

CHAPTER 1

INTRODUCTION

1.1. Background of the Study.

Nepal is one of the least developed & landlocked country of the world. It is surrounded by two big and rapidly developing countries like India and China. It has surrounded three sides by India and one side by China. Because of landlocked country, it has to depend upon its neighbor and donors countries.

Nepal has an agro-based economy, where many people are engaged with agriculture. The main reason for agro-based economy of Nepal is because of the geographical construction of the country. The other reason is due to its low literacy rate, which has restricted the people to primitives and traditional forms of occupation.

The sources of finance are the most essential element for the establishment and operation of any profit and non-profit oriented institutions. Profit oriented institutions usually obtain these sources through ownership capital, public capital and financial institutions such as bank; in the form of credit and overdraft. Banking sector plays a vital role for the countries economic development. Bank is a resource mobilizing institution, which accepts deposits from various sources and invest such accumulated resources into the field of agriculture, trade, commerce, industry and tourism e.t.c.

The banking sector is largely responsible for collecting household savings in terms of different types of deposits and regulating them into the society by lending them in different sectors of the economy. The banking sector has been reached in the most remote areas of the country and has experienced a good deal in the growth of the economy by lending its resources in small scale industries under intensive banking program that has enable the banks to share economic growth of the country. (Shrestha, 1993: 32)

Banking institutions are inevitable for the resources mobilization and all the development of the country. They have resources for economic confidence of various segments and extend credit to people. (Grywinshki, 1993: 87)

Bank refers to any firms that are basically concerns with the transaction of money. However, today's banks are established for specific purposes. Different types of bank focus different types of services to its customers although the basic principle is same.

The history of the development of financial institutions in Nepal is not very long. The history of banking begins from the establishment of the commercial bank; Nepal Bank Ltd. in 1994 B.S. for the first time to provide modern and organized banking services in Nepal. Up to 2012 B.S., only N.B.L. provided services to the publics and organized bank. Later, Nepal Rastra Bank was established in 14th Baisakh 2013 B.S. as a Central bank of Nepal under N.R.B. Act 2012 B.S.

Similarly, R.B.B bank was established in 2021 B.S. The birth of these banks brought a new land mark in history of banking facilities in Nepal. Thereafter banks were established gradually.

According to Nepal Commercial Bank Act 2031 B.S., “A commercial bank is the one which exchanges money, accepts deposits, grants loan and performs commercial banking functions and which is not a bank meant for co-operative agriculture, industries as for such specific purpose.”(Nepal commercial Act, 2031 B.S.)

Commercial banks are the central part of financial institutions and they are the most visible series of financial intermediaries. They hold the deposits of many persons, government, establishments and business units. They make funds available through their lending and investing activities to borrow business firms, industries and individuals’ etc. Bank is a resource for the economic development which maintains the self confidence of various segments of society and extends credit to people.

When the government adopted liberal and market oriented economic policy from since mid of 1980’s, Nepal allowed foreign banks on joining venture basis to operate in the country after getting the approval from N.R.B. These foreign J.V.B.s namely Nabil Bank Ltd., Nepal Indo-Suez Bank Ltd., Standard Chartered Nepal Bank Ltd. were established in 2041, 2042 and 2043 B.S. respectively. Now we have 17 commercial banks in Nepal, among of them two are under the control of government and rest 15 are non government and joint ventures. Joint ventures bank gave new horizon to the financial sectors of the country .They were expected to bring foreign capital, technology experience, healthy competition, expertise and skills in Nepal

Government liberal policy of allowing J.V. banks operation in Nepal is basically to encourage local traditionally run commercial banks to enhance their bankable capacity thorough competition, efficiency modernization mechanism via computerization and prompt customer’s service. (Shrestha, 2047: 44)

In Nepal, we have six joint venture banks which are Nabil Bank Ltd., Nepal Standard Chartered Bank Ltd., Himalayan Bank Ltd, Nepal Bangladesh Bank Ltd., Nepal S.B.I. Bank Ltd. and Everest Bank Ltd.

1.2. Concept of Banking.

Bank is financial institution, which plays a significant role in the development of country. The history of banking transaction is as old as our civilization. In ancient time goldsmith used to keep people’s valuable goods for the security rather than earning interest. Mostly at that time goldsmith performed this task, but now various type of banks have been acting in this field.

In England, gold smiths were the bankers in an ancient period. They used to lend money to the government and also at the time of emergency to keep deposits for purpose. People used to keep their ornaments with goldsmith for safety. In ancient times, the function of foreign exchange also used to be done by goldsmiths, merchants and money lenders. The terms ‘bank’ was originated from the Italian word ‘Banco’. A bank is an business organization that receives and holds deposits

from others, lends loans or extends credit and transfers funds by written orders of depositors'.(Encyclopedia, 1984: Vol. 3)

The business in banking is one of collecting funds from the community and extending credit to people for useful purpose. Banks have played a pivotal role in moving money from lenders to borrowers. Banking is the profit seeking business not a community charity. As a profit seeker it is expected to pay dividend and otherwise add to the wealth of its shareholders. (Edmister, 1980: Ph.D. report)

In the present Nepalese context, three types of banks have been separately performing their activities in different sectors, such as central bank, commercial banks and development banks. Three types of commercial banks have been operating in Nepal in the public sector like Nepal Bank Ltd., Rastriya Banijya Bank Ltd. etc. The joint venture with origin banks like Himalayan Bank Ltd., Standard Chartered Bank Ltd. etc.

Nepal Bank Ltd. is the first bank of Nepal, which was established under Nepal Bank Ltd. act 1994. This is the first organized bank of Nepal under Rastra Bank Act. 2013. Nepal R.B. was established as the central bank of Nepal. After Commercial Bank Act. 2031 was enacted, other commercial banks and development banks were also established.

1.2.1. Commercial Banking.

Commerce is the financial transactions related to selling and buying activities of goods and services. Therefore commercial banks are those banks which work from commercial point of view. They perform all kinds of banking functions as accepting deposits, advancing credits, credit creations and agency functions. The commercial banks are those financial institutions that deal in accepting deposits of persons and institutions and give loans against securities. They meet working capital need of trade and industry even in agriculture sectors. Moreover commercial banks provide technical and administrative assistance to industries, trades and business.

Commercial banks are those banks, which perform all kinds of banking functions as accepting deposits, advancing credits, credit creation and agency functions etc. They provide short term credit, medium credits and long-term credits to trade and industries. They also operate off-balance sheet functions such as issuing guarantee, bonds letter of credit etc.

In every country out set of economic development is quite different but there is debate about the significance role of banking sector for the economic development of the country; as they are considered as the main source of finance.

Without development of sound commercial banking, underdeveloped countries cannot hope to join the ranks of advanced countries. If industrial development requires use of capital, use of capital equipment will not be possible without the existence of banks to provide the necessary capital. Besides, industrial development will be impossible without the existence of markets to dispose of the foods produced. On the other hand the existence of commercial banks will help to extend the market. The commercial banks play an important role as follows:

- Help in Business Expansion.
- Encouragement to the right type of industries.
- Necessary for Trade and industries.
- Promotion of capital formation.
- Transfer for surplus funds to needy regions.

The number of commercial bank branches operating in the country in mid July 2005 totaled 422 of which 375 belonged to 17 commercial banks and the remaining 47 belonged to A.D.B.\N. performing commercial banking activities. The regional distribution of these bank branches seemed to be much skewed. Of the total bank branches, 202 are being operating in the central development region, followed by eastern development region (88), and western development region (83). Only 27 & 22 branches are being operated in the mid western and far western development region respectively. (N.R.B. Directive)

Commercial banks are the heart of the financial system. They hold the deposits of many persons, government establishment and business units. They make fund available through their lending and investing activities to borrowers, individuals, business firms and services from the procedures to customers and for the government too. This fact shows that the commercial banking system of the nation is important to the functioning of the economy. (Reed \ Cotter \ Gill Smith, 1976)

The commercial bank has its own role and contribution in the economic development. It is a source for economic development; it maintains economic confidence to various segments and extends credit to people (Grvwinshki, 1994:87)

Commercial banks are organized as a joint stock company system, primarily for the purpose of earning profit, they can be either of the branch banking types as we see in most of the countries with a large network branches like in Nepal or of the unit banking type, as we see in the United States where a bank operations are confined to a single office or to a few branches with in a strictly limited area (Shekher and Shekher, 1999:4)

Nepal Commercial bank act 2031 B.S. defines," A commercial bank is one which exchanges money, deposits money, accepts deposits, grants loans and performs commercial banking functions and which is not a bank meant for co-operations, agriculture, industries or for such specific purposes." (Nepal Commercial Bank Act, 2031 B.S.)

Commercial banks obtain deposits from customers under different accounts such as savings, fixed and current. Commercial banks also provides short-term drawing as necessary for trade and commerce such as hypothecation against stock, guarantee against any deviation in performing tasks, purchasing and selling of securities, treasury bills, foreign currencies, performing such tasks on the behalf of required persons. Central bank's main task is to monitor, direct and control the

lending activities in the country. In Nepal, commercial banks perform their functions under the rules and regulations of the Nepal Rastra Bank as the central bank of Nepal.

To sum up, a bank is defined as a financial institution, which performs widest range of economic and financial functions of any business firms in the economy. The commercial bank is that financial institutions which collect scattered savings of the people and provide loan against proper securities for their productive purpose. Moreover they also provide technical help and suggestions, administrative suggestions, safekeeping of valuables, collections of bills, cheques and overdraft facilities to industries and commerce.

1.2.2. Joint Venture Banking.

A joint venture is joining force between two or more enterprises for the purpose of carrying out specific operations like industrial of commerce investment, production or trade. When two commercial banks from different countries joint hands to form independent enterprises it is said as joint venture commercial bank. The deliberate policy of allowing JVB in Nepal is basically to enhance local commercial bank performance viz. Competition, efficiency, modernization and computerization to prompt customer services etc

Joint venture banks in Nepal are operated under the rules and regulations, supervision, control and directives of Nepal Rasta bank, the central bank of Nepal. Major functions performed by these banks are the regular banking service for any commercial banks. Along with that it also brings foreign capital, skills, experience and latest technology and technique. It has also introduced the modern management for employee detainment and customer's satisfaction and latest technology such as ATM, Tele-banking, Credit\Debit cards etc. Due to international name attached to it, commercial banks might be able to raise resources internationally for viable projects due to their creditability. It is also seen that because of J.V.B.s there has been a healthy and essential competition among the contemporary banks.

A joint venture is a form of two forces between two or more enterprises for the purpose of carrying out of specific operation like industrial or commercial investments, production trade etc. (D.P. Gupta, Banking System, its role in export development, Delhi, Tata Mc. Grew Hill, 1984, p.15-25).

J.V.B.s are the commercial banks formed by joining two or more enterprises, for the purpose of carrying out of specific operation such as investment in trade, business and industry as well as in the form of negotiation between various group of industries or traders to achieve mutual exchange of goods and services.

Nepalese joint venture banks should take initiation in search of new opportunities to survive in the competitive market and earn profit. There is high liquidity in the market but there seems no profitable place to invest. At the same time, the bank and financial institutions are offering very low deposit interest rate. In this situation Nepalese J.V.B.s are required to explore new opportunities to make investment if they want to survive in the competitive market. Since commercial banks can inspire entrepreneurship, the banks should also consider national interests

and government emphasis for the economic growth of the country by the development of industry, trade and business and to fulfill the objective of profit making.

Thus, conclusively, it can be said that J.V.B.s mobilizes the passive fund towards trade and commerce, provides economic assistant to enterprises, creates savings habits in general public, investors in primary sectors etc.

1.3. Joint Venture Banks of Nepal.

For this study mainly all joint venture banks of Nepal are chosen. In Nepal, we have six joint venture banks which are Nabil bank Ltd., Standard chartered bank Ltd., Himalayan bank Ltd., Nepal Bangladesh bank Ltd., Nepal S.B.I. bank Ltd. and Everest bank Ltd.

Table 1.1. List of licenced J.V.B.s of Nepal.

Joint venture banks.	Operation date	Head office	Telephone	Fax
Nabil Bank Ltd.	16-07-1984	Kantipath, Kathmandu.	44295469	4429548
Standard C.B. Ltd.	30-01-1987	New Baneshwor, Kath.	4781469	4780762
Himalayan Bank Ltd.	18-01-1993	Thamel, Kathmandu.	4227749	4222800
Nepal Bangladesh Bank	05-06-1993	New Baneshwor, Kath.	4783972	4780106
Nepal S.B.I. Bank Ltd.	07-07-1993	Hattisar, Kathmandu.	4435516	4435612
Everest Bank Ltd.	18-10-1994	Lazimpat, Kathmandu.	4443377	4443160

Nabil Bank Ltd. is the 1st joint venture bank established in 16th of July 1984 A.D. under the company act Dubai Bank ltd. The share owned by DBL were transferred to Emirates Bank International Ltd, Dubai later on EBIL sold its entire holding to National Bank Ltd, Bangladesh. This bank was established with 50% of equity hold by D.B.L., 20% from financial institutions of Nepal and sharing 30% from local public.

Standard Chattered Bank Ltd. is one of the most recognized banks in Nepal established as a joint venture Bank. Earlier it was known as “Nepal Grind lays Bank”. It was established on joint venture bank between ANZ Grind lays (Australian and New-Zealand Banking Group) and Nepal Bank Ltd. in 13th Jan 1987. It has been financed by Standard chartered Grind lays Bank sharing 50%, 33.34% by Nepal bank Ltd., and rest 16.66% by general public. The bank authorized capital is Rs 1000 million, Rs500 million of issued capital and Rs 375 million of paid-up capital. Currently it has 8 branches spread over 3 development regions; 2 branches at eastern region and 4 at central and 2 at western development regions.

Himalayan Bank Ltd. is a joint venture bank with Habib Bank Ltd. of Pakistan which was established in 18 June 1993 under the company act 1994. This is the first joint venture bank holding with maximum share by Nepalese private sectors. Its ownership is composed of financial institutions of Nepal by 66.29%, Habib Bank Ltd. of Pakistan by 20% and general public of Nepal by 13.58%. Currently bank has Rs 1000 million of authorized capital, Rs 600 million of issued and

Rs 643million of paid up capital. Currently it has 15 branches spread over 3 development region of the country. Still it has not any branch at mid western and far western development region.

Nepal Bangladesh Bank Ltd. was established in 5th June 1993 as a joint venture bank with I.F.I.C. bank Ltd. is one of the largest commercial bank of Bangladesh has a joint venture exchange company in Oman and a joint venture in Pakistan. It has Rs 1500 million authorized capital, Rs 1000 million issued and Rs 719.85 million paid-up capitals. Currently it has 17 branches spread over all 5 development regions of the country.

Nepal S.B.I. Bank Ltd. is a joint venture bank with state bank of India was established in 7th july1993 as per act, 2031 B.S. It is the first joint venture in the financial sector sponsored by three institutions promoters, namely State Bank of India, Karmachari Sanchaya Kosh and A.D.B.\N. S.B.I. bank Ltd. is considered as one of the main commercial bank of India with large no of branches all over India is a major promoter of S.B.I. bank Ltd. which held 50% of equity share capital, K.S.K. holds its 15% equity, 5% equity capital hold by A.D.B./N. and rest 30% equity shares hold by general public. The Bank's authorized capital is Rs 1000 million, RS 500 million of issued and Rs 431.87 million of paid-up capital. Currently it has 8 branches spread over 3 development region; 2 branches at eastern development region and 4 at central and 2 at western development region.

Everest Bank Ltd. is a joint venture bank with Punjab national bank of India was established in 18th oct 1994. This bank is established with 20% equity capital hold by Punjab national bank and other 80% equity capital sharing by general public of Nepal. It has Rs 600 million authorized capital, Rs 466.8 million of issued capital and Rs 455 million of paid-up capital. Currently it has 16 branches spread over 4 development region of the country. Still it hasn't any branch at mid western development region till 2005.

1.4. Focus of the Study.

Present situation of Nepalese market is not so good for any kind of business. Banking business depends upon lending business too. So it is also known as a risky business. At present situation, these banks are playing the vital role in the growth of the Nepalese economy. So, what sorts of precautions are to be taken by banks for their existence ?

As loan is the core area of commercial banking, it plays the significant impact on the commercial banks' liquidity and profitability. But the most concerned factor for banking sectors is the total management of loan. Due to the excessive amount of non performing assets in commercial banks, there are the wide spread suspicions on the performance of the commercial banks. So, the main research questions and the focus of the study are as follows.

- What types of risk are existed throughout the banking business ?
- What are the techniques of credit risk management ?
- What is the frame work of risk management ?

- What does the central bank plans to control the commercial banks credit risk portion ?
- What is the present scenario of commercial bank with regard to the credit risk management ?

1.5. Statement of the Problem.

Nepal is small country with small market. Economic condition of the country is degrading due to the conflict since 2052 B.S. Overall economic sectors either manufacturing or commercial have undergone heavy losses. However, the financial institutions are increasing regularly. Liquidity is at maximum level with the financial institutions. Hence, the banks and financial institutions are competing among themselves to advance credit to limited opportunity sectors. Due to the unhealthy competition among the banks, the recovery of bank credit is going towards negatives. Non-performing credits of the banks are increasing year by year. To control such type of state' condition, the regulatory body of the banks and financial institutions, N.R.B. has renewed its directives of the credit loss provision. Since the objective of the commercial banks are wealth maximization and achievement of organizational objectives contribute to the national economy. The success and failure of the commercial banks largely depends on the total credit risk management of the commercial banks. It is important to determine the factors affecting the default risk and its management. This study will assist to reveal how the joint venture banks of Nepal manage the credit risk. Especially, the study is expected to reveal the following research questions.

- How the commercial banks are managing the credit risk ?
- What are the main causes of highly increasing credit risks in commercial banking sectors?
- Is the credit risk management affected by the P.E.S.T.L. factors ?
- Is the proper investment policies and practices does assist to increase the credit risk?
- Is their any necessity to amend the existing regulation ?
- How to make optimal management of credit risk ?

1.6. Objectives of the Study.

The main objective of the study is to evaluate the credit risk management of commercial banks of Nepal. In order to achieve the basic objective, the following are the additional objectives to determine the main objectives.

- To determine and analyze the credit risk of joint venture banks of Nepal.
- To evaluate the S.W.O.T. in credit risk management of joint venture banks.
- To reveal recovery status of the credit disbursement.
- To recommend about credit risk management based on the major findings of the study.

1.7. Significance of the Study.

The business of banking is to measuring, managing and accepting risk. We all know that default risk is a major factor facing by any banking industry. It is the uncertainty associated with the borrowers' loan payment. In general, when borrowers' assets value exceeds their indebtedness, they repay their loan but when borrowers' assets values are less than borrowers loan value, they may not repay. Thus, it is important that lenders be able to value the borrowers' assets and to estimate a borrower's probability of default. Lenders should be very careful when they grant the loans, for that they need to acquire proper information about the borrowers. Successful commercial lender needs good communication skill and clear vision to analyze borrowers planning and ability. Despite of being a very crucial topic of financial management, many researches have not been made for this topic. At present the joint venture banks are gaining a wide popularity through their efficient management and professional services and playing an important role for the economic growth. This study will comprises such information which will be advantageous for shareholders, management bodies of the bank and outsiders i.e. other financial institution, potential investors, stock brokers etc.

