets ratio

Bank/F.Y	2006/07	2007/08	2008/09	2009/10	2010/11	Mean	S.D	C.V
RBB	0.51	0.34	0.26	0.12	0.17	0.280	0.1537	54.89
NIC Asia	0.0096	0.0044	0.0021	0.0020	0.0025	0.00412	0.0032	77.67

Table 4.8

Annex 8 Loan portfolio of RBB and NIC Asia AmtRs.000

Loan portfolio	F.Y 066/067		F.Y 067/068		F.Y 068/069	
	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia
Real estate loan	1780073	1470317	1790233	1736670	1945889	2010732
Housing loan	3110961	1025626	3151612	1396761	3275898	1568732
Margin type loan	794694	648227	563473	252215	331111	230218
Term loan	1941329	1011576	2027049	848784	1937645	948748
Overdraft loan	16339326	4516395	17583013	5959393	19524331	7053935
Other loan	11726131	4059874	11750724	3542650	13433988	3934733
Total	**35692514**	**12732014**	**36866104**	**14933940**	**40448863**	**15747098**

Table 4.9

Annex 9 Total loan to portfolio loan ratio of RBB and NIC Asia

Loan portfolio	F.Y 066/067		F.Y 067/068		F.Y 068/069		Mean		S.D.		C.V.	
	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia	RBB	NIC Asia
Real estate	0.049	0.115	0.048	0.126	0.048	0.127	0.048	0.123	0.008	0.006	16.67	4.87

loan												
Housing loan	0.087	0.080	0.085	0.101	0.080	0.099	0.084	0.093	0.003	0.011	3.57	11.83
Margin loan	0.023	0.051	0.015	0.018	0.081	0.014	0.039	0.027	0.003	0.020	9.23	7.04
Term loan	0.054	0.079	0.054	0.061	0.047	0.060	0.051	0.066	0.004	0.010	7.84	15.15
Overdraft loan	0.458	0.355	0.476	0.439	0.482	0.447	0.472	0.413	0.012	0.050	2.54	12.13
Other loan	0.329	0.319	0.318	0.257	0.332	0.249	0.326	0.275	0.007	0.038	2.14	13.81

Annex 10. Calculation of Risk Index and Book Value Insolvency.

Fiscal Year	**RBB**			**NIC Asia**		
	R.O.A.	R.O.E.	Equity Multiplier	R.O.A.	R.O.E.	Equity Multiplier
2006/07	3.07	13.67	4.45	1.44	20.68	14.36
2007/08	2.94	14.68	4.94	1.81	22.57	12.46
2008/09	2.56	15.53	6.07	1.88	24.23	12.48
2009/10	2.78	17.09	6.14	2.30	27.09	11.77
2010/11	1.18	18.55	15.72	2.34	28.09	12.04
n = 5	12.53 = ∑ R.O.A.	79.52 = ∑ R.O.E.		9.84 = ∑ R.O.A.	122.66 = ∑ R.O.E.	
Risk Index		27.80%		32.65 %		
Prob. of B.V. Insol.		0.038 %		0.0533 %		

where,

Equity Multiplier = R.O.E. / R.O.A.

$$\text{Risk Index.} = \frac{[E(ROA) + CAP]}{S.D.(ROA)}, \quad CAP = \frac{1}{E.M.} \times 100$$

Profitability of Book Value Insolvency. $= [0.5(R.I.)^2]$

Calculation of S.D. of R.O.A. for Annex 10 Purpose.

Fiscal Year	**RBB**		**NIC Asia**	
	R.O.A.	$(R.O.A. - \overline{R.O.A.})^2$	R.O.A.	$(R.O.A. - \overline{R.O.A.})^2$
2006/07	3.07	0.3180	1.44	0.278
2007/08	2.94	0.191	1.81	0.024
2008/09	2.56	0.0031	1.88	0.0077
2009/10	2.78	0.076	2.30	0.110
2010/11	1.18	1.752	2.34	0.138
n = 5	12.53 = $\sum$ R.O.A.	2.341 = $\sum(R.O.A. - \overline{R.O.A.})^2$	9.84 = $\sum$ R.O.A.	0.557 = $\sum(R.O.A. - \overline{R.O.A.})^2$
S.D.	0.684		0.333	

Annex 11. Calculation of Correlation Coefficient.

where,

$$\text{Correlation (r)} = \frac{n\sum XY - \sum X \sum Y}{}$$

$$\sqrt{\{n\sum X^2 - (\sum X)^2\}\{n\sum Y^2 - (\sum Y)^2\}}$$

$$P.E. = \frac{[0.6745(1-r^2)]}{\sqrt{n}}$$

RBB

Fiscal Year	P.L.L. (X)	R.O.A .(Y_1)	R.O.E. (Y_2)	X^2	XY_1	XY_2	Y_1^2	Y_2^2
2006/07	1.56	3.07	13.67	2.43	4.78	21.32	9.42	486.86
2007/08	1.37	2.94	14.68	1.87	4.027	20.11	8.64	215.5
2008/09	0.80	2.56	15.53	0.64	2.048	12.42	6.55	241.18
2009/10	1.13	2.78	17.09	1.27	3.14	19.31	7.72	292.06
2010/11	1.58	1.18	18.55	2.49	1.86	29.30	1.39	344.10
n = 5	6.44 $= \sum X$	12.53 $= \sum Y_1$	79.52 $= \sum Y_2$	8.70 $= \sum X^2$	15.85 $= \sum XY_1$	102.46 $= \sum XY_2$	33.72 $= \sum Y_1^2$	1579.7 $= \sum Y_2^2$