1.8. Limitation of the Study.

As the study is being carried out in a partial fulfillment of the requirement for the degree; master of business studies, it possesses a number of limitations of its own kind. Some of the basic limitation of the study may be as follows:

- The study will be based on data and information provided by the banks.
- Due to the small sample size, it may not fully represent Nepal as a whole.
- The study will cover recent few year data regarding with credit risk management.
- The study largely may be depends upon the published documents such as balance sheet, profit and loss account statements etc.
- Statistical and financial technique will be used for credit risk management analysis.

1.9. Organization of the Study.

This study will be organized into following chapters.

Chapter 1 Introduction.

This chapter includes the background of the study, introduction of commercial banking industry of Nepal, focus of study, statement of problem, objectives, significance and the limitations of the study etc.

Chapter 2. Review of Literature.

This chapter deals with the review of available literature. It includes review of books, reports, thesis and journals etc.

Chapter 3. Research Methodology.

This chapter includes the research methodology used in the study which includes research design, sources of data, population and sample and methods of data analysis etc.

Chapter 4. Presentation and analysis of data.

This chapter will concern with the data presentation and analysis of the study etc.

Chapter 5. Summary, Conclusion and Recommendation.

This chapter will concerned with the major findings of the study, conclusion drawn from the findings and the recommendation of this study etc.

CHAPTER 2

REVIEW OF LITERATURE

2.1. Introduction.

The review of literature is a crucial aspect of planning of the study. The main purpose of literature review is to find out what work have been done in the area of the research problem.

2.2. Concept of Credit.

Credit is the amount of money lent by the creditor to borrower either on the basis of security or without security. Credit and advances is an important item on the asset side of the balance sheet of a commercial bank. Bank earns interest on credits and advances which is one of the major sources of income for banks. Bank prepares credit portfolio; otherwise it will not only effect debts but also affect profitability adversely. (Varshney, N.P. and Swaroop, 1994:6)

Credit is financial assets resulting from the delivery of cash or other assets by a lender to a borrower in return of obligation repay on specified date on demand. Bank generally grants credit on four ways: (Chhabra, T.N. and Taneja, 1991: 4)

- Overdraft
- Cash credit
- Direct credit
- Discounting of bills

For bank's overall corporate strategy and strategic plan at least three critical components are needed. They are: (Joseph, 1998:112)

- Business plan
- Framework for risk management
- Strategies for corporate control.

These are the basic components provide a solid foundation for managing value and risk planning, it focuses in just an operating and competing in the financial services industry. The modern strategic approach also includes a framework for risk management and strategic for completing in the component fits for the modern idea of the basic business of banking as measuring, managing and accepting risk. The bank's objective is to manage value and risk by maximizing those or eliminating those that destroy value.

The main task of commercial bank is to collect funds as deposit through several sources and lend them to different sectors like; manufacturing, transportation, trade, construction, communication and other public utilities etc. Doing all these activities every bank has to face so many risks. There are several types of risk prevailed in the banking industry, but the major area of the risk are widely recognized, i.e. credit risk, market risk and operating risk etc.

The credit risk is the potential financial loss resulting from the failure of customers to honor fully the terms of loan or contract. On the other hand, the market risk includes balance sheet risk and trading risk such as potential risk to earning and capital resulting from changes in interest rate, liquidity conditions, impact of foreign exchange rate fluctuations etc. Meanwhile operating risk arises from the natural disasters, errors in processing and settlement of transactions safeguarding of assets, system failure, fraud and forgery.

2.2.1. An Overview on Credit Risk.

Credit risk is defined as the possibility that a borrower will fail to meet its obligations in accordance with the agreed forms and condition. Credit risk is not restricted to lenders doing activities only but includes off balance sheet and interbank exposures. The goal of C.R.M. is to maximize the bank risk adjusted rate of return by maintaining the C.R.E. within acceptable parameters. For most banks, loan is the largest and most obvious resources of credit. However, other sources of credit risk exist throughout the activities of banks including in the banking book and in the trading book and also in both on and off balance sheet. Banks are increasingly facing credit risk or counterparty risk in various financial instruments other than loans including acceptance, inter bank transactions, trade financing, foreign exchange transaction and guarantee and the settlement of transactions.

Credit is regarded as the most income generating assets especially in commercial banks. Credit is regarded as the heart of commercial bank in the sense that, it occupies large volume of transaction. It covers the main part of investment. It is the main factor for creating profit and determining the profitability. It affects the overall economy.

In today's context, it also affects national economy in some extent because if the bank provides credit to retailer, it will make the customer status. Similarly, it provides cash to trade and industry too. The government will get tax from them and help to increase national economy. It is also the security against depositors. It is supposed from the very beginning that Credit is the wealth maximization derivative. However, other factors can also affect profitability and wealth maximization but the most effective factor is regarded as credit risk. It is the most challenging task because it is backbone in commercial banking. Thus effective management of credit should seriously be considered. Management is the system which helps to complete the task effectively. Credit risk management is also the system which helps to manage credit effectively, in other words, credit risk management refers the management of credit exposure arising from loans, corporate bodies, and credit derivatives. Credit exposures are the main sources of investment in commercial banks and return on such investment is supposed to be main sources of income.

2.2.2. Credit Risk Management.

Financial environment is dynamic. In this dynamic financial environment fluctuation in interest rates, exchange rates and commodity and real estate price are not something new. These fluctuations in economic and financial variables destabilize the corporate strategies and performance of bank. Thus, it is necessary that bank has a framework of risk management.

Effective credit risk management allows a bank to reduce risk and potential non performing assets. Once bank understand their risk and their cost they will be able to determine their most profitable business. Therefore the bank must have an explicit credit risk strategy by organizational changes, risk measurement techniques and fresh credit processes and system. While talking about the credit risk management, five C's of creditworthiness should be considered and they are:

- **Character**

The good character and intention of the borrower is very important and thus should be seriously considered. Information about the character of the client can be gathered from his working place, reference, neighbors and other places he is associated with. This job tediously but should be carried out for secure investment.

- **Capacity**

It can be describe as a customer ability to pay. It is measured by applicants past performance records. For this an interview with applicants, customers\suppliers will further clarify the situation. The gross income, expenses and net income should be analyzed whether the borrower lives on salary\wages or any other forms of income sources. Whether the borrower has extra income source other than usual based which should be used to repay the scheduled installments should be considered.

- **Capital**

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

- **Collateral**

Sufficiency of collateral is necessary to ensure the recovery of loan. In case of default, by any cause, the collateral kept should have value enough to recover the loan granted and interest borne by it. It is recommended that only 50% of the value of collateral is granted as loan, but considering other factors like character of borrower and his credit worthiness, this percentage can be made flexible.

- **Conditions**

Borrowers may be subject to unfavorable economic conditions beyond their control. Repayment depends not only upon character, capacity and collateral but those factors over which the borrower exercise little or on control. As for example: natural calamities or drastic economic crises etc.

Risk depends upon the quality found in each 'C' and the combination of these five Cs., assuming the same conditions prevails; the following guidelines are suggested.

Table 2.2.1. Guidelines of Assessing Risk.

<i>Applicant character</i>	<i>Credit risk</i>
Character + Capacity	Very low
Character + Capacity without capital	Low to moderate
Character + Capacity but insufficient capital	Low to moderate
Character + Capital but impaired character	Moderate
Character + Capital without character	High

Character + Capital without capital	High
Character + No capital + No capacity	Very high
Capital + No character + No capacity	Very high
Capacity + No character + No capital	Fraudulent

2.2.3. Credit Risk Management Techniques.

As the majority of bank assets are in the form of loan, as the lending function is simple and create the value of the bank. The main danger is the chance of the borrower not to pay the loan amount. So the proper prudent management of the credit risk is very important. Merton and Bodies have suggested three technique for the managing the credit risk in their article published in the journal of Banking and Finance. (Miller & Merton, 1995:483-489)

- **Risk based pricing.**

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

- **Assets restriction.**

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

- **Monitoring.**

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

Before providing credit to customer, bank makes analysis of project from various aspects and angles. It will help the bank to see whether project is really suitable to invest or not. For that, bank needed to do a project appraisal. The purpose of project appraisal is to achieve the guarantee of reasonable return from the project. Project appraisal answers the following questions:

- Is the project technically sound?
- Will the project provide a reasonable return?
- Is the project in line with the overall economic objectives of the country?

Generally, the project appraisal involves the investigation from the following aspects. (Gautam, 2004:258)

- Financial aspect.
- Economic aspect.
- Management\Organizational aspect.
- Legal aspect.

2.2.4. Credit Risk Management Framework.

Fluctuations in interest rate, exchange rate, and commodity and real estate prices are not something new. However, fluctuation in economic and financial variables destabilized the corporate strategies and performance of the banks and their client customers. Thus, it is crucial to those banks have a framework for risk management and for selling risk management services to clients. Risk management can be conducted on a bank's balance sheet through adjustments in portfolio composition, or off the balance sheet by using most of risk management weapons derived from the technology of financial engineering, there off-balance sheet tools of risk management are known as derivatives contracts of activities or simply as 'derivatives.' (Joseph, 1998: 126)

The risk management framework rests on three pillars, (Froot, 1994:91-102) are summarized as follows.

- Making good investment decisions creates corporate value.

For traditional banks this means making good locus and investments and tradition banks, it means this plus making good investment decision regarding their non-traditional activities e.g. Investment banking, mutual funds, insurance derivatives.

- Generating enough cash flows internally is the key to making good investments.

Companies that don't generate cash flow internally tend to cut investment more substantially than their competitors do. In banking generating enough cash flow internally plays a critical role in maintaining a firm's capital adequacy. Adequate capital in turn is a pre requisite for expansion and making good investment. With respect to cost and control, banks with inadequate capital are subject to higher deposit insurance premium greater regulatory scrutiny and possible take over by outsiders.

- Proper and prudent look at major market indicator.

Bank should look properly at major market indicator because adverse movements in external factors such as interest rates and commodity prices can disrupt cash flow, a company ability to invest be jeopardized.

2.2.5. Factor Affecting Credit Policy.

The credit policy of a firm provides the framework to determine whether or not to extend credit and loan such to extend. The credit policy decisions of banks have two broad dimensions; credit standards and credit analysis. A firm has to establish and use standards to making credit decision, develop appropriate sources of credit information and methods of credit analysis.

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

- **Industry environment.**

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

- **Financial Conditions.**

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

- **Management quality.**

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

- **Technical strength.**

It determines the strength and quality of the technical support required for sustainable operation of the company in terms of man power , the viability of the technology uses, availability of after sales services, cost of maintenance and replacement need to be evaluated.

- **Security realization.**

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

2.2.6. Directives of N.R.B. on Credit Aspect.

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

- **Pass credit.**

Pass loan and advances whose principle amounts are not past due for a period up to 3 months shall be included in this category. Those are classified and defined as performing loans.

- **Substandard credit.**

All loans and advances that are past due for a period of 3 to 6 months shall be included in this category. Those are classified as non-performing loans.

- **Doubtful credit.**

All loans and advances which are past due for period of 6 months to 1 year shall be included in this category. Those loans are classified as nonperforming loss.

- **Loss.**

All loans and advances which are past due for a period of more than 1 year as well as advance which have at least possibility of recovery or considered unrecoverable and those having thin possibility of even partial recovery in future shall be included in this category. These loans and advances are also classified as non-performing loans.

The credit loss provision for performing credit is termed as general loss provision where as the credit loss provision for non-performing credit is termed as specific credit loss provision. Auditor has to correctly rate the credit and ensure that accurate credit loss provision has been made. The auditor should examine whether the bank has obtain the complete documentation so that the bank interest is secured. In addition audit is made to inspect compliance of terms and condition laid down. Credit audit is required to check whether credit is given in within authority, drawing power etc. Credit audit helps the bank to adopt corrective measures where weakness has been pointed out and to focus further on strengths.

On the basis of outstanding loans and advances classification and provisioning for credit as per directives shall be provided as follows:

Classification of loan.	Loss provision.
Pass	1%
Substandard	25%
Doubtful	50%
Loss	100%

2.3. Review of Previous Studies.

2.3.1. Review of Journals.

When government decides to establish banks with joint ventures, two benefits were expected. First that competition would force domestic banks. Thus, Nepal Bank Ltd. and Rastriya Banijay Bank have to improve their services and efficiency. Second, the introduction of new banking procedures methods and technology would occur. (Madlin C. and Snock H., Jan. 31, 1998: 4)

There has been substantial growth in the number of joint venture banks in Nepal since 1990s. The basic reason behind this is the government's deliberate policy of allowing foreign J.V.B. to operate in Nepal. Government's liberalization policy also encourages the traditionally run domestic commercial banks to enhance their efficiency and computerization and prompt customers services by setting them to the exposure of the joint venture banks.(Shrestha M.K.,1990:16)

Mr. Sharma explains in his article," Joint venture banks in Nepal coexisting of crowding out."(Sharma M.R., 1988:3.42) that it would be definitely un-wishful for Nepal not to let joint venture bank to operate in the country and not to take advantage of additional means of resources mobilization as well as harbinger of new in banking. But it will certainly be unfortunate for the country to let the development of the J.V.B.s at the cost of domestic banks. So far, one should admit frankly, no differential treatment has been made to the domestic and joint venture banks, at least from the latter's bargaining.

If the joint venture banks show strength and briskness to come forward to share the trails and tribulation of this poor country, both types of bank will collapse and co-exist complementing each other, contributing to the nation's accelerated development. On the contrary if the J.V.B. use their strength against treading to the cumbersome path of development along with the domestic banks and government, they will eventually throw out the domestic banks from the more profitable and lucrative urban sectors unless reincarnated by the determination of the government. Mr. Sharma has made a comparative study of two different natures of banks, especially on nature of transaction and expertise in banking network. J.V.B.s basically were oriented in urban areas where the local banks are setup and conducted their transaction both in urban and remote areas. Moreover a number of commercial banks are situated in rural rather than in urban areas.

Mr. Thapa, in his article," Financial system of Nepal"(Thapa, G.B., 1994:29-30) has expressed his view that the commercial banks including foreign joint venture banks seen to be doing pretty well in mobilizing deposits. Likewise, loans and advances of these banks are also increasing but compared to the high credit needs particularly by the newly emerging industries, the banks still seem to lack adequate funds. The banks are increasing their lending to non-traditional along with traditional sectors.

He has also studied that out of all commercial banks operating in the country, Nepal Bank Ltd. and Rastriya Banijaya Bank are operating with nominal profit, the later turning towards negatives from time to time. Because of non-recovery of accrued interest, the margin between interest income and

interest expenses is declining. They have heavy burden of personal and administrative overhead. On the other hand, foreign joint venture banks are functioning in an extremely efficient way. They are making huge profit year after year. Because of their effective persuasion on loan recovery, overdue and defaulting loans have been limited resulting in high margins between interest income and interest payment.

2.3.2. Review of Earlier Thesis.

Various studies have been conducted on the credit risk management and other related subject of different institutions and banks. Reviews of some of the thesis work are presented below:

2.3.2.1. Study of Mr. Kimanand Aryal.

Mr. Kimananda Aryal has submitted a thesis named, "A evaluation of credit investment and recovery of financial public enterprise in Nepal," a case study of ADB\N. In his thesis he stated high interest rate of non-institutional sources; people are unable to pay their credit at fixed time. These institutions compel them to transfer their property to the money lender resulting himself or herself as a landless person as a research statement of the problem. ADB\N is one of the major financial institutions supporting for the people for the different purpose like agro, industry, tea, coffee, livestock farming etc. ADB\N provides the credit for individual and co-operative sector to all region of the country. Credit outstanding amount is increasing day by day but the collection amount is not good. However, ADB\N has increased its effort to collect its credit. It is said that those people who really need to do sufficient amount of credit from A.D.B.N. So, Mr. Aryal chose this bank to analyze the credit disbursement and recovery pattern of A.D.B.N.

From his research, he has made some findings which are shown below.

- Actual credit disbursement, collection and outstanding are increasing in decreasing rate.
- Yearly increase in credit disbursement is higher than that of collection.
- Positive relation between credit disbursement and collection that is 0.996
- Target credit collection and disbursement fixed by planning and project department is not significantly different than the actual.
- Most of the customers are unaware of the policy of the bank.

Mr. Aryal has concluded in his thesis that, the borrower should be informed about the credit, its use and its payment procedures and schedule.

- Greater attention should be given to increase the credit collection and to collect old outstanding amount of credit and renewal of it.
- To accelerate the collection, credit should be followed continuously in a regular interval of time.
- To behavior of the personal should be strictly supervised in granting credit in proper investment proposal because of most the bad credit disbursement is due to weak decision of the personal.

2.3.2.2. Study of Mr. Pawan Regime.

Mr. Pawan Regmi has submitted a thesis named "Credit management of commercial banks with reference to Nepal Bangladesh Bank Ltd. and Bank of Katmandu" on December 2004 to T.U.

In his thesis, he has stated liquidity matters, unfair competition between banks and service institutions, lack of enough profitable investment sectors, poor recovery process and lengthy and ineffective legal process in the recovery of credit as a statement of research problem.

Mr. Regmi has concluded in his thesis that, both of the banks have sufficient liquidity. It shows that banks have not got investment sectors to utilize their liquid money; both of the banks have provided modern facilities to its customers and have used modern technology; non performing credits are increasing. So, he conclude that credit is not satisfactory; because of increasing in non-performing credit bank should increase its provision for credit loss; lack ness in efficiency in the management of credit become the process of recovery is slow; due to increase in the non performing credit, bank's profit is decreasing year by year.

In his thesis he has recommended some suggestions which are as follows:

- Cash and bank balance of both banks are high. Unused cash and bank balance do not provide return to the bank, therefore some percentage of cash and bank balance should be invest somewhere in profitable sector.
- Nonperforming assets of both banks are high. It does not provide return to banks therefore bank should increase its effort to recover its credit on time.
- Weighted average capital funds of both banks are lesser than the required as per directive issued by N.R.B. Therefore, he suggested to increase the amount of the capital fund for overcome out from panelize by N.R.B.
- Few customers are unsatisfied with the service charges and interest of credit; therefore, he suggested that banks should decrease service charges and interest charges.

2.3.2.3. Study of Mr. Ganesh Bhadhur Chand.

Mr. Ganesh Bahadur Chand has submitted his thesis on "Credit disbursement and repayment of A.D.B.N." on 1988 to T.U. In his thesis, he stated problem of balance development; slowly ness in credit collection hinder the flow of capital required to develop the economic growth as a statement of research problem. And the main objectives of his study were: to analyze the repayment situation, finding out the rate of growth of investment and to explain the possible causes of none and delayed repayment. Mr. Chand had found some findings and recommendation which are follows.

- There is systematic relationship between credit disbursement and repayment.
- Repayment situation is satisfactory on production inputs and agro-based industry, warehouse and marketing percentage of repayment to irrigation and tea horticulture and livestock, poultry and fisheries is much less satisfactory.
- A.D.B.N. should to play a significance role in such direction as fulfill the credit demands of the rural areas. For effective credit recovery from the borrower or clients' credit should be channeled through the borrower groups.

2.4. Research Gap.

Research gap is the difference between previous work done and the present work. Earlier works conducted by the previous researchers are very useful and appreciated by personnel in various related field. The suggestions and recommendations given by the previous researchers help to improve and increase the necessary data for the related topic. Although there is long gap between previous studies and this stud, the gap between earlier studies and this study analyses the credit risk management system of commercial banks, in this study requirement of loan loss provisions are studied and its effect on activity and profitability of the commercial banks, which are very crucial for the going concern strategy of the commercial banks. For the analysis purpose this study mostly used" Risk index and profitability of Book value insolvency" as suggested by Joseph F. Sinkey, in his book "Commercial Bank and Financial Management.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction.

Research is the common parlance refers to a search for knowledge. The web star international dictionary gives a very inclusive definition of research as “a careful critical inquiry or examination in seeking facts and principles; diligent information in order to ascertain something.” (Saravanel, 1990: 1)

A systematic methodology is required to pick an actual result of any study. Research methodology refers to the various sequential step to adopted by a researcher in studying a problem with certain objective in views. ‘Research methodology is a way to systematically solve the research problem.’ (Kothari, 1990: 10) It may be understood as a science of studying how research is done scientifically.

This chapter deals with the methodology that adopted in analysis of the data for the study. The population and sample, sources and data collection technique, data analysis tool, the hypothesis to be tested and various limitations which are associated with the study have been discussed in this chapter. IT helps us to find out accuracy, validity and suitability. The justification on the present study cannot be obtained with out help of proper research methodology used in present study cannot be obtained without help of proper research methodology. The research methodology used in present study is briefly mentioned below.

3.2. Research Design.

A research design is the arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Is an overall operational pattern of framework of the project that stipulates what information is to be collected from which source and by what procedures? As the study focuses to evaluate credit risk management of the banks, the research design is the study is primarily related to the credit risk management of Nepalese joint venture banks. So, further research work, the analytical and descriptive research design are appropriate and will be adopted.

3.3. Population and Sample.

During the past decade, central bank has licensed more than a dozen of commercial banks to get established. So, all the commercial banks operating in Nepal are considered as the population. Thus, here only six Joint Venture Banks are taken out as a samples.

Similarly, financial statements of six J.V.B.s for five years research period have been taken as sample for the same purpose.

S.N.	Joint venture banks.	Sample.	Joint venture with.
1.	Nabil Bank Ltd.	1	National B.L. Bangladesh.
2.	Standard C.B.Nepal Ltd.	1	ANZ, Grind lays Bank.
3.	Himalayan Bank Ltd.	1	Habib. B.L.
4.	Nepal Banaladesh Bank	1	IFIC Bank L. of Bangladesh.
5.	Nepal S.B.I. Bank Ltd.	1	State Bank of India.
6.	Everest Bank Ltd.	1	Punjab National Bank of India.
		Sample(n) = 6	

3.4. Types and Sources of Data.

There are two kinds of data; primary data and secondary data. The primary data are those which are collected a fresh and for the first time and thus happen to be original in character. Secondary data on an other hand are those which have already been collected by someone else and already been passes through the statistical processes.

To achieve the objectives of the study, both primary as well as secondary data has been used. Discussions and interview with existing credit takers, staff members of the related banks will be conducted to collect the primary data. In this regard questionnaire will be used as a primary data.

The secondary data has been collected through various published and unpublished documents of the concerned authorities. The sources of secondary data are as follows.

- Journals, newspaper and magazines.
- Unpublished master degree thesis related to this research.
- Government material related to this research.
- Books related to financial managements.
- Different websites.

3.5. Data Collection Techniques.

In order to collect the data, annual reports published by banks and N.R.B. economic report and other published statistical data will be used, and to obtain the additional information, informal talks and procedures will be used. Similarly, information may be collected from bulletin, booklets and journals published from relevant banks and other external sources also have been used.

In order to collect primary data and information, the schedule has been developed and will be provided to the related parties to know their views regarding to the objectives of the study. These

primary data will be assumed as original in character because they are to be collected for the first time.

Secondary data, on the other hand, are those which have been already collected by someone and already been passed through the statistical process. Thus, the sources of secondary data would be journals, newspaper, government material related to the study; master degree thesis related to this research, book related to financial management and different related websites. Hence, data collection procedures consist both the way of data collection procedures.

3.6. Data analysis Tools.

For the achievement of the study various financial and statistical tools can be applied. The analysis of data will be done according to the pattern of available data. The descriptions of financial as well as statistical tools are as follows.

3.6.1. Financial Tools.

Analysis of financial statements helps to take managerial and financial decisions. In this study, various financial tools will be employed for the sake of analysis. The basic tool for financial analysis will be ratio analysis. Beside it, risk index techniques also will be adopted.

Ratio analysis has been accepted as the most dominant financial tools to analyze and interpret the financial statements. The relationship between two figures expressed mathematically is known as financial ratio. It is the systematic use of ratio to interpret the financial statement so that the strength and weakness of the firms as well as its historical performance and current financial conditions can be determined. Thus ratio is defined as “the indicated quotient of two mathematically expresses ions, and the relationship between two or more things.” (Web star’s New Collegiate Dictionary: 1975: 985)

Alexander wall has considered as the pioneer of ratio analysis. He presented after serious thinking, a detailed system of ratio analysis I 1909. He explained that the work of interpretation can be made easier by establishing quantitative relationship between the facts given in the financial statement.

Ratio analysis has various uses such as it is useful n financial position which helps the banks and other financial institutions in lending and making investment decisions; for forecasting purpose and making plans; for locating weak spot in business and also in comparison of performance with the contemporary firms or department. In spite of uses, there are some limitations, which rusticates it uses. If data are incorrect, it present false result; there is no common standard of comparison; it is only one method of analysis. But despite that its significance is much accepted in analyzing the financial performance of any firm. A large no. of ratios can be generated from the components of profit and loss account and balance sheet. For this study, ratios are categorized into the following major headings.

A. Activity Ratio

Activity ratio or utilization ratio is employed to measure the efficiency of the bank managers for utilize its resources. Hence the ratios are called efficiency ratio, assets utilization ratio or turnover ratio.

This ratio indicates the efficiency, speed and rapidly with which assets have been used or converted in to sales. The greater the ratio is the more efficient the utilization of resources. Various ratios are examined under this ratio. Some of them which are useful for this study have been shown below.

1. Credit and Advances to Total Deposit Ratio.

Commercial banks utilize the outsider's funds for profit generation purpose. Credit and advances to total deposit ratio shows whether the banks are successful to utilize the outsider's funds for the profit generate purpose on the credit and advances or not. Generally a high ratio reflects higher efficiency outsiders fund and vice-versa. The ratio can be calculated by using the following formula.

$$\text{Credit and Advance to Total Deposit Ratio.} = \frac{\text{Credit and advance.}}{\text{Total deposit.}}$$

2. Credit and Advance to Fixed Deposit Ratio.

Fixed deposits are the long-term interest bearing obligations and credits and advances are the major sources of investment to generate the income by the commercial banks. The ratio measures how many times the amount is used in credit and advances in comparison of fixed deposit for the income generating purpose. The following formula is used to obtain this ratio.

$$\text{Credit and Advance to Fixed Deposit Ratio.} = \frac{\text{Credit and advance.}}{\text{Fixed deposit.}}$$

3. Credit and Advance to Total Assets Ratio.

It measures the ability in mobilizing total assets into credit and advances for generating income. A higher ratio is consider as an adequate symbol for effective utilization of total assets of banks to credit and advances which creates opportunities to earn more and more. This ratio can be calculated as follows.

$$\text{Credit and Advance to Total Assets Ratio.} = \frac{\text{Credit and advances.}}{\text{Total assets.}}$$

4. Performing Assets to Total Assets Ratio.

It tells the percent of performing assets to total assets. It is useful to know the fact that whether the good credit is increasing or not. We can generate more earning by increasing good credit and can reduced bad and inferior credit. It teaches us to invest on the sources of good credit. This ratio can be calculated using following formula.

$$\text{Performing Assets to Total Assets Ratio.} = \frac{\text{Performing assets.}}{\text{Total assets.}}$$

B. Profitability Ratio

Profitability ratio indicated the degree of success in achieving desired profit. Profit is the difference between revenue and expenses over a certain period of time. Profit is ultimate output of company and its existence is not justified if it fails to make sufficient profit. So profits are essential for every firm to survive and to grow over a long period of time. Profitability ratios are the indicators of degree of managerial success for achieving firm's overall efficiency of the business. The following ratios are calculated under the profitability ratio.

1. Return on Total Assets Ratio.

Return on total assets explains the contribution of assets to generating net profit. This ratio indicates the efficiency of assets mobilization. In other word, ROA is an overall profitability rate which measure earning power and overall efficiency of the organization. This ratio can be calculated by using following formula.

$$\text{Return on Total Assets Ratio.} = \frac{\text{Net profit after tax.}}{\text{Total assets.}}$$

2. Return on Equity.

The equity capital of a bank is its owned capital. The prime objective of any bank is wealth maximization i.e. to earn high profit by maximizing return on its equity capital. This ratio shows how efficiently the banks have utilized shareholders' funds to raise the profit. The higher ratio represents the higher efficiency of the bank in utilizing long term funds of shareholders. It can be calculated as follows.

$$\text{Return on Equity.} = \frac{\text{Net profit after tax.}}{\text{Share holder's equity.}}$$

3.6.2. Statistical Tools.

1. Risk Index.

Basically credit risk management is reviewed by two approaches. First approach is micro approach which is generally out by bank employee, internal auditor who can collect all and every related information to credit management. Another approach is macro approach. This approach is faster but less accurate way of estimating risk and loss exposure of banks according to Joseph F. Siney, in his book, commercial bank and financial management.

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, 1998. It has been applied by Liang and Savage in 1990, Sinkey and Nash, 1993. Risk index can be computed by using following formulae.

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

Where,

E (ROA) = expected return on assets.

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

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

Lower the risk index implies riskier bank where as higher implies safer bank. 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.

2. Profitability of Book Value Insolvency.

This figure is calculated by using the value of risk index. Profitability of book value insolvency can be expressed as half square of risk index i.e. $[0.5(\text{R.I.})^2]$. The resulting figures show the thickness of the book value cushion a bank has available to absorb accounting losses. In both cases, risk index and profitability of book value insolvency, a bank with the high expected R.O.A shows a strong capital position and stable earning, has a relatively high of risk index and a small change of exhausting its book value equity.

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

where,

R.I. = risk index.

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 non linear.

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'.

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

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.

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

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

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 1 variable when the value of other variable is known. The unknown variable which have to be predicted is called dependent variable and the know 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.

6. Test of Hypothesis.

The test of hypothesis is a process of testing population on the basis of the sample drawn from the population. The computed value of the statistics may differ from the hypothetical value of the parameter due to sampling fluctuation. If the differences are small, we consider that has arisen due to sampling fluctuation. Hence, the difference is considered to be insignificant and the hypothesis is rejected. (Shrestha and Manandhar, Valley Publishers, P. 6-11)

Another type to measure the statistical analysis is significance of the slope of the line has been calculated. For this purpose, null hypothesis will be formulated, as the slope of the line is zero. This can be formulated as follows.

$$S_y = \sqrt{\frac{(Y)^2 - a(Y) - b(XY)}{N-2}}$$

Where,

S_y indicates the standard error of the y value.

The S_y value results are again put in calculating the standard error of estimate of the slope of the line. That is;

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}}$$

The resultant figure is put in the following formula and compared it with the tabulated value which determines statistically significant of the slope of the line. That is

$$T_b = \frac{b - 0}{S_b}$$

Where,

T_b indicates the calculated T-value.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with the presentation and analysis of relevant data of the J.V.B.s of Nepal in order to fulfilled 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 relationships or differences supporting or conflicting with original or new hypothesis should be subjected to statistical test of significance to determine with what validity data can be served to indicate any conclusion. This chapter divides into two parts; analysis within primary data and analysis within secondary data of joint venture banks and its findings have been discussed in this chapter.

4.1. Presentation and Analysis of Primary Data.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Does any bank officer visit your project site at the time of granting loan?”

Table 4.1.1. Grant of Loan.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	6	66.67	1	11.11	2	22.22	9
S.C.B.N.	7	77.78	-	-	2	22.22	9
H.B.L.	8	80	2	20	-	-	10
N.B.B.L.	6	60	3	30	1	10	10
N.S.B.I. B.L.	6	60	3	30	1	10	10
E.B.L.	7	70	1	10	2	20	10

Sources: Questionnaire No. 1 (Annex 1.1)

Above table shows that 66.67 % credit customer sample of N.B.L. told that the bank officer visited their project site at the time of granting loan, 11.11 % said they don't visited and 22.22 % haven't given any proper response for the question. 77.78 % credit customer sample of S.C.B.N. told that

the bank officer visited their project site at the time of granting loan and 22.22 % haven't gave the proper response for the same question. 80 % credit customer sample of H.B.L. told that the bank officer visited their project site at the time of granting loan and 20 % said they don't visited. 60 % credit customer sample of N.B.B.L. told that the bank officer visited their project site at the time of granting loan, 30 % said they don't visited and 10 % haven't gave the proper response for the question. 60 % credit customer sample of N.S.B.I.B.L. told that the bank officer visited their project site at the time of granting loan, 30 % said they don't visited and 10 % haven't gave the proper response for the question. 70 % credit customer sample of E.B.L. told that the bank officer visited their project site at the time of granting loan, 10 % said they don't visited and 20 % haven't gave the proper response for the question.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of "Do you know all information about bank policies?"

Table 4.1.2. Bank Policies.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	5	55.56	4	44.44	-	-	9
S.C.B.N.	6	66.67	3	33.33	-	-	9
H.B.L.	6	60	4	40	-	-	10
N.B.B.L.	5	50	5	50	-	-	10
N.S.B.I.B.L.	5	50	5	50	-	-	10
E.B.L.	7	70	3	30	-	-	10

Sources: Questionnaire No. 2 (Annex 1.1)

Above table shows that 55.56 % credit customer sample of N.B.L. told that they knew all information about the bank policies and 44.44 % said they don't know. 66.67 % credit customer sample of S.C.B.N. told that they knew all information about the bank policies and 33.33 % said they don't know. 60 % credit customer sample of H.B.L. told that they knew all information about the bank policies and 40 % said they don't know. 50 % credit customer sample of N.B.B.L. told that they knew all information about the bank policies and 50 % said they don't know. 50 % credit customer sample of N.S.B.I.B.L. told that that they knew all information about the bank policies

and 50 % said they don't know. 70 % credit customer sample of E.B.L. told that they knew all information about the bank policies and 30 % said they don't know.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Are you satisfied with the bank interest rate?”

Table 4.1.3. Bank Interest Rate.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	5	55.56	4	44.44	-	-	9
S.C.B.N.	6	66.67	3	33.33	-	-	9
H.B.L.	3	30	7	70	-	-	10
N.B.B.L.	3	30	7	70	-	-	10
N.S.B.I.B.L.	6	60	4	40	-	-	10
E.B.L.	4	40	6	60	-	-	10

Sources: Questionnaire No. 3 (Annex 1.1)

Above table shows that 55.56 % credit customer sample of N.B.L. told that they are satisfied with the bank interest rate and 44.44 % said they aren't satisfied. 66.67 % credit customer sample of S.C.B.N. told that they are satisfied with the bank interest rate and 33.33 % said they aren't satisfied. 30 % credit customer sample of H.B.L. told that they are satisfied with the bank interest rate and 70 % said they aren't satisfied. 30 % credit customer sample of N.B.B.L. told that they are satisfied with the bank interest rate and 70 % said they aren't satisfied. 60 % credit customer sample of N.S.B.I.B.L. told that that they are satisfied with the bank interest rate and 40 % said they aren't satisfied. 40 % credit customer sample of E.B.L. told that they are satisfied with the bank interest rate and 60 % said they aren't satisfied.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Have you received any notice before credit expiration date?”

Table 4.1.4. Credit Expiration Date.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	6	66.67	3	33.33	-	-	9
S.C.B.N.	8	88.89	-	-	1	11.11	9
H.B.L.	8	80	-	-	2	20	10
N.B.B.L.	7	70	1	10	2	20	10
N.S.B.I.B.L.	7	70	1	10	2	20	10
E.B.L.	8	80	1	10	1	10	10

Sources: Questionnaire No. 4 (Annex 1.1)

Above table shows that 66.66 % credit customer sample of N.B.L. told that they received bank notice before credit expiration date and 33.33 % said they don't received. 88.89 % credit customer sample of S.C.B.N. told that they received bank notice before credit expiration date and 11.11 % haven't given proper answer. 80 % credit customer sample of H.B.L. told that they received bank notice before credit expiration date and 20 % said they don't received. 70 % credit customer sample of N.B.B.L. told that they received bank notice before credit expiration date, 10 % said they don't received and 20 % haven't give any response. 70 % credit customer sample of N.S.B.I.B.L. told that that they received bank notice, 10 % said they don't and 20 % haven't given any response. 80 % credit customer sample of E.B.L. told that they received bank notice before credit expiration date 10 % said they don't and rest 10% haven't given proper response.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Do you feel that you have got full cooperation from the bank officer?”

Table 4.1.5. Co-operation by Bank Officer.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	8	88.89	-	-	1	11.11	9
S.C.B.N.	7	77.78	1	11.11	1	11.11	9
H.B.L.	6	60	1	10	3	30	10
N.B.B.L.	6	60	4	40	-	-	10
N.S.B.I.B.L.	6	60	1	10	3	30	10
E.B.L.	7	70	3	30	-	-	10

Sources: Questionnaire No. 5 (Annex 1.1)

Above table shows that 88.89 % credit customer sample of N.B.L. told that they have got full cooperation from the bank officer and 11.11 % haven't given any response. 77.78 % credit customer sample of S.C.B.N. told that they have got full cooperation from the bank officer, 11.11% said they haven't and 11.11 % haven't given proper answer. 60 % credit customer sample of H.B.L. told that they have got full cooperation from the bank officer, 10% said they haven't and 10 % haven't given proper response. 60 % credit customer sample of N.B.B.L. told that they have got full cooperation from the bank officer and 10 % haven't given any response. 60 % credit customer sample of N.S.B.I.B.L. told that that they have got full cooperation from the bank officer, 10 % said they haven't and 30 % haven't given any response. 70 % credit customer sample of E.B.L. told that they have got full cooperation from the bank officer and rest 30% haven't given proper response.

-Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Have you utilized the entire credit to the same sector as specified at the time of taking loan?”

Table 4.1.6. Utilization of Loan.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	9	100	-	-	-	-	9
S.C.B.N.	9	100	-	-	-	-	9
H.B.L.	8	80	-	-	2	20	10
N.B.B.L.	9	90	-	-	1	10	10
N.S.B.I.B.L.	9	90	1	10	-	-	10
E.B.L.	8	80	-	-	2	20	10

Sources: Questionnaire No. 6 (Annex 1.1)

Above table shows that 100 % credit customer sample of N.B.L. and S.C.B.N. told they have utilized the entire credit to the same sector as specified at the time of taking loan. 80 % credit customer sample of H.B.L. told that they have utilized the entire credit to the same sector as specified at the time of taking loan and 20 % haven't given proper response. 90 % credit customer sample of N.B.B.L. told that they have utilized the entire credit to the same sector as specified at the time of taking loan and 10 % haven't give any response. 90 % credit customer sample of N.S.B.I.B.L. told that that they have utilized the entire credit to the same sector as specified at the time of taking loan and 10 % said they haven't. 80 % credit customer sample of E.B.L. told that they have utilized the entire credit to the same sector as specified at the time of taking loan and rest 20% haven't given proper response.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Are you satisfied with the interest rate of the bank?”