$$r_{(R.O.A.)} = \frac{n\sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n\sum X^2 - (\sum X)^2\}\{n\sum Y_1^2 - (\sum Y_1)^2\}}} = -0.296$$

$$P.E._{(R.O.A.)} = \frac{[0.6745(1-r^2)]}{\sqrt{n}} = 0.2752$$

$$n\sum XY_2 - \sum X \sum Y_2$$

$$r_{(R.O.E.)} = \frac{}{\sqrt{\{n\sum X^{2-}(\sum X)^2\}\{n\sum Y_2^{2-}(\sum Y_2)^2\}}} = 0.00339$$

$$P.E._{(R.O.E.)} = \frac{[0.6745(1-r^2)]}{\sqrt{n}} = 0.674$$

Regression analysis of R.O.A. on P.L.L. and R.O.E. on P.L.L.

Regression equation of Y_1 on X i.e. R.O.A. on P.L.L. (Y = a + bX)

To determine the value of a and b, the following two normal equations are to be solved.

$\sum Y_1 = Na + b\sum X$ i.e. 12.53 = 5a + 6.44 b ---------1st

$\sum XY_1 = a\sum X + b\sum X^2$ i.e. 15.85 = 6.44a +8.70b -------2nd

Multiplying equation 1st by 3.73 and 2nd by 2.76 subtracting equation 2nd from equation 1st,

We have, a = 3.39

Putting the value of 'a' in equation 1st, we get b = -0.6863

Regression equation of Y_2 on X ie. R.O.E. on P.L.L. (Y = a + bX)

To determine the value of a and b , the following two normal equations are to be solved.

$\sum Y_2 = Na + b\sum X$ i.e. 197.93= 5a + 23.91b ----------1st

$\sum XY_2 = a\sum X + b\sum X^2$ i.e. 935.13= 23.91a +116.41b -------2nd

Multiplying equation 1st by 3.73 and 2nd by 2.76 and subtracting equation 2nd from equation 1st,

We have, a = 15.72

Putting the value of 'a' in equation 1st, we get b = 0.1460

NIC Asia

Fiscal Year	P.L.L. (X)	R.O.A (Y_1)	R.O.E. (Y_2)	X^2	XY_1	XY_2	Y_1^2	Y_2^2
2006/07	2.05	1.44	20.68	4.20	2.95	42.39	2.07	427.66
2007/08	1.75	1.81	22.57	3.06	3.16	39.49	3.27	509.40
2008/09	1.70	1.88	24.23	2.89	3.19	41.19	3.53	587.09
2009/10	1.64	2.30	27.09	2.68	3.77	44.42	5.29	733.86
2010/11	1.52	2.34	28.09	2.31	3.55	42.69	5.47	789.04
n = 5	8.66 $= \sum X$	9.77 $= \sum Y_1$	122.66 $= \sum Y_2$	15.14 $= \sum X^2$	16.62 $= \sum XY_1$	210.18 $= \sum XY_2$	19.63 $= \sum Y_1^2$	3047.05 $= \sum Y_2^2$

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\}\{n \sum Y_1^2 - (\sum Y_1)^2\}}} = -1.088$$

$$P.E._{(R.O.A.)} = \frac{[0.6745(1-r^2)]}{\sqrt{n}} = -0.0555$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\}\{n \sum Y_2^2 - (\sum Y_2)^2\}}} = -1.0025$$

$$P.E._{(R.O.E.)} = \frac{[0.6745(1-r^2)]}{\sqrt{n}} = -0.00151$$

Regression analysis of R.O.A. on P.L.L. and R.O.E. on P.L.L.

Regression equation of Y_1 on X i.e. R.O.A. on P.L.L. (Y = a + bX)

To determine the value of a and b, the following two normal equations are to be solved.

$\sum Y_1 = Na + b\sum X$ i.e. 9.77 = 5a + 8.66 b ---------1^{st}

$\sum XY_1 = a\sum X + b\sum X^2$ i.e. 16.62 = 8.66a +15.14b -------2^{nd}

Multiplying equation 1^{st} by 3.46 and 2^{nd} by 1.98 and subtracting equation 2^{nd} from equation 1^{st},

We have, a = 5.625

Putting the value of 'a' in equation 1^{st}, we get b = -2.11

Regression equation of Y_2 on X ie. R.O.E. on P.L.L. (Y = a + bX)

To determine the value of a and b , the following two normal equations are to be solved.

$\sum Y_2 = Na + b\sum X$ i.e. 122.66 = 5a + 8.66b ----------$\sum XY_2 = a\sum X + b\sum X^2$ i.e. 210.18= 8.66a +15.14b -------2^{nd}

Multiplying equation 1^{st} by 3.46 and 2^{nd} by 1.98 subtracting equation 2^{nd} from equation 1^{st},

We have, a = 51.56

Putting the value of 'a' in equation 1^{st}, we get b = -15.6