Table 4.1.7. Satisfaction.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	9	100	-	-	-	-	9
S.C.B.N.	8	88.89	-	-	1	11.11	9
H.B.L.	8	80	1	10	1	10	10
N.B.B.L.	7	70	3	30	-	-	10
N.S.B.I.B.L.	7	70	2	20	1	10	10
E.B.L.	8	80	1	10	1	10	10

Sources: Questionnaire No. 7 (Annex 1.1)

Above table shows that 100 % credit customer sample of N.B.L. told that they are satisfied with the bank interest rate. 88.89 % credit customer sample of S.C.B.N. told that they are satisfied with the bank interest rate and 11.11% haven't given proper answer. 80 % credit customer sample of H.B.L. told that they are satisfied with the bank interest rate, 10% said they aren't and 10 % haven't given proper response. 70 % credit customer sample of N.B.B.L. told that they are satisfied with the bank interest rate and 30 % aren't satisfied. 70 % credit customer sample of N.S.B.I.B.L. told that that they are satisfied with the bank interest rate, 20 % said they aren't and 10 % haven't given any response. 80 % credit customer sample of E.B.L. told that they are satisfied with the bank interest rate, 10 % said they aren't satisfied and rest 10% haven't given proper response.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Do you want to take further credit from the bank?”

Table 4.1.8. Furthur Credit.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	7	77.78	-	-	2	22.22	9
S.C.B.N.	8	88.89	-	-	1	11.11	9
H.B.L.	8	80	1	10	1	10	10
N.B.B.L.	7	70	1	10	2	20	10
N.S.B.I.B.L.	8	80	2	20	-	-	10
E.B.L.	8	80	1	10	1	10	10

Sources: Questionnaire No. 8 (Annex 1.1)

Above table shows that 77.78 % credit customer sample of N.B.L. told that they will take further credit from the same bank and 22.22 % haven't given any response. 88.89 % credit customer sample of S.C.B.N. told that they will take further credit from the same bank and 11.11 % haven't given proper answer. 80 % credit customer sample of H.B.L. told that they will take further credit from the same bank, 10 % said they won't and rest 10 % haven't given proper response. 70 % credit customer sample of N.B.B.L. told that they will take further credit from the same bank, 10 % said they won't and 20 % haven't give any response. 80 % credit customer sample of N.S.B.I.B.L. told that they will take further credit from the same bank and 20 % said they won't. 80 % credit customer sample of E.B.L. told that they will take further credit from the same bank, 10% said they won't and rest 10 % haven't given proper response.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Is the service charge taken by bank is satisfactory?”

Table 4.1.9. Service Charge.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	5	55.56	4	44.44	-	-	9
S.C.B.N.	6	60	3	30	1	10	10
H.B.L.	6	60	3	30	1	10	10
N.B.B.L.	4	40	5	50	1	10	10
N.S.B.I.B.L.	6	60	4	40	-	-	10
E.B.L.	3	30	5	50	2	20	10

Sources: Questionnaire No. 9 (Annex 1.1)

Above table shows that 55.56 % credit customer sample of N.B.L. told that they are in favor of service charge taken by the bank and 44.44 % are not in favor of bank’ service charge. 60 % credit customer sample of S.C.B.N. told that they are in favor of bank’ service charges, 30% are not in favor and 10 % haven’t given proper answer. 60 % credit customer sample of H.B.L. told that they are in favor of bank’s service charges, 30 % are not in favor and rest 10 % haven’t given proper response. Only 40 % credit customer sample of N.B.B.L. told that they are in favor of bank’s service charges, 50 % are not in favor and 10 % haven’t give any response. 60 % credit customer sample of N.S.B.I.B.L. told that they are in favor of bank’s service charges and 40 % are not in favor. Only 30 % credit customer sample of E.B.L. told that they are in favor of bank’ service charges, 50% are not in favor and rests 20 % haven’t given proper response.

- Frequencies of responses of credit customers of the J.V.B.s of Nepal for the question of “Are you thinking to switch off the bank in the future?”

Table 4.1.10. Future Plan.

Banks	Yes		No		No clear response		Total
	No.	%	No.	%	No.	%	
N.B.L.	-	-	9	100	-	-	9
S.C.B.N.	-	-	9	100	-	-	9
H.B.L.	1	10	9	90	-	-	10
N.B.B.L.	1	10	7	70	2	20	10
N.S.B.I.B.L.	2	20	8	80	-	-	10
E.B.L.	1	10	9	90	-	-	10

Sources: Questionnaire No. 10 (Annex 1.1)

Above table shows that 100 % credit customer sample of N.B.L. and S.C.B.N told that they will not switch off the bank in near future. Only 10 % credit customer sample of H.B.L. are planning to switch off the bank in near future but still 90 % customer will not switch off the bank. Only 10 % credit customer sample of N.B.B.L. are thinking to switch off the bank in future, 70 % will not switch off and 20 % haven't give any response. 20 % credit customer sample of N.S.B.I.B.L. told that they are thinking to switch off the bank in future and 80 % will not. Only 10 % credit customer sample of E.B.L. told that they are thinking to switch off the bank in future but still 90% are not thinking to switch off the bank.

4.2. Presentation and Analysis of Secondary Data.

4.2.1. Company Wise Analysis.

As per directives issued by N.R.B., loan and advances should be categorizes into performing loan and non performing loan. Non-performing loan also must be categorizes into substandard, doubtful and loss. For these loans provision should be maintained which must be 25, 50 and 100% respectively.

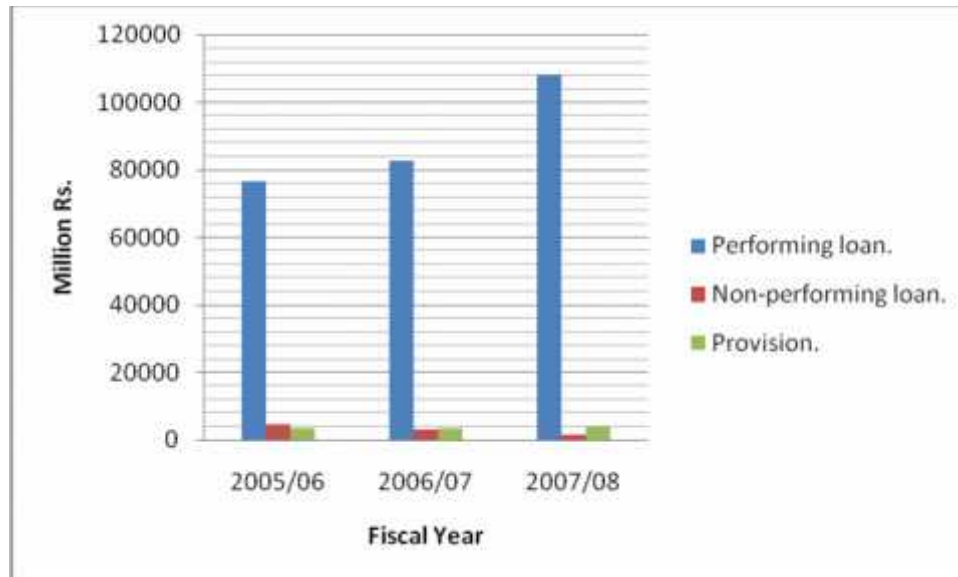
Table 4.2.1. (A₁) Loan and Loss Provision of N.B.L.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	76640.50	82619.80	108016.30
Non-performing loan.	4496.30	2866.80	1445.10
Provision.	3577.00	3568.00	3920.00

Sources: Annual report of N.B.L

Figure 4.2.1. (A₁) Loan and Loss Provision of N.B.L.



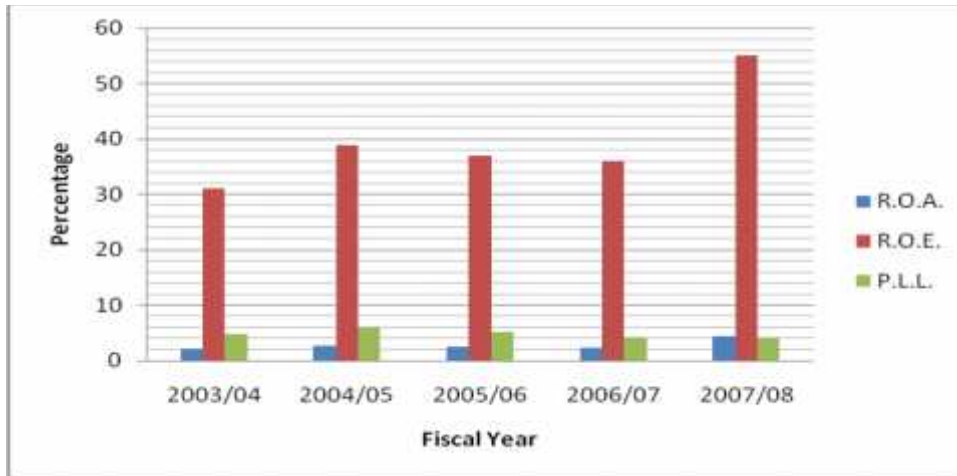
As per above figure of loan loss provision of N.B.L., its performing loan is in increasing trend and difference between the performing and non-performing loan is very high which indicates that bank is maintaining good loan position and its credit position is also maintained.

Table 4.2.1. (A₂) Return Analysis of N.B.L.

F.Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	2.19	2.60	2.41	2.27	4.35
R.O.E.	31.08	38.79	37.03	35.95	55.08
P.L.L.	4.76	5.83	5.07	4.24	4.01

Sources: Annual report of N.B.L

Figure 4.2.1. (A₂) Return Analysis of N.B.L.



As per above figure of return analysis of N.B.L., it shows that there is no negative effect of loan loss provision on return on assets and return on equity. Trend of return on equity and assets is stable. It is slightly high in fiscal year 2007/08 which is good sign for the bank.

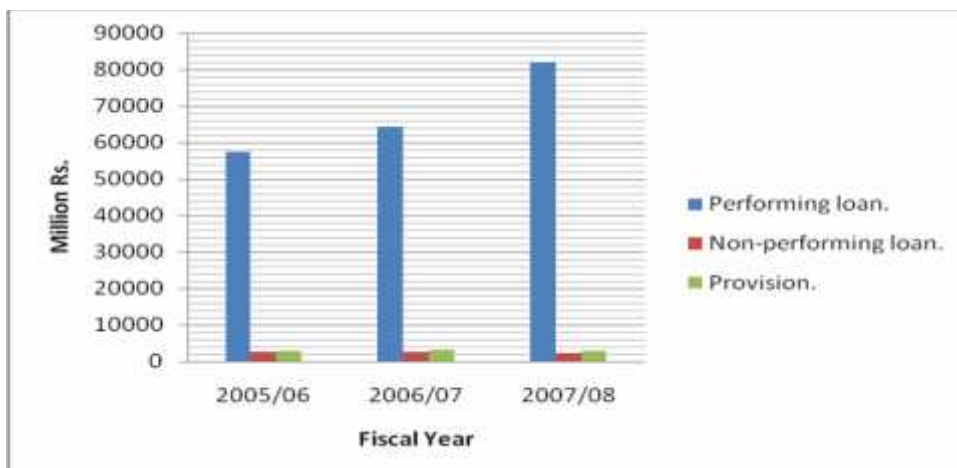
Table 4.2.1. (B₁) Loan and Loss Provision of S.C.B.N.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	57522.10	64416.60	81945.60
Non-performing loan.	2479.50	2522.00	2263.10
Provision.	2836.00	3043.00	2777.00

Sources: Annual report of S.C.B.N.

Figure 4.2.1. (B₁) Loan and Loss Provision of S.C.B.N.



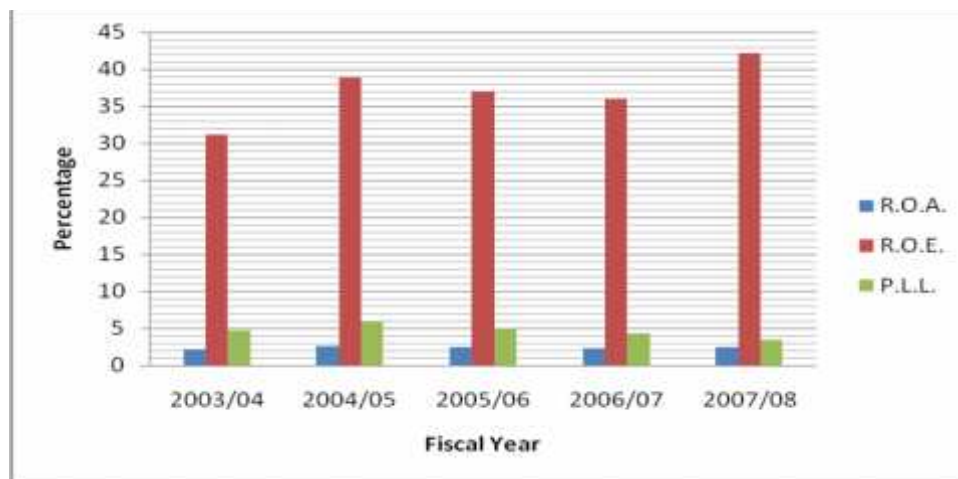
As per above figure of loan and loss provision of standard chartered bank ltd., its performing loan is in increasing trend and non-performing loan is in decreasing trend. Difference between performing and non-performing loan is very high which shows that bank is maintaining good loan position and its credit risk position is also maintained.

Table 4.2.1. (B₂) Return Analysis of S.C.B.N.

F.Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	2.19	2.60	2.41	2.27	2.36
R.O.E.	31.08	38.79	37.03	35.95	42.08
P.L.L.	4.76	5.83	5.07	4.24	3.38

Sources: Annual report of S.C.B.N.

Figure 4.2.1. (B₂) Return Analysis of S.C.B.N.



As per above figure of return analysis, it shows that there is no negative effect of loan loss provision on R.O.A. and R.O.E. Trend of return on equity and return on assets is stable R.O.E. is slightly fluctuated than R.O.A. but it has not decreased as bank has to maintain the loan loss provision.

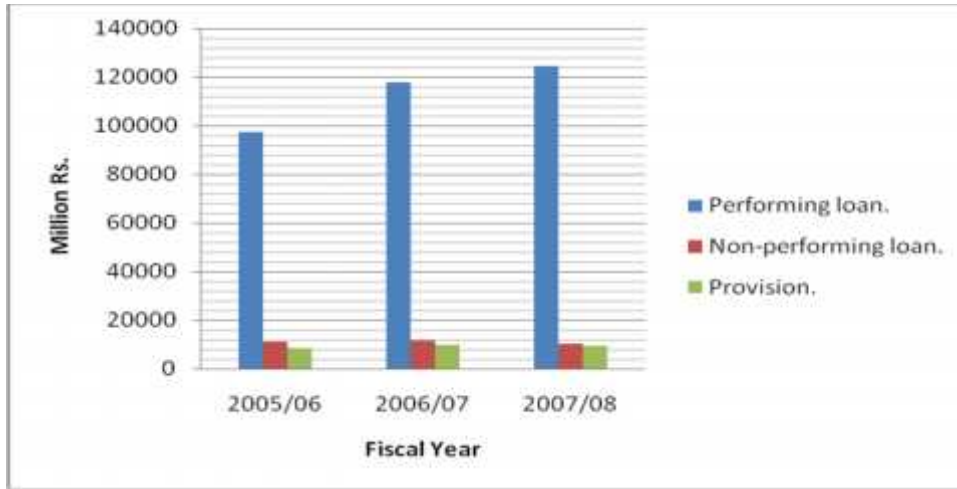
Table 4.2.1. (C₁) Loan and Loss Provision of H.B.L.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	97517.60	117721.70	124498.20
Non-performing loan.	10928.40	11474.60	10013.50
Provision.	8427.00	9677.00	9371.00

Sources: Annual report of H.B.L.

Figure 4.2.1. (C₁) Loan and Loss Provision of H.B.L.



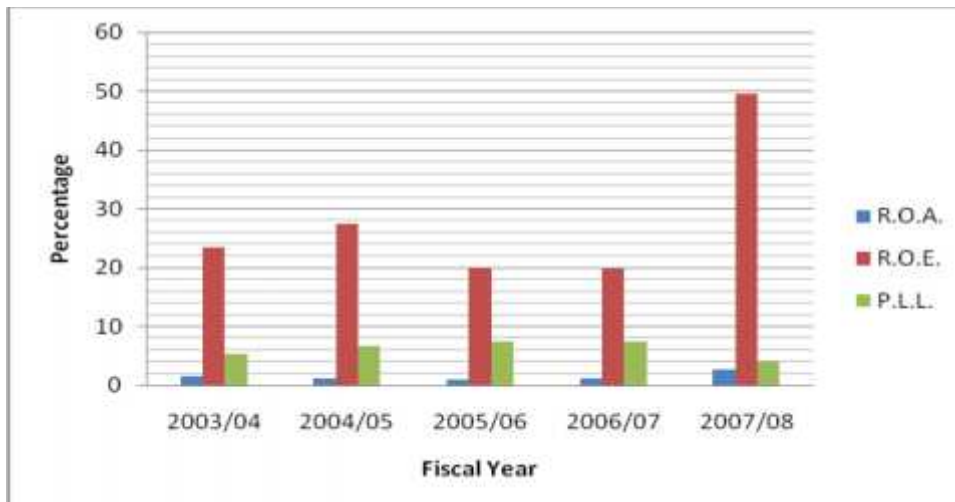
As per above figure on loan loss provision of H.B.L., its performing loan is in increasing trend and difference between the performing loan and non-performing loan is very high which shows that the bank is able to maintain the good ratio of performing loan and the percentage of loan loss provision is also as per N.R.B. rules, and its credit risk position is also maintained.

Table 4.2.1. (C₂) Return Analysis of H.B.L.

F.Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	1.44	1.13	0.91	1.06	2.58
R.O.E.	23.43	27.38	19.95	19.86	49.48
P.L.L.	5.30	6.73	7.49	7.49	3.91

Sources: Annual report of H.B.L.

Figure 4.2.1. (C₂) Return Analysis of H.B.L.



The above figure of H.B.L. shows that the trend of return on assets and equity is little fluctuated. In fiscal year 2007/08, both R.O.A. and R.O.E. are highly in increasing way. There is no negative effect of loan loss provision on R.O.A. and R.O.E. which proved that there is no negative impact of P.L.L. on R.O.A. and R.O.E.

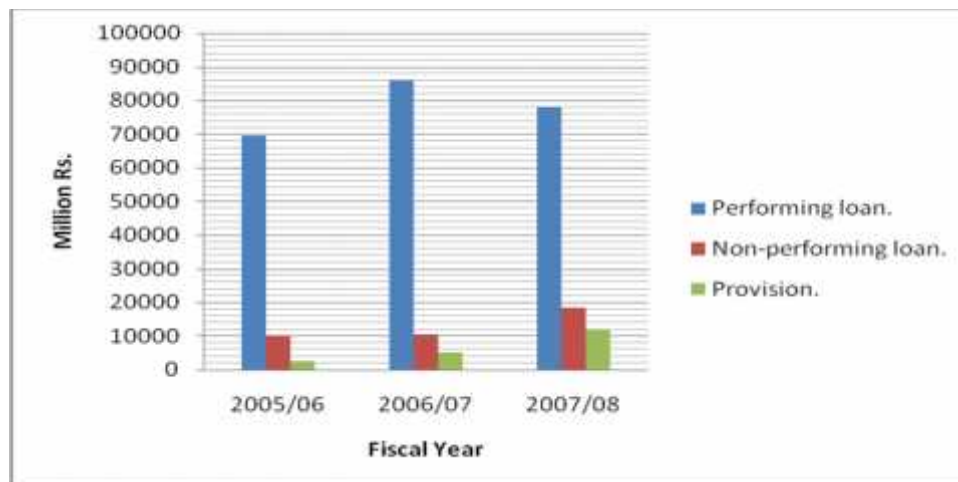
Table 4.2.1. (D₁) Loan and Loss Provision of N.B.B.L.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	69482.30	86025.20	77939.70
Non-performing loan.	10132.80	10421.80	18329.40
Provision.	2638.00	5236.00	11845.00

Sources: Annual report of N.B.B.L.

Figure 4.2.1. (D₁) Loan and Loss Provision of N.B.B.L.



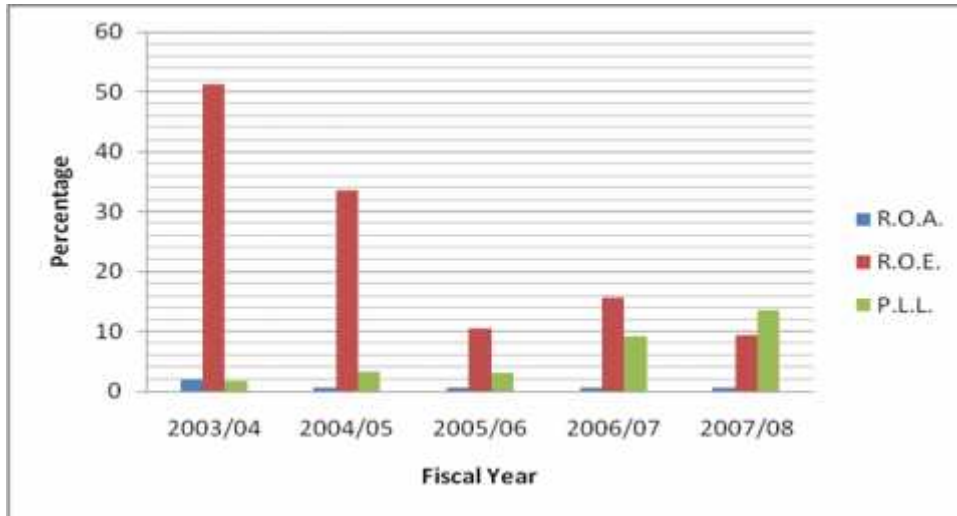
As per above figure of loan and loss provision of N.B.B.L., its performing loan is in increasing trend but has little fluctuated. It has increased in financial year 2004/05 but it has slightly down in fiscal year 2007/08. The difference between performing and non performing loan is very high which indicates that bank is maintaining good loan position.

Table 4.2.1. (D₂) Return Analysis of N.B.B.L.

F.Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	1.88	0.60	0.60	0.59	0.62
R.O.E.	51.23	33.57	10.57	15.56	9.41
P.L.L.	1.78	3.28	3.08	9.20	13.55

Sources: Annual report of N.B.B.L.

Figure 4.2.1. (D₂) Return Analysis of N.B.B.L.



Above figure of return analysis of N.B.B.L. shows that the trend of return on assets and return on equity of N.B.B.L. is decreasing which is not good sign for any bank. In financial year 2003/04 both R.O.A. and R.O.E. are high but in fiscal year 2005/06 both R.O.A. and R.O.E. of the bank is decreased as the lowest for the study time period.

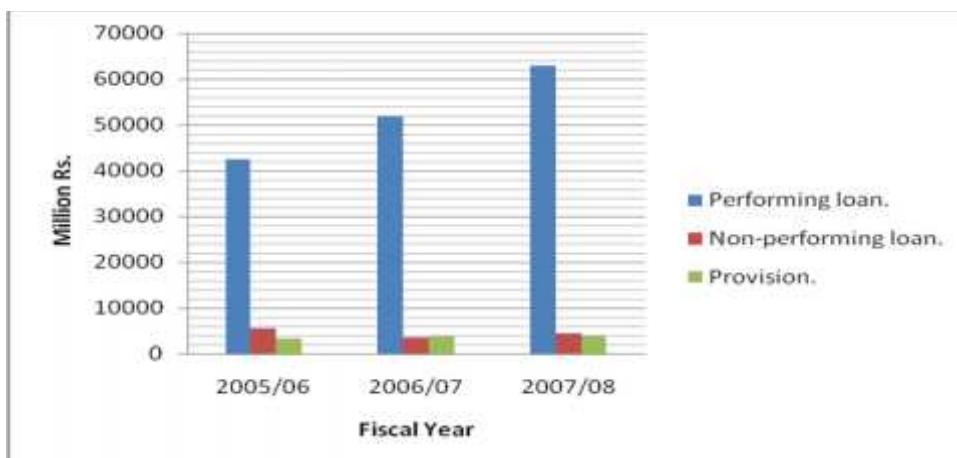
Table 4.2.1. (E₁) Loan and Loss Provision of N.S.B.I.B.L.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	42341.70	51860.10	62923.30
Non-performing loan.	5616.70	3458.20	4410.20
Provision.	3271.00	3881.00	3973.00

Sources: Annual report of N.S.B.I.B.L.

Figure 4.2.1. (E₁) Loan and Loss Provision of N.S.B.I.B.L.



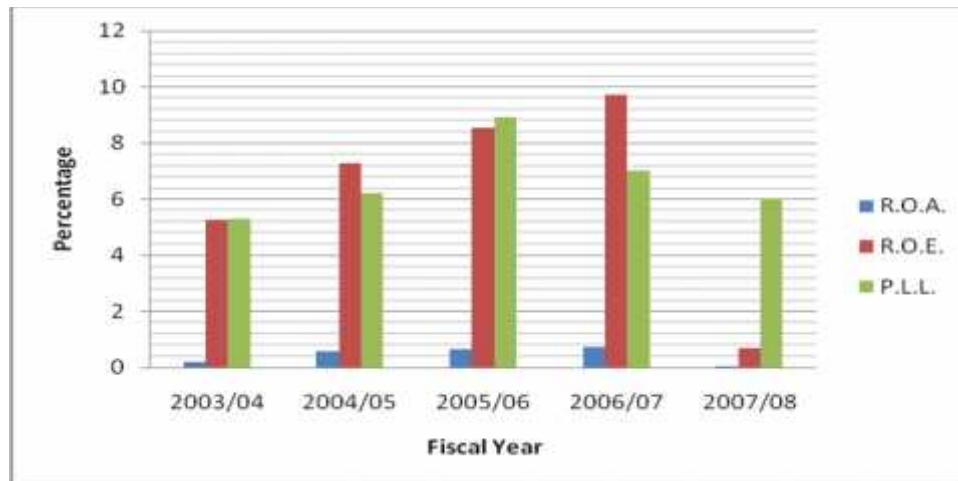
As per above figure of loan and loss provision of N.S.B.I.B.L., its performing loan is in increasing trend and difference between the performing loan and non performing loan is very high which show that the bank is maintaining good loan position and its credit risk position is maintained.

Table 4.2.1. (E₂) Return Analysis of N.S.B.I.B.L.

F. Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	0.18	0.59	0.64	0.72	0.04
R.O.E.	5.24	7.29	8.55	9.72	0.67
P.L.L.	5.29	6.21	8.90	7.02	6.00

Sources: Annual report of N.S.B.I.B.L.

Figure 4.2.1. (E₂) Return Analysis of N.S.B.I.B.L.



As per above figure of return analysis of N.S.B.I.B.L. shows that there is no negative effect of loan loss provision on return on assets and return on equity. Trend of increase in return on equity and assets is stable excluding of fiscal year 2007/08. N.S.B.I.B.L. net profit for 2007/08 is very low which effects bank's R.O.A. and R.O.E. But it has not decreased negatively as bank has to maintain the loan loss provision.

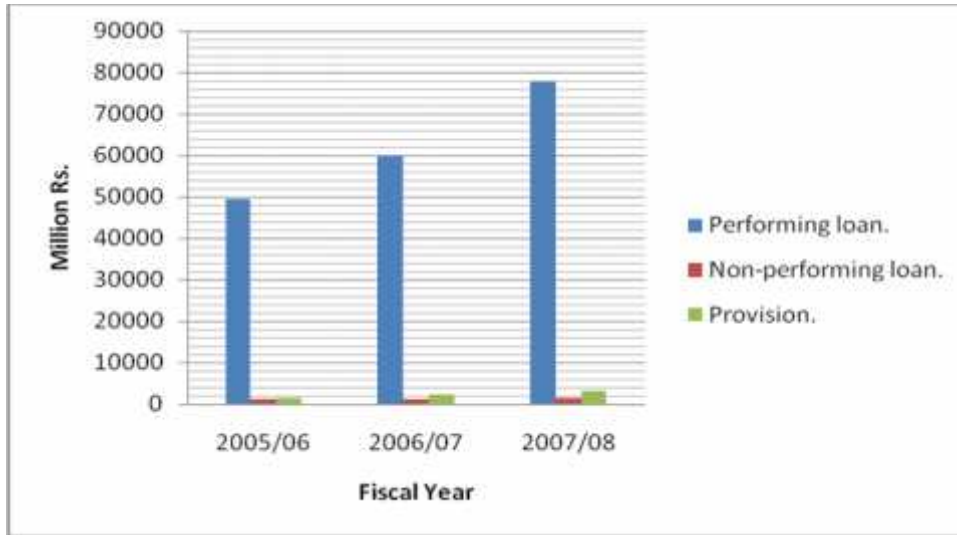
Table 4.2.1. (F₁) Loan and Loss Provision of E.B.L.

(Figure in Million Rs)

Fiscal Year	2005/06	2006/07	2007/08
Performing loan.	49383.90	59910.80	77712.80
Non-performing loan.	1111.90	1047.60	1288.10
Provision.	1411.00	2177.00	3177.00

Sources: Annual report of E.B.L.

Figure 4.2.1. (F₁) Loan and Loss Provision of E.B.L.



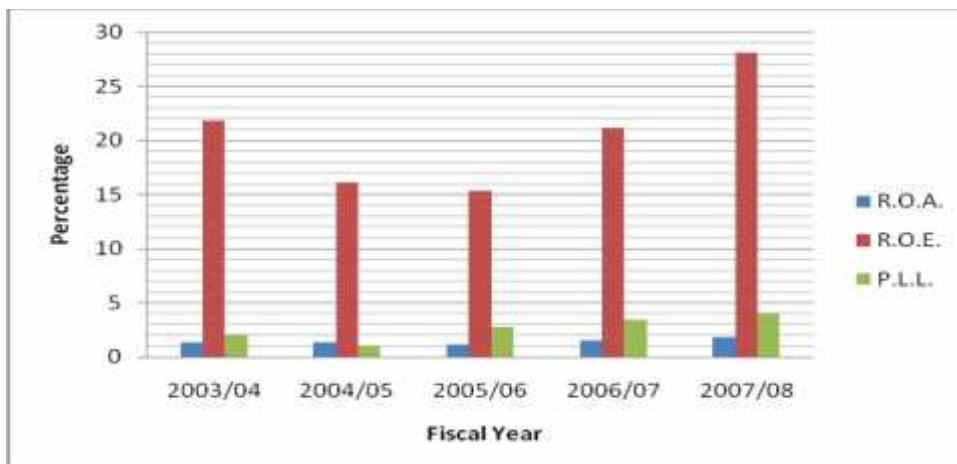
As per above figure of loan and loss provision of E.B.L., its performing loan is in increasing trend and non-performing loan is in decreasing trend which is bright situation for the survival of the bank. Bank's loan position shows that it is able to manage the credit risk position and it is also following the N.R.B. regulation which is shown by the amount of loan loss provision.

Table 4.2.1. (F₂) Return Analysis of E.B.L.

F.Y.	2003/04	2004/05	2005/06	2006/07	2007/08
R.O.A.	1.30	1.30	1.16	1.49	1.82
R.O.E.	21.82	16.07	15.36	21.10	28.13
P.L.L.	2.08	1.02	2.79	3.47	4.01

Sources: Annual report of E.B.L.

Figure 4.2.1. (F₂) Return Analysis of E.B.L.



The above figure of return analysis of E.B.L. shows that the trend of return on assets and return on equity is increasing and there is no negative effect of loan loss provision on return on equity and return on assets which proves that there is no negative impact of P.L.L. on R.O.A. and R.O.E.

4.2.2. Financial Statement Analysis.

The concept of financial statement analysis has been already discussed in previous chapter. Here we study and analyze the data by using financial tools:

Table 4.2.2. (A) Analysis of Credit and Advances to Total Deposit Ratio.

Fiscal Year	N.B.L.	S.C.B.N.	H.B.L.	N.B.B.L	N.S.B.I.B.L.	E.B.L.
2003/04	53.27	36.06	52.10	85.65	61.25	65.77
2004/05	47.68	36.55	52.02	86.42	69.90	61.64
2005/06	61.53	32.42	52.73	80.51	73.05	75.42
2006/07	62.21	31.80	57.47	80.44	76.78	76.03
2007/08	75.95	42.46	53.34	72.07	76.56	78.37
Total.	300.64	179.29	267.66	405.09	357.54	357.23
Average.	60.13	35.86	53.52	81.02	71.51	71.45
Standard dev.	9.58	3.80	2.03	5.05	5.72	5.87
C.V.	15.93	10.60	3.79	6.24	8	8.21

Sources: Annex 2.

The average ratio of **N.B.L.** is 60.13 %. There is medium level of fluctuation in bank's credit and advances to total deposits. Under the study period the lowest ratio is 47.68 % and the highest ratio is 75.95 % in fiscal year 2004/05 and 2007/08 respectively. Standard deviation and coefficient of variation of N.B.L. are 9.58 and 15.93 percent respectively which is not too high. The consistency of the bank is 84.07 %.

From the above table the average ratio of credit and advances to total deposit of **S.C.B.N.** is 35.86 %. The fluctuation in the ratio is not too high. The lowest ratio is 31.80 and the highest ratio is 42.46 percent in fiscal year 2006/07 and 2007/08 respectively. Standard deviation and coefficient of variation of S.C.B.N. are 3.80 and 10.60 percent respectively. The consistency of the bank is 89.40 %.

The average ratio of **H.B.L.** is 53.52 %. The lowest ratio is 52.02 and the highest ratio is 57.47 % in fiscal year 2004/05 and 2006/07 respectively. Standard deviation and coefficient of variation of H.B.L. are 2.03 and 3.79 percent respectively. The consistency of the bank is 96.21 %.

The average ratio of **N.B.B.L.** is 81.02 %. Fluctuation of the ratio is not too high. Under the study period, the lowest ratio and the highest ratio are 72.07 and 86.42 percent in fiscal year 2007/08 and 2004/05 respectively. Standard deviation and coefficient of variation of the ratios are 5.05 and 6.24 percent respectively. The consistency of the bank is 93.76 %.

The average ratio of credit and advances to total deposits of **N.S.B.I.B.L.** is 71.51 %. Fluctuation in the ratio is not high. The lowest and the highest ratios are 61.25 and 76.78 percent in fiscal year 2003/04 and 2006/07 respectively. Standard deviation and coefficient of variation of the ratios are 5.72 and 8 percent respectively. The consistency of the bank is exactly 92 %.

The average ratio of **E.B.L.** is 71.45 %. Fluctuation in the ratio is low. The lowest and the highest ratios are 61.64 and 78.37 percent in fiscal year 2004/05 and 2007/08 respectively. Standard deviation and the coefficient of variance are 5.87 and 8.21 percent respectively. The consistency of the bank is 91.79 %.

It is clear from the above table that the combined average ratio is 62.25 %. Total deposits are the main source of bank to provide credit and advances and 62.25 % of total deposits goes as credit and advances to customers. Therefore it seems that the banks are heavily depended on credit and advances to make profit from their investment. Above table shows that as the deposit increases, the credit and advances also increases and vice versa. Therefore it indicates that there is strong relationship between total deposit and total credit and advances.

Table 4.2.2. (B) Analysis of Credit and Advances to Total Assets Ratio.

Fiscal Year	N.B.L.	S.C.B.N.	H.B.L.	N.B.B.L	N.S.B.I.B.L.	E.B.L.
2003/04	43.37	27.66	43.85	71.12	56.43	57.38
2004/05	37.30	29.42	45.24	68.52	66.08	58.79
2005/06	45.24	26.72	44.80	65.68	59.56	61.13
2006/07	48.09	27.51	48.90	64.50	62.16	61.51
2007/08	59.07	36.09	45.51	56.24	62.35	52.34
Total.	233.07	147.40	228.3	326.06	306.58	291.15
Average.	46.61	29.48	45.66	65.21	61.32	58.23
Standard dev.	7.16	3.42	1.72	5.04	3.21	3.31
C.V.	15.37	11.60	3.76	7.73	5.23	5.69

Sources: Annex 3.

From the above table we can conclude that the **N.B.L.** is in increasing trend except in 2nd year of the study period. The ratio is highest in the fiscal year 2007/08 i.e. 59.07 % and lowest in 2004/05 i.e. 37.30 %. The average ratio as credit and advances to total assets of the bank is 46.61%. Standard deviation and the coefficient of variations are 7.16 and 15.37 percent respectively which means that the bank has the capability to utilize its assets to gain income. Consistency in utilization of assets in the form of credit and advances is satisfactory i.e. 84.63 %.

S.C.B.N. has generally steady trends under the study period. Only in fiscal year 2007/08 it has little higher ratio ie.36.09%. The lowest ratio as credit and advances to total assets of the bank is 26.72 in the fiscal year 2005/06. The average ratio is 29.48 % which shows that the bank has utilizing the minimum capacity of total assets in the form of credit and advances. Fluctuation in the ratio is little which is supported by standard deviation i.e. 3.42 and C.V. i.e. 11.60 %.

H.B.L. has the steady trends of ratio within the study period. The highest ratio is 48.90 % and the lowest is 43.85 in fiscal year 2006/07 and 2003/04 respectively. The average ratio is 45.66 % which shows that the bank has utilized its total assets properly in the form of credit and advances. Banks standard deviation and C.V. are 1.72 and 3.76 percent respectively which indicates that the consistency in the utilization of assets in the form of credit by H.B.L. is good.

It is clear from the above table that **N.B.B.L.** has generally mixed trends under the study period. The highest ratio is 68.52 % and the lowest ratio is 56.24 % in fiscal year 2004/05 and 2007/08 respectively. The average ratio is 65.21 % which shows that the bank has utilized its total assets as credit and advances is little high which can create little difficulty for the bank. Fluctuation in the ratio is medium and standard deviation and C.V. of the ratio are 5.04 and 7.73 respectively.

N.S.B.I.B.L. has mixed trend of the ratios under the study period. The highest ratio is 66.08 and the lowest ratio is 56.43 in fiscal year 2004/05 and 2003/04 respectively and the fluctuation rate is also little. The average ratio is 61.32 which indicate that the bank has the capability to utilize its total assets in the form of credit and advances. Bank's standard deviation and C.V. are 3.21 and 5.23 respectively. It shows that the bank has uses its assets at satisfactory level.

E.B.L. has increasing trend on utilization of its assets through credit and advances except in fiscal year 2007/08. The highest ratio is in fiscal year 2006/07 i.e. 61.51 % and the lowest is in fiscal year 2007/08 i.e. 52.34 %. The average ratio under the study period is 58.23 % which shows that bank has capability to utilize its assets to gain income. Bank's standard deviation and C.V. as the credit and advances to total assets ratio are 3.31 % and 5.69 % respectively which shows that the consistency in the utilization of assets on the form of credit and advances is good.

The combined average ratio of the J.V.B.s is 51.09 %. Standard deviation and coefficient of variation are 3.98 % and 8.23 % respectively. It shows that in an average, the joint venture banks have utilized their total assets as credit and advances around 51 %. It will be the good investment for bank if there is not any default situation emerge. Combined consistency level is around 92 %.

Table 4.2.2. (C) Analysis of Performing Assets to Total Assets Ratio.

Fiscal Year	N.B.L.	S.C.B.N.	H.B.L.	N.B.B.L.	N.S.B.I.B.L.	E.B.L.
2005/06	41.94	25..27	39.45	53.74	52.95	60.34
2006/07	45.31	26.34	44.00	54.12	58.05	60.11
2007/08	57.60	36.01	42.78	50.17	59.27	51.39
Total.	144.85	87.62	126.23	158.03	170.24	171.84
Average.	48.28	29.21	42.08	52.68	56.75	57.28
Standard dev.	6.73	4.83	1.92	1.78	2.75	4.17
C.V.	13.94	16.54	4.56	3.38	4.85	7.28

Sources: Annex 4.

N.B.L. performing assets ratio is in increasing trend i.e. 41.94, 45.31 and 57.60 percent in fiscal year 2005/06, 2006/07 and 2007/08 respectively. The average ratio for N.B.L. is 48.28 %. Standard deviation and C.V. of the bank are 6.73 and 13.94 percent respectively.

Performing assets to total assets ratio of **S.C.B.N.** is 25.27, 26.34 and 36.01 percent in their respective year. It shows that the performing asset of the S.C.B.N. is in increasing way. The average ratio is 29.21 %. Standard deviation and C.V. of the bank are 4.83 and 16.54 percent respectively.

H.B.L. performing asset ratio has volatile trend in the study period i.e. 39.45, 44 and 42.78 percent in their respective year. The average ratio is 42.08 %. Standard deviation and C.V. of the bank are 1.92 and 4.56 percent respectively.

The ratio of performing assets to total assets of **N.B.B.L.** is also in volatile trend i.e. 53.74, 54.12 and 50.17 percent in their respective year. The average ratio is 52.68 % which indicates that non-performing assets is almost 47 %. Consistency in the ratio is high as it is almost 97 %.

N.S.B.I.B.L. performing assets ratio is in increasing way i.e. 52.95, 58.05 and 59.27 percent for their respective year. The average ratio is 56.75 %. Standard deviation and C.V. of the bank are 2.75 and 4.85 percent respectively.

Performing assets to total assets ratio of **E.B.L.** is in decreasing way i.e. 60.34, 60.11 and 51.39 percent in their respective year. The average ratio is 57.28 %. Standard deviation and C.V. of the bank are 4.17 and 7.28 percent respectively.

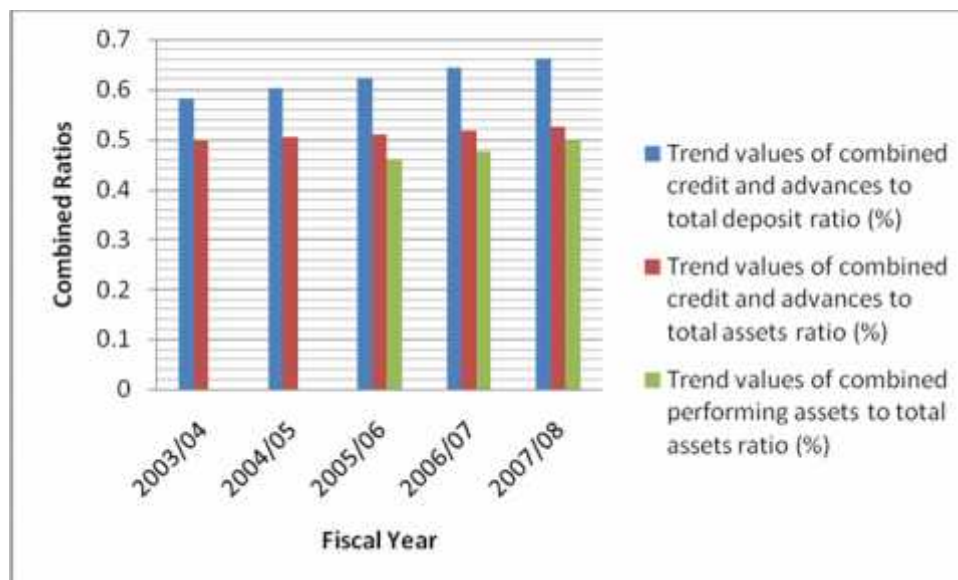
The combined average ratio also shows that the performing assets ratio is 47.71 % only in the five years research period. All banks should increase their performing assets for prosperity of the bank.

Table 4.2.2. (D) Trend Analysis of Combined Ratios.

Particular / Fiscal Year	2003/04	2004/05	2005/06	2006/07	2007/08
Trend values of combined credit and advances to total deposit ratio (%)	0.5822	0.6023	0.6224	0.6425	0.6626
Trend values of combined credit and advances to total assets ratio (%)	0.4956	0.5032	0.5108	0.5184	0.5260
Trend values of combined performing assets to total assets ratio (%)	-	-	0.4575	0.4770	0.4965

Sources: Annex 5.

Figure 4.2.2. (D) Trend analysis of combined ratios.



Above figure shows that the trend values of combined credit and advances to total deposit are increasing every year. Figure also shows that the trend value is 0.5822, 0.6023, 0.6224, 0.6425 and 0.6626 in financial year 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08 respectively in the research period. The trend value of the combined credit and advances to total assets ratio is in increasing trend i.e. 0.4956, 0.5032, 0.5108, 0.5184 and 0.5260 times respectively in the five year

of the research period. The trend values of combined performing assets to total assets are also in increasing trend for the research period.

In overall trend values indicates that in the research period of time the amount of credit and advances are increasing faster than total assets and deposits.

4.2.3. Statistical Analysis.

A. Nabil Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 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 2001/02 up to 2005/06.

Table 4.2.3. (A₁) Risk Index and Book Value Insolvency of N.B.L.

S. No.	Description.	Figure.
1.	Risk Index.	13.24
2.	Probability of Book Value Insolvency. (%)	0.2852

Sources: Annex 6.

Table 4.2.3. (A₁) 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 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 4.2.3. (A₂) Correlation Coefficient of N.B.L.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	-0.4735	0.2340	Insignificant.	$r < P.E.$
2.	R.O.E.	-0.4330	0.2451	Insignificant.	$r < P.E.$

Sources: Annex 7.

Table 4.2.3. (A₂) shows the correlation between loan and loan loss provision to R.O.A. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (A₃) Regression Coefficient of N.B.L.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	-0.5817	5.5455	0.9090	Insignificant.
2.	P.L.L.	R.O.E.	-5.4048	65.4318	0.8157	Insignificant.

Sources: Annex 7 & 8.

Table 4.2.3.(A₃) reveals that the regression coefficient of provision of loan loss for R.O.A. and R.O.E. are 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.

B. Standard Chartered Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 4.2.3. (B₁) Risk Index and Book Value Insolvency of S.C.B.N.

S. No.	Description.	Figure.
1.	Risk Index.	57.29
2.	Probability of Book Value Insolvency. (%)	0.0152

Sources: Annex 6.

Table 4.2.3. (B₁) 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. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.2.3. (B₂) Correlation Coefficient of S.C.B.N.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	0.5567	0.1679	Significant.	$r > P.E.$
2.	R.O.E.	-0.3070	0.2732	Insignificant.	$r < P.E.$

Sources: Annex 7.

Table 4.2.3. (B₂) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (B₃) Regression Coefficient of S.C.B.N.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	0.094	1.93	1.3763	Significant.
2.	P.L.L.	R.O.E.	-1.36	43.30	-0.5470	Insignificant.

Sources: Annex 7 & 8.

Table 4.2.3.(B₃) reveals that the regression coefficient of provision of loan loss for R.O.E. is negative and R.O.A. 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.

C. Himalayan Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 4.2.3. (C₁) Risk Index and Book Value Insolvency of H.B.L.

S. No.	Description.	Figure.
1.	Risk Index.	11
2.	Probability of Book Value Insolvency. (%)	0.4132

Sources: Annex 6.

Table 4.2.3. (C₁) indicates the following decisions.

- Bank has the moderate higher risk.
- 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 bank has a higher expected R.O.A., strong capital position and stable earning R.O.A. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.2.3. (C₂) Correlation Coefficient of H.B.L.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	-0.9418	0.0341	Insignificant.	$r < P.E.$
2.	R.O.E.	-0.8608	0.0781	Insignificant.	$r < P.E.$

Sources: Annex 7.

Table 4.2.3. (C₂) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. The calculation in the table clearly shows that there is negative correlation between P.L.L. and R.O.A. as well as P.L.L. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (C₃) Regression Coefficient of H.B.L.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	-0.4101	3.9551	-4.5617	Insignificant.
2.	P.L.L.	R.O.E.	-6.9284	70.8654	-3.0148	Insignificant.

Sources: Annex 7 & 8.

Table 4.2.3.(C₃) reveals that the regression coefficient of provision of loan loss for R.O.A. and R.O.E. are 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.

D. Nepal Bangladesh Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 4.2.3. (D₁) Risk Index and Book Value Insolvency of N.B.B.L.

S. No.	Description.	Figure.
1.	Risk Index.	14.57
2.	Probability of Book Value Insolvency. (%)	0.2355

Sources: Annex 6.

Table 4.2.3. (D₁) indicates the following decisions.

- Bank has the moderate risk.
- 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 bank has a higher expected R.O.A., strong capital position and stable earning R.O.A. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.2.3. (D₂) Correlation Coefficient of N.B.B.L.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	-0.2820	0.2776	Insignificant.	$r < P.E.$
2.	R.O.E.	-0.6606	0.1700	Insignificant.	$r < P.E.$

Sources: Annex 7.

Table 4.2.3. (D₂) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. The calculation in the table clearly shows that there is negative correlation between P.L.L. and R.O.A. as well as P.L.L. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (D₃) Regression Coefficient of N.B.B.L.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	-0.0546	1.1955	-0.9512	Insignificant.
2.	P.L.L.	R.O.E.	-2.3698	38.7083	-1.5261	Insignificant.

Sources: Annex 7 & 8.

Table 4.2.3.(D₃) reveals that the regression coefficient of provision of loan loss for R.O.A. and R.O.E. are 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.

E. Nepal S.B.I. Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 4.2.3. (E₁) Risk Index and Book Value Insolvency of N.S.B.I.B.L.

S. No.	Description.	Figure.
1.	Risk Index.	23.60
2.	Probability of Book Value Insolvency. (%)	0.0898

Sources: Annex 6.

Table 4.2.3. (E₁) indicates the following decisions.

- Bank has the higher risk index indicates the 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 bank has a higher expected R.O.A., strong capital position and stable earning R.O.A. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.2.3. (E₂) Correlation Coefficient of N.S.B.I.B.L.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	0.6528	0.1731	Significant.	r > P.E.
2.	R.O.E.	0.5590	0.1330	Significant.	r > P.E.

Sources: Annex 7.

Table 4.2.3. (E₂) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. The calculation in the table clearly shows that there is positive correlation between P.L.L. and R.O.A. as well as P.L.L. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (E₃) Regression Coefficient of N.S.B.I.B.L.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	0.1437	-0.5263	1.4938	Significant.
2.	P.L.L.	R.O.E.	1.4554	-3.4336	1.1800	Significant.

Sources: Annex 7 & 8.

Table 4.2.3. (E₃) reveals that the regression coefficient of provision of loan loss for R.O.A. and R.O.E. are 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.

F. Everest Bank Limited.

The data related to overall credit risk management is given below. Table below presented shows the financial model i.e. risks index and probability of book value insolvency. 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 4.2.3. (F₁) Risk Index and Book Value Insolvency of E.B.L.

S. No.	Description.	Figure.
1.	Risk Index.	34.50
2.	Probability of Book Value Insolvency. (%)	0.0420

Sources: Annex 6.

Table 4.2.3. (F₁) indicates the following decisions.

- Bank has the higher risk index indicates the higher 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 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 4.2.3. (F₂) Correlation Coefficient of E.B.L.

S. No.	P.L.L.	Correlation.	P.E.	Conclusion.	Remarks.
1.	R.O.A.	0.6930	0.1568	Significant.	$r > P.E.$
2.	R.O.E.	0.6859	0.1597	Significant.	$r > P.E.$

Sources: Annex 7.

Table 4.2.3. (F₂) shows that the correlation between loan and loan loss provision to R.O.A. and R.O.E. The calculation in the table clearly shows that there is positive correlation between P.L.L. and R.O.A. as well as P.L.L. and R.O.E. but the result is too small and considers it as insignificant.

Table 4.2.3. (F₃) Regression Coefficient of E.B.L.

S. No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T- Value.	Remarks.
1.	P.L.L.	R.O.A.	0.1512	1.0097	1.6543	Significant.
2.	P.L.L.	R.O.E.	3.0012	12.4709	1.4858	Significant.

Sources: Annex 7 & 8.

Table 4.2.3.(F₃) reveals that the regression coefficient of provision of loan loss for R.O.A. and R.O.E. are 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.

4.3. Major Findings.

After analyzing the credit portfolio of the joint venture banks of Nepal from both financial and statistical aspects, the major findings of the study are described below:

4.3.1. Based on the Analysis of Primary Data.

1. 68.97 % customers have accepted that the bank officers used to visit their project site or analyzed their project in depth. 17.24 % customers denied that the bank officers visit or analyze their project site before granting the loan and 13.79 % customers were not given any clear response for the research question.
2. 58.62 % credit customers knew all the information about the bank policies and 41.38 % were little unknown with the bank policies.
3. 46.55 % of the customers from the sample taken in this topic were satisfied with the bank's interest rate whereas rests of the customers were not satisfied with that interest rate. 41.38 % customers were not satisfied with interest rate. It shows that the bank must think about this situation.
4. 75.86 % customers were accepted that bank gave them the credit expiration notice for their credit amount. 10.34 % customers clearly denied and 13.80 % customers were still confused while giving their opinion.
5. 68.97 % customers said that the cooperation followed by the bank officers to them are quite appreciable, 17.24 % customers said that cooperation given by the bank officers are not reached at that level where it has to be and 13.79 % customers were not given their clear response on the bank officers' cooperation.
6. Exactly 89.66 % customers said that they used the credit taken by the bank on that project where they clearly specified at the time of loan taking, 1.72 % customers denied using the credit amount taking from the bank using the credit amount taking from the bank used on the same project where they specified and 8.62 % customers were confused while giving the answer for the same question.
7. 81.04 % customers were satisfied with their bank in the view point of there overall performance, 12.07 % customers were unsatisfied with their bank at some circumstances and 6.89 % were unable to give the clear answer for the question.
8. 79.31 % customers were on the favor of taking loan from same bank again and again in the future too, 8.62 % customers denied to taking loan again from the same bank and said that the process taken by the bank at the time of granting loan is little irritating and 12.07 % customers cannot make the proper decision either they take a loan again or not.
9. 51.72 % customers were in the favor of service charge with their related bank, 41.38 % customers were not in favor of bank's service charges and 6.90 % customer cannot make the proper decision.
10. 8.62 % customers were not in the favor of continuing the relationship with their bank in future and like to switch off the bank if they got another bank which gives them more facilities, 87.93 % customers were in favor of continuing their relation with the same bank in future too and 3.45 % were unable to make proper decision.

4.3.2. Based on the Analysis of Secondary Data.

1. Risk index and the probability of book value insolvency of **Nabil Bank Limited** indicates that the bank has low risk, in other word it shows the better performance of the bank and its current position shows that it has high level of cushion available to absorb accounting loss. Bank's non-performing loan to net loan for three years is just 3.32 % (Combined) which is very good situation for the bank and also it is in decreasing trend. Correlation coefficient regarding P.L.L with R.O.A. and R.O.E. indicate that there is negative relationship between them but the result is small and considered it as insignificant. Regression coefficient of P.L.L. is also negative and its value is not significant at 5 % level of significance.

2. In the case of **Standard Chartered Bank Limited** it has the higher risk index rate and its probability of book value insolvency is less than one percent. This indicates that a bank has a higher current expected R.O.A., strong capital position and stable earning. And its current position shows that it has a high level of cushion to absorb accounting loss. Almost 29.48 % of its total deposits, bank uses it as credit and advances which is not too high as well as low. Bank's non-performing loan to net loan for 3 years is 3.59 % (combined), which is little high but it is in decreasing trend. It is the good sign for the bank. Again by analyzing from statistical aspect, there is insignificant relationship between independent variable P.L.L. and dependent variable R.O.A. and R.O.E. though regression coefficient of P.L.L. is positive for R.O.A. and negative for R.O.E. It t-value is not significant at 5 % level of significance. It shows that the slope of the line is statistically insignificant at 5 % level of significance. Most of the credit customers of the bank are satisfied with the bank.

3. Higher risk index and book value insolvency of **Himalayan Bank Limited** indicate that bank has low risk i.e. 9.40 % (Combined). In other word, it shows that the better performance of the bank and its current position shows it has high level of cushion available to absorb accounting loss. Bank's correlation coefficient regarding P.L.L. with R.O.A. and R.O.E. indicates that there is negative relationship between P.L.L. and R.O.A. and the positive relationship between P.L.L. and R.O.E. but the result are too small for both and considers it as insignificant. Regression coefficient of loan loss provision is negative for both and bank's t-value is not significant at 5 % level of significance.

4. The data pertaining to **Nepal Bangladesh Bank Limited** shows that it has higher risk index and probability of book value insolvency is less than one percent. Bank's non-performing loan to net loan for 3 years is 15.39 % (combined) which is little high and in increasing trend which can be generate dangerous situation to the bank. Correlation coefficient regarding P.L.L. with R.O.A. and R.O.E. indicates that there is negative relationship between them but the result is too small so it is considered as insignificant. Regression coefficient of P.L.L. is also negative for both R.O.A. and R.O.E. and its t-value is not significant at 5 % level of significance. It shows that the slope of the line is statistically insignificant at 5 % level of significance.

5. **Nepal S.B.I. Bank Limited** data shows that risk index of the bank is high and the probability of book value insolvency is less than one percent. Bank's non-performing loan to net loan for three

years is 8.46 %(combined) which is not too high and at maintaining level and also the non-performing loan to gross loan ratio is in decreasing trend. There is insignificant relationship between independent variable P.L.L. and dependent variables R.O.A. and R.O.E. though the regression coefficient of loan loss provision is negative for both R.O.A. and R.O.E. Bank's t-value is not significant at 5 % level of significance.

6. In the case of **Everest Bank Limited**, risk index is high and probability of book value insolvency is less than one percent. Relatively its risk index is highest among other joint ventures and probability of book value insolvency is lowest among others which is very good sign for the bank for its future. Bank's non-performing loan to net loan for 3 years is just 1.88 % which is the tremendous performance by the bank as a view point of credit risk management. Correlation coefficient regarding to P.L.L. with R.O.A. and R.O.E. indicates that there is positive relationship between them but the result is not too sufficient that's why it is considered as insignificant. Regression coefficient of P.L.L. is positive but the value is not significant at 5 % level of significance.

7. The trend of combined credit ratios of the commercial banks are increasing. With the increase in the ratio of credit, the non-performing assets have also increased it means that performing assets of the commercial banks have increasing regularly.

8. Most of the credit customers of the joint venture banks of Nepal are satisfied with their respective bank. Few customers suggested bank should decrease its interest rate. As they complain that bank has decreased the deposits interest rate heavily but the credit interest rate has not lowered so much. Therefore sometimes they go under difficulty to pay the interest amount in time. Some of the credit customer of joint venture bank said that they have not got full cooperation from the bank's officer. This complains is mainly for bank management who do not extend time period of reimbursement of credit when they demanded even when they have provided all the required explanation and documents. They said because of political conditions of our country they are suffering from the economic crisis but the bank does not understand their problems.

9. In the term of activity, all the joint venture banks are able to satisfy the demand of various depositors, creditors and shareholders as well as the government. All banks have provided modern facilities to its customers and have used modern technology. Therefore they can attract good customers. It can be taken as strength of the joint venture banks. In other hand, overdue credits of all commercial banks have increased. It has damaged the income of bank. Banks have not opened their branches all over the country especially in mid-western and far-western. Only Nepal Bangladesh Bank and Everest Bank have one- one branch and other joint venture banks haven't any branch at far and mid-western regions. Because of this, banks are unable to grabs the opportunity from all over the Nepal.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary

For the detail analysis of commercial banks in Nepal, in this study, Nepal's joint venture banks data are collected through primary and secondary sources and different data analysis tools have been used. The hypothesis tests are done and various limitations are found out. For the analysis of data, mainly this study focuses on loan loss provision, ratio analysis and their relations with return on assets and return on equity. On an average of five years of research period, credit and advances to total assets ratio of Nepal Bank Limited, Standard Chartered Bank, Himalayan Bank, Nepal Bangladesh Bank, Nepal S.B.I. Bank and Everest Bank are 60.13, 35.86, 53.52, 81.02, 71.51 and 71.45 percent respectively. Likewise Nepal Bank Limited, Standard Chartered Bank, Himalayan Bank, Nepal Bangladesh Bank, Nepal S.B.I. Bank and Everest Bank have credit and advances to total assets ratio for the five years of research periods are 41.61, 29.48, 45.66, 65.21, 61.32 and 58.23 percent respectively. At the same time, the average performing assets to total assets ratio for the five years research period of Nepal Bank Limited, Standard Chartered Bank, Himalayan Bank, Nepal Bangladesh Bank, Nepal S.B.I. Bank and Everest Bank are 48.28, 29.21, 42.08, 52.68, 56.75 and 57.28 percent respectively. Also 66.46 % of total deposits of joint venture banks (as combined) are utilized in credit and advances for the year 2007/08 and combined performing assets to total assets for 2005/06 to 2007/08 are 0.4575, 0.4770 and 0.4965 percent respectively. This indicates that performing assets are increasing regularly in the research period. As the non-performing credit has been decreases year by year, banks are generating lower credit risk which is good sign for any banks.

5.2. Conclusion

After analyzing the credit portfolio of joint venture banks of Nepal from both financial and statistical aspect we can draw some major conclusion from the study which is as follows.

All the joint venture banks have insufficient liquidity. 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, monetarization have 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. The banks have deposits born can provide many to its customers as credit and advances. For that, Banks are attracting deposits to the needy areas to make profit for themselves.

Provisions for credit and losses have been increasing year by year for all joint venture banks. Due to economic condition in the country, credit takers 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, due to the risk of default credit has increases. That's why the bank should increase its provision for credit loss.

5.3. Recommendations

These entire figure suggest that the commercial bank overall management of credit risk is good and reasonable. According to the analysis, the following points are highlighted to put forward for the further improvement of all commercial banks.

- Cash and bank balance of all joint venture banks are high. Unused cash and bank balance do not provide return to the bank. Therefore some percentage of cash and bank should be invested somewhere in profitable sectors. There must be a good investment decision which increases the cooperate value of the firm. It should be carried out by effective identify, organized and manage, discrete and diverse segmenting order to serve particular status of customers more effectively.
- Good liquidity position is very necessary for commercial banks as it should be enough to meet the depositors' obligations as well as for good investment and for expansion.
- Bank should avoid extending credit 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 also should regularly follow the credit customers to confirm that whether the customers have utilized their credit for the same purpose committed at the time of taking credit from the bank.

- Bank should be sensitive to 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.
- Bank should strictly bond the policy of nepotism and favoritism. On the basis of capability and efficiency, employees' recruitment, placement and promotion should be executed.
- Economic liberalization policy adopted by the government of Nepal has created an environment of strict competition even in the banking sectors. In this context, all the commercial banks are suggested to formulate and implement some sound and effective financial and non-financial strategies to minimize their operational expenses to meet required level of profitability. N.R.B. has formulated various kinds of rules and regulation. Every bank must follow these rules and regulation and central bank must examine timely whether the banks follow these rules.
- In this research, joint venture banks were taken for the study. Joint venture banks definitely have international relation. Therefore, these banks should make negotiations with the international banks to increase its transactions in the internal arena.
- Banks are one of the most reputed organizations of our country. So, banks should fulfill some social obligations by extending their resources to rural areas and promoting the development of poor and disadvantaged group. In order to do so, they should open their branches in the remote areas with the objective of providing cheaper charge banking services.

APPENDICES

Annex 1.

1.1. Researcher Questionnaire

Dear Respondent,

I would like to request you to kindly fill up the following questionnaire prepared for collection of your views as valuable resources for my research work. This research is conducted for partial fulfillment of the requirement of Masters of Business Studies (M.B.S.) degree. The research topic is credit risk management of joint venture banks in Nepal. The views provided by you will be taken as the input of this research work only and will not be made public.

Your kind cooperation will be helpful to complete this research successfully.

Thank you.

Please place () mark on the correct box and express your ideas and views where necessary.

SN	Particular	Yes	No
1.	Does any bank officer visit your project site at the time of granting loan?		
2.	Do you know all information about bank policies?		
3.	Are you satisfied with the bank interest rate?		
4.	Have you received any notice before credit expiration date?		
5.	Do you feel that you have got full cooperation from the bank officer?		
6.	Have you utilized the entire credit to the same sector as specified at the time of taking loan?		
7.	Are you satisfied with the interest rate of the bank?		
8.	Do you want to take further credit from the bank?		
9.	Is the service charge taken by bank is satisfactory?		
10.	Are you thinking to switch off the bank in the future?		

About Respondent

) Name:

) Office:

) Address:

) Position:

1.2. List of the Respondent.

SN	Particular	Respondent
1.	Individual.	
2.	Institutional.	

Annex 2. Credit and Advances to Total Deposit Ratio. (Fig. in Million Rs.)

Fiscal Year	N.B.L.			S.C.B.N.		
	Total Credit and Advance	Total Deposits	Ratio (%)	Total Credit and Advance	Total Deposits	Ratio (%)
2003/04	84376	158389	53.27	59241	164301	36.06
2004/05	73282	153706	47.68	57879	158367	36.55
2005/06	82678	134377	61.53	60807	187565	32.42
2006/07	87697	140980	62.21	67296	211614	31.80
2007/08	110780	145868	75.95	82140	193440	42.46
Fiscal Year	H.B.L.			N.B.B.L.		
	Total Credit and Advance	Total Deposits	Ratio (%)	Total Credit and Advance	Total Deposits	Ratio (%)
2003/04	91769	176136	52.10	73474	85788	85.65
2004/05	96735	185952	52.02	82221	95140	86.42
2005/06	110742	210028	52.73	84919	105480	80.51
2006/07	130817	227609	57.47	102536	127473	80.44
2007/08	132450	248311	53.34	87400	121266	72.07
Fiscal Year	N.S.B.I.B.L			E.B.L.		
	Total Credit and Advance	Total Deposits	Ratio (%)	Total Credit and Advance	Total Deposits	Ratio (%)
2003/04	41763	68184	61.25	30086	45745	65.77
2004/05	45939	65722	69.90	39827	64611	61.64
2005/06	47651	65228	73.05	50496	66949	75.42
2006/07	55525	72321	76.78	61311	80640	76.03

2007/08	66190	86458	76.56	79140	100978	78.37
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Annex 3. Credit and Advances to Total Assets Ratio. (Fig. in Million Rs.)

Fiscal Year	N.B.L.			S.C.B.N.		
	Total Credit and Advance	Total Assets	Ratio (%)	Total Credit and Advance	Total Assets	Ratio (%)
2003/04	84376	194549	43.37	59241	214176	27.66
2004/05	73282	196466	37.30	57879	196734	29.42
2005/06	82680	182759	45.24	60807	227588	26.72
2006/07	87697	182344	48.09	67296	244591	27.51
2007/08	110780	187525	59.07	82140	227588	36.09
Fiscal Year	H.B.L.			N.B.B.L.		
	Total Credit and Advance	Total Assets	Ratio (%)	Total Credit and Advance	Total Assets	Ratio (%)
2003/04	91769	209279	43.85	73474	103310	71.12
2004/05	96735	213826	45.24	82221	119996	68.52
2005/06	110742	247212	44.80	84919	129292	65.68
2006/07	130817	267512	48.90	102536	158966	64.50
2007/08	132450	291026	45.51	87400	155399	56.24
Fiscal Year	N.S.B.I.B.L.			E.B.L.		
	Total Credit and Advance	Total Assets	Ratio (%)	Total Credit and Advance	Total Assets	Ratio (%)
2003/04	41763	74009	56.43	30086	52433	57.38
2004/05	45939	69520	66.08	39827	67745	58.79

2005/06	47651	80006	59.56	50496	82602	61.13
2006/07	55525	89330	62.16	61311	99672	61.51
2007/08	66190	106166	62.35	79140	151216	52.34

Annex 4. Performing Assets to Total Assets Ratio. (Fig. in Million Rs.)

Fiscal Year	N.B.L.			S.C.B.N.		
	Performing Assets	Total Assets	Ratio (%)	Performing Assets	Total Assets	Ratio (%)
2005/06	76640.50	182759	41.94	57522.10	227588	25.27
2006/07	82619.80	182344	45.31	64416.60	244591	26.34
2007/08	108016.80	187525	57.60	81945.60	227588	36.01

Fiscal Year	H.B.L.			N.B.B.L.		
	Performing Assets	Total Assets	Ratio (%)	Performing Assets	Total Assets	Ratio (%)
2005/06	97517.60	247212	39.45	69482.30	129292	53.74
2006/07	117705.28	267512	44.00	86025.20	158966	54.12
2007/08	124498.20	291026	42.78	77969.70	155399	50.17

Fiscal Year	N.S.B.I.B.L.			E.B.L.		
	Performing Assets	Total Assets	Ratio (%)	Performing Assets	Total Assets	Ratio (%)
2005/06	42341.70	80006	52.92	49838.9	82602	60.34
2006/07	51860.10	89330	58.05	59910.8	99672	60.11
2007/08	62923.30	106166	59.27	77712.8	151216	51.39

Calculation of Standard Deviation and C.V for Annex 2, 3 and 4 purpose.

N.B.L.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$
2003/04	53.27	47.06	43.37	10.50	-	-
2004/05	47.68	155.00	37.30	86.68	-	-
2005/06	61.53	1.96	45.24	1.88	41.94	40.20
2006/07	62.21	4.33	48.09	2.19	45.31	8.82
2007/08	75.95	250.27	59.07	155.25	57.60	86.86
Total	300.64	458.62	233.07	256.50	144.85	135.88
Mean	60.13		46.61		48.28	
S.D.	9.58		7.16		6.73	
C.V.	15.93		15.37		13.94	

S.C.B.N.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$
2003/04	36.06	0.04	27.66	3.31	-	-
2004/05	36.55	0.48	29.42	0.00	-	-

2005/06	32.42	11.83	26.72	7.62	25.27	15.52
2006/07	31.80	16.48	27.51	3.88	26.34	8.24
2007/08	42.46	43.56	36.09	43.69	36.01	46.24
Total	179.29	72.39	147.40	58.50	87.62	70
Mean	35.86		29.48		29.21	
S.D.	3.80		3.42		4.83	
C.V.	10.60		11.60		16.54	

H.B.L.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$
2003/04	52.10	2.02	43.85	3.28	-	-
2004/05	52.02	2.25	45.24	0.18	-	-
2005/06	52.73	0.62	44.80	0.74	39.45	6.92
2006/07	57.47	15.60	48.90	10.50	44.00	3.69
2007/08	53.34	0.03	45.51	0.02	42.78	0.49
Total	267.66	20.52	228.3	14.72	126.23	11.10
Mean	53.52		45.66		42.08	
S.D.	2.03		1.72		1.92	
C.V.	3.79		3.76		4.56	

N.B.B.L.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$

2003/04	85.65	17.89	71.12	34.93	-	-
2004/05	86.42	29.16	68.52	10.96	-	-
2005/06	80.51	0.26	65.68	0.22	53.74	1.12
2006/07	80.44	0.34	64.50	0.50	54.12	2.07
2007/08	72.07	80.10	56.24	80.46	50.17	6.30
Total	405.09	127.75	326.06	127.07	158.03	9.49
Mean	81.02		65.21		52.68	
S.D.	5.05		5.04		1.78	
C.V.	6.24		7.73		3.38	

N.S.B.I.B.L.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$
2003/04	61.25	105.27	56.43	23.91	-	-
2004/05	69.90	2.59	66.08	22.60	-	-
2005/06	73.05	2.37	59.56	3.10	52.92	14.67
2006/07	76.78	27.77	62.16	0.71	58.05	1.69
2007/08	76.56	25.50	62.35	1.06	59.27	6.35
Total	357.54	163.50	306.58	51.44	170.24	22.71
Mean	71.51		61.32		56.75	
S.D.	5.72		3.21		2.75	
C.V.	8		5.23		4.85	

E.B.L.

Fiscal Year	For Credit and Advances to Total Deposit Ratio		For Credit and Advances to Total Assets Ratio		For Performing Assets to Total Assets Ratio	
	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$	X	$(X - \bar{X})^2$
2003/04	65.77	32.26	57.38	0.72	-	-
2004/05	61.64	96.24	58.79	0.31	-	-
2005/06	75.42	15.76	61.13	8.41	60.34	9.36
2006/07	76.03	20.98	61.51	10.76	60.11	8.01
2007/08	78.37	6.92	52.34	34.69	51.39	34.69
Total	357.23	172.16	291.15	54.89	171.84	52.06
Mean	71.45		58.23		57.28	
S.D.	5.87		3.31		4.17	
C.V.	8.21		5.69		7.28	

where,

$$\text{Mean} = \frac{\sum X}{n}$$

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

$$\text{C.V.} = \text{S.D.} / \text{Mean}$$

Annex 5. Trend Analysis of Combined Ratios.

5.1. Credit and Advances to Total Deposit Ratio.

Fiscal Year	X (Deviation from 05/06)	Y	X^2	XY	Trend value. ($y = a + bx$)
2003/04	-2	0.590	4	-1.18	0.5822
2004/05	-1	0.590	1	-0.59	0.6023

2005/06	0	0.626	0	0	0.6224
2006/07	1	0.641	1	0.641	0.6425
2007/08	2	0.665	4	1.33	0.6626
n = 5	0	3.112	10	0.201	
	= X	= Y	= X ²	= XY	

$$a = Y / n = 3.112/5 = 0.6224$$

$$b = XY / X^2 = 0.201/10 = 0.0201$$

5.2. Credit and Advances to Total Assets Ratio.

Fiscal Year	X (Deviation from 05/06)	Y	X ²	XY	Trend value. (y = a + bx)
2003/04	-2	0.500	4	-1	0.4956
2004/05	-1	0.509	1	-0.491	0.5032
2005/06	0	0.505	0	0	0.5108
2006/07	1	0.521	1	0.529	0.5184
2007/08	2	0.519	4	1.038	0.5260
n = 5	0	2.554	10	0.076	
	= X	= Y	= X ²	= XY	

$$a = Y / n = 2.554/5 = 0.5108$$

$$b = \frac{XY}{X^2} = 0.076/10 = 0.0076$$

5.3. Performing Assets to Total Assets Ratio.

Fiscal Year	X (Deviation from 06/07)	Y	X ²	XY	Trend value. (y = a + bx)
2005/06	-1	0.456	1	-0.456	0.4575
2006/07	0	0.480	0	0	0.4770
2007/08	1	0.495	1	0.495	0.4965
n = 3	0	1.431	2	0.039	
	= X	= Y	= X ²	= XY	

$$a = \frac{Y}{n} = 1.431/3 = 0.477$$

$$b = \frac{XY}{X^2} = 0.039/2 = 0.0195$$

Annex 6. Calculation of Risk Index and Book Value Insolvency.

Fiscal Year	N.B.L.			S.C.B.N.		
	R.O.A.	R.O.E.	Equity Multiplier	R.O.A.	R.O.E.	Equity Multiplier
2003/04	2.19	31.08	14.19	2.19	31.08	14.19
2004/05	2.60	38.79	14.92	2.60	38.79	14.92
2005/06	2.41	37.03	15.37	2.41	37.03	15.37
2006/07	2.27	35.95	15.84	2.27	35.95	15.84
2007/08	4.35	55.08	12.66	2.36	42.08	17.83
n = 5	13.82 =	197.93 =		11.83 =	184.93 =	
	R.O.A.	R.O.E.		R.O.A.	R.O.E.	

Risk Index	13.24 %	57.29 %
Prob. of B.V. Insol.	0.2852 %	0.0152 %

Fiscal Year	H.B.L.			N.B.B.L.		
	R.O.A.	R.O.E.	Equity Multiplier	R.O.A.	R.O.E.	Equity Multiplier
2003/04	1.44	23.43	16.27	1.88	51.23	27.25
2004/05	1.13	27.38	24.23	0.60	33.57	55.95
2005/06	0.91	19.95	21.92	0.60	10.57	17.62
2006/07	1.06	19.86	18.74	0.59	15.56	26.37
2007/08	2.58	49.48	19.18	0.62	9.41	15.18
n = 5	7.12 = R.O.A.	140.10 = R.O.E.		4.29 = R.O.A.	120.34 = R.O.E.	
Risk Index	11 %			14.57 %		
Prob. of B.V. Insol.	0.4132 %			0.2355 %		

Fiscal Year	N.S.B.I.B.L			E.B.L.		
	R.O.A.	R.O.E.	E.M.	R.O.A.	R.O.E.	E.M.
2003/04	0.18	5.24	29.11	1.30	21.82	16.78
2004/05	0.59	7.29	12.36	1.30	16.07	12.36
2005/06	0.64	8.55	13.36	1.16	15.36	13.24
2006/07	0.72	9.72	13.50	1.49	21.10	14.16
2007/08	0.04	0.67	16.75	1.82	28.13	15.46
n = 5	2.17 = R.O.A.	31.47 = R.O.E.		7.07 = R.O.A.	102.48 = R.O.E.	
Risk Index	23.60 %			34.50 %		

Prob. of B.V. Insol.	0.0898 %	0.0420 %
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where,

$$\text{Equity Multiplier} = \text{R.O.E.} / \text{R.O.A.}$$

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

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

Calculation of S.D. of R.O.A. for Annex 6 Purpose.

Fiscal Year	N.B.L.		S.C.B.N.	
	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$
2003/04	2.19	0.3295	2.19	0.0310
2004/05	2.60	0.0269	2.60	0.0548
2005/06	2.41	0.1253	2.41	0.0019
2006/07	2.27	0.2440	2.27	0.0092
2007/08	4.35	2.5154	2.36	0.0000
n = 5	13.82 = R.O.A.	3.2411 = $(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$	11.83 = R.O.A.	0.0969 = $(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$
S.D.		0.8051		0.1392

Fiscal Year	H.B.L.		N.B.B.L.	
	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$
2003/04	1.44	0.0003	1.88	1.0445
2004/05	1.13	0.0864	0.60	0.0666
2005/06	0.91	0.2642	0.60	0.0666
2006/07	1.06	0.1326	0.59	0.0718
2007/08	2.58	1.3363	0.62	0.0566

n = 5	7.12 = R.O.A.	1.8197 = $(\overline{\text{R.O.A.}} - \text{R.O.A.})^2$	4.29 = R.O.A.	1.3061 = $(\overline{\text{R.O.A.}} - \text{R.O.A.})^2$
S.D.	0.6033		0.5111	

Fiscal Year	N.S.B.I.B.L.		E.B.L.	
	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$	R.O.A.	$(\text{R.O.A.} - \overline{\text{R.O.A.}})^2$
2003/04	0.18	0.0645	1.30	0.0130
2004/05	0.59	0.0243	1.30	0.0130
2005/06	0.64	0.0424	1.16	0.0645
2006/07	0.72	0.0818	1.49	0.0058
2007/08	0.04	0.1552	1.82	0.1648
n = 5	2.17 = R.O.A.	0.3682 = $(\overline{\text{R.O.A.}} - \text{R.O.A.})^2$	7.07 = R.O.A.	0.2611 = $(\overline{\text{R.O.A.}} - \text{R.O.A.})^2$
S.D.	0.2714		0.2285	

where,

$$\overline{\text{R.O.A.}} = \text{R.O.A.} / n$$

$$\text{S.D.} = \sqrt{\frac{(\text{R.O.A.} - \overline{\text{R.O.A.}})^2}{n}}$$

Annex 7. Calculation of Correlation and Regression Coefficient.

Where,

$$\text{Correlation (r)} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y^2 - (\sum Y)^2\}}}$$

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

N.B.L.

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
2003/04	4.76	2.19	31.08	22.66	10.42	147.94	4.796	965.97
2004/05	5.83	2.60	38.79	33.99	15.16	226.15	6.760	1504.66
2005/06	5.07	2.41	37.03	25.70	12.22	187.74	5.808	1371.22
2006/07	4.24	2.27	35.95	17.98	9.62	152.43	5.153	1292.40
2007/08	4.01	4.35	55.08	16.08	17.44	220.87	18.923	3033.81
n = 5	23.91	13.82	197.93	116.41	64.86	935.13	41.440	8168.06
	= X	= Y ₁	= Y ₂	= X ²	= XY ₁	= XY ₂	= Y ₁ ²	= Y ₂ ²

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = -0.4735$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.2340$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = -0.4330$$

$$P.E. (R.O.E.) = \frac{[0.6745(1-r^2)]}{n} = 0.2451$$

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

Regression equation of Y₁ 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.

$$Y_1 = Na + b \sum X \quad \text{i.e.} \quad 13.82 = 5a + 23.91 b \text{ -----1}^{\text{st}}$$

$$\sum XY_1 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 64.86 = 23.91a + 116.41b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 4.87 and subtracting equation 2nd from equation 1st,

we have, $a = 5.5455$

Putting the value of 'a' in equation 1st, we get $b = -0.5817$

Regression equation of Y₂ 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.

$$Y_2 = Na + b X \quad \text{i.e.} \quad 197.93 = 5a + 23.91b \text{ -----1}^{\text{st}}$$

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

Multiplying equation 1st by 4.87 and subtracting equation 2nd from equation 1st,

we have, $a = 65.4318$

Putting the value of 'a' in equation 1st, we get $b = -5.4048$

S.C.B.N.

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
2003/04	4.76	2.19	31.08	22.658	10.42	147.94	4.796	965.97
2004/05	5.83	2.60	38.79	33.989	15.16	226.15	6.760	1504.66
2005/06	5.07	2.41	37.03	25.705	12.22	187.74	5.808	1371.22
2006/07	4.24	2.27	35.95	17.978	9.62	152.43	5.153	1292.40
2007/08	3.38	2.36	42.08	11.424	7.98	142.23	5.570	1770.73
n = 5	23.28	11.83	184.93	111.75	55.40	856.49	28.087	6904.98
	= $\sum X$	= $\sum Y_1$	= $\sum Y_2$	= $\sum X^2$	= $\sum XY_1$	= $\sum XY_2$	= $\sum Y_1^2$	= $\sum Y_2^2$

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = 0.5567$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.1679$$

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

$$r_{(R.O.E.)} = \frac{\sum (X - \bar{X})(Y_2 - \bar{Y}_2)}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = -0.3070$$

$$P.E. (R.O.E.) = \frac{[0.6745(1-r^2)]}{n} = 0.2732$$

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

Regression equation of Y₁ 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.

$$Y_1 = Na + b \sum X \quad \text{i.e.} \quad 11.83 = 5a + 23.28 b \text{ -----1}^{\text{st}}$$

$$\sum XY_1 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 55.40 = 23.28a + 111.75b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 4.80 and subtracting equation 2nd from equation 1st, we have, a = 1.93

Putting the value of 'a' in equation 1st, we get b = 0.094

Regression equation of Y₂ on X i.e. 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.

$$Y_2 = Na + b \sum X \quad \text{i.e.} \quad 184.93 = 5a + 23.28b \text{ -----1}^{\text{st}}$$

$$\sum XY_2 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 856.49 = 23.28a + 111.75b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 4.80 and subtracting equation 2nd from equation 1st, we have, a = 43.30

Putting the value of 'a' in equation 1st, we get b = -1.36

H.B.L.

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
2003/04	5.30	1.44	23.43	28.09	7.63	124.18	2.074	548.96
2004/05	6.73	1.13	27.38	45.29	7.60	184.27	1.277	749.66

2005/06	7.49	0.91	19.95	56.10	6.82	149.43	0.828	398.00
2006/07	7.49	1.06	19.86	56.10	7.94	148.75	1.124	394.42
2007/08	3.91	2.58	49.48	15.29	10.09	193.47	6.656	24448.27
n = 5	30.92	7.12	140.10	200.87	40.08	800.10	11.959	4539.31
	= X	= Y ₁	= Y ₂	= X ²	= XY ₁	= XY ₂	= Y ₁ ²	= Y ₂ ²

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = -0.9418$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.0341$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = -0.8608$$

$$P.E. (R.O.E.) = \frac{[0.6745(1-r^2)]}{n} = 0.0781$$

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

Regression equation of Y₁ 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.

$$Y_1 = Na + b \sum X \quad \text{i.e.} \quad 7.12 = 5a + 30.92b \text{ -----1}^{\text{st}}$$

$$\sum XY_1 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 40.08 = 30.92a + 200.87b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 6.50 and subtracting equation 2nd from equation 1st,

we have, a = 3.9551

Putting the value of 'a' in equation 1st, we get b = -0.4101

Regression equation of Y₂ on X i.e. 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.

$$Y_2 = Na + b X \quad \text{i.e.} \quad 140.10 = 5a + 30.92b \text{ -----1}^{\text{st}}$$

$$XY_2 = a X + b X^2 \quad \text{i.e.} \quad 800.10 = 30.92a + 200.87b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 6.50 and subtracting equation 2nd from equation 1st,

we have, a = 70.8654

Putting the value of 'a' in equation 1st, we get b = -6.9284

N.B.B.L.

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
2003/04	1.78	1.88	51.23	3.17	3.35	91.19	3.534	2624.51
2004/05	3.28	0.60	33.57	10.76	1.97	110.11	0.360	1126.94
2005/06	3.08	0.60	10.57	9.49	1.85	32.56	0.360	111.72
2006/07	9.20	0.59	15.56	84.64	5.43	143.15	0.348	242.11
2007/08	13.55	0.62	9.41	183.60	8.40	127.51	0.384	88.55
n = 5	30.89	4.29	120.34	291.66	21.00	504.52	4.986	4193.83
	= X	= Y ₁	= Y ₂	= X ²	= XY ₁	= XY ₂	= Y ₁ ²	= Y ₂ ²

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = -0.2820$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.2776$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = -0.6606$$

$$[0.6745(1-r^2)]$$

$$\text{P.E. (R.O.A.)} = \frac{\quad}{n} = 0.1700$$

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

Regression equation of Y₁ 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.

$$Y_1 = Na + b X \quad \text{i.e.} \quad 4.29 = 5a + 30.89 b \text{ -----1}^{\text{st}}$$

$$XY_1 = a X + b X^2 \quad \text{i.e.} \quad 21.00 = 30.89a + 291.66b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 9.4419 and subtracting equation 2nd from equation 1st, we have, a = 1.1955

Putting the value of 'a' in equation 1st, we get b = -0.0546

Regression equation of Y₂ on X i.e. 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.

$$Y_2 = Na + b X \quad \text{i.e.} \quad 120.34 = 5a + 30.89b \text{ -----1}^{\text{st}}$$

$$XY_2 = a X + b X^2 \quad \text{i.e.} \quad 504.52 = 30.89a + 291.66b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 9.4419 and subtracting equation 2nd from equation 1st, we have, a = 38.7083

Putting the value of 'a' in equation 1st, we get b = -2.3698

N.S.B.I.B.L

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
2003/04	5.29	0.18	5.24	27.98	0.95	27.72	0.032	27.458

2004/05	6.21	0.59	7.29	38.56	3.66	45.27	0.348	53.144
2005/06	8.90	0.64	8.55	79.21	5.70	76.10	0.410	73.103
2006/07	7.02	0.72	9.72	49.28	5.05	68.23	0.518	94.478
2007/08	6.00	0.04	0.67	36.00	0.24	4.02	0.002	0.449
n = 5	33.42	2.17	31.47	231.03	15.60	221.34	1.310	248.632
	= $\sum X$	= $\sum Y_1$	= $\sum Y_2$	= $\sum X^2$	= $\sum XY_1$	= $\sum XY_2$	= $\sum Y_1^2$	= $\sum Y_2^2$

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = 0.6528$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.1731$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = 0.5590$$

$$P.E. (R.O.E.) = \frac{[0.6745(1-r^2)]}{n} = 0.1330$$

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.

$$Y_1 = Na + b \sum X \quad \text{i.e.} \quad 2.17 = 5a + 33.42b \quad \text{-----1}^{\text{st}}$$

$$\sum XY_1 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 15.60 = 33.42a + 231.03b \quad \text{-----2}^{\text{nd}}$$

Multiplying equation 1st by 6.9129 and subtracting equation 2nd from equation 1st,

we have, $a = -0.5263$

Putting the value of 'a' in equation 1st, we get $b = 0.1437$

Regression equation of Y_2 on X i.e. 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.

$$Y_2 = Na + b X \quad \text{i.e.} \quad 31.47 = 5a + 33.42b \text{ -----1}^{\text{st}}$$

$$XY_2 = a X + b X^2 \quad \text{i.e.} \quad 221.34 = 33.42a + 231.03b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 6.91 and subtracting equation 2nd from equation 1st,

we have, a = -3.4336

Putting the value of 'a' in equation 1st, we get b = 1.4554

E.B.L.

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
2003/04	2.08	1.30	21.82	4.33	2.70	45.39	1.69	476.11
2004/05	1.02	1.30	16.07	1.04	1.33	16.39	1.69	258.24
2005/06	2.79	1.16	15.36	7.78	3.24	42.85	1.35	235.93
2006/07	3.47	1.49	21.10	12.04	5.17	73.22	2.22	445.21
2007/08	4.01	1.82	28.13	16.08	7.30	112.80	3.31	791.30
n = 5	13.37	7.07	102.48	41.27	19.74	290.65	10.26	2206.79
	= X	= Y ₁	= Y ₂	= X ²	= XY ₁	= XY ₂	= Y ₁ ²	= Y ₂ ²

$$r_{(R.O.A.)} = \frac{n \sum XY_1 - \sum X \sum Y_1}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_1^2 - (\sum Y_1)^2\}}} = 0.6930$$

$$P.E. (R.O.A.) = \frac{[0.6745(1-r^2)]}{n} = 0.1568$$

$$r_{(R.O.E.)} = \frac{n \sum XY_2 - \sum X \sum Y_2}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y_2^2 - (\sum Y_2)^2\}}} = 0.6859$$

$$P.E. (R.O.E.) = \frac{[0.6745(1-r^2)]}{n} = 0.1597$$

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.

$$Y_1 = Na + b \sum X \quad \text{i.e.} \quad 7.07 = 5a + 13.37b \text{ -----1}^{\text{st}}$$

$$\sum XY_1 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 19.74 = 13.37a + 41.27b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 3.0868 and subtracting equation 2nd from equation 1st, we have, $a = 1.0097$

Putting the value of 'a' in equation 1st, we get $b = 0.1512$

Regression equation of Y_2 on X i.e. 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.

$$Y_2 = Na + b \sum X \quad \text{i.e.} \quad 102.48 = 5a + 13.37b \text{ -----1}^{\text{st}}$$

$$\sum XY_2 = a \sum X + b \sum X^2 \quad \text{i.e.} \quad 290.65 = 13.37a + 41.27b \text{ -----2}^{\text{nd}}$$

Multiplying equation 1st by 3.0868 and subtracting equation 2nd from equation 1st, we have, $a = 12.4709$

Putting the value of 'a' in equation 1st, we get $b = 3.0012$

Annex 8. T-test Calculation of Joint Venture Banks.

A. Nabil Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A (Y)	XY	Y ²	(X- X/ n)	(X- X/ n) ²
2003/04	4.76	2.19	10.42	4.80	-0.03	0
2004/05	5.83	2.60	15.16	6.76	1.05	1.10
2005/06	5.07	2.41	12.22	5.81	0.29	0.08
2006/07	4.24	2.27	9.62	5.15	-0.54	0.29
2007/08	4.01	4.35	17.44	18.92	-0.77	0.59
n = 5	23.91 = X	13.82 = Y	64.86 = XY	41.44 = Y ²	0	2.06 = X(X- X/ n) ²

We have, a = 5.5455 and b = -0.5817 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 0.9184$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - X/n)^2}} = 0.6399$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -0.9090$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	4.76	31.08	147.94	965.97
2004/05	5.83	38.79	226.15	1504.66
2005/06	5.07	37.03	187.74	1371.22
2006/07	4.24	35.95	152.43	1292.40
2007/08	4.01	55.08	220.87	3033.81
n = 5	23.91	197.93	935.13	8168.06
	= X	= Y	= XY	= Y ²

We have, a = 65.4318 and b = -5.4048 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 9.5102$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}} = 6.6259$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -0.8157$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

B. Standard Chartered Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A (Y)	XY	Y ²	(X- X/ n)	(X- X/ n) ²
2003/04	4.76	2.19	10.42	4.796	0.104	0.011
2004/05	5.83	2.60	15.16	6.760	1.174	1.378
2005/06	5.07	2.41	12.22	5.808	0.414	0.171
2006/07	4.24	2.27	9.62	5.153	-0.416	0.173
2007/08	3.38	2.36	7.98	5.570	-1.276	1.628
n = 5	23.28	11.83	55.40	28.087	0	3.361 =
	= X	= Y	= XY	= Y ²		X(X- X/ n) ²

We have, a = 1.93 and b = 0.094 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 0.125$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - X/n)^2}} = 0.0683$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = 1.3763$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	4.76	31.08	147.94	965.97
2004/05	5.83	38.79	226.15	1504.66
2005/06	5.07	37.03	187.74	1371.22
2006/07	4.24	35.95	152.43	1292.40
2007/08	3.38	42.08	142.23	1770.73
n = 5	23.28	184.93	856.49	6904.98
	= X	= Y	= XY	= Y ²

We have, a = 43.30 and b = -1.36 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 4.5584$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}} = 2.4864$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -0.5470$$

S_b

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

C. Himalayan Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A. (Y)	XY	Y ²	(X- X/ n)	(X- X/ n) ²
2003/04	5.30	1.44	7.63	2.07	-0.88	0.77
2004/05	6.73	1.13	7.60	1.28	0.55	0.30
2005/06	7.49	0.91	6.82	0.83	1.31	1.72
2006/07	7.49	1.06	7.94	1.12	1.31	1.72
2007/08	3.91	2.58	10.09	6.66	-2.29	5.24
n = 5	30.92	7.12	40.08	11.96	0	9.75 =
	= X	= Y	= XY	= Y ²		X(X- X/ n) ²

We have, a = 3.9551 and b = -0.4101 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 0.2808$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - X/n)^2}} = 0.0899$$

Therefore, t-value of beta (b)

$$T_b = \frac{b-o}{S_b} = -4.5617$$

Since, the calculated 't' is more than tabulated 't' at 5 % levels of significance, null hypothesis is rejected.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	5.30	23.43	124.18	548.96
2004/05	6.73	27.38	184.27	749.66
2005/06	7.49	19.95	149.43	398.00
2006/07	7.49	19.86	148.75	394.42
2007/08	3.91	49.48	193.47	2448.27
n = 5	30.92	140.10	800.10	4539.31
	= X	= Y	= XY	= Y ²

We have, a = 70.8654 and b = -6.9284 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 7.1759$$

Putting the value of standard error of y in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\text{—————}} = 2.2981$$

$$(X - \bar{X})^2$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -3.0148$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

D. Nepal Bangladesh Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A. (Y)	XY	Y ²	(X - \bar{X})	(X - \bar{X}) ²
2003/04	1.78	1.88	3.35	3.53	-4.40	19.36
2004/05	3.28	0.60	1.97	0.36	-2.90	8.41
2005/06	3.08	0.60	1.85	0.36	-3.10	9.61
2006/07	9.20	0.59	5.43	0.35	3.03	9.18
2007/08	13.55	0.62	8.40	0.38	7.37	54.32
n = 5	30.89	4.29	21.00	4.98	0	100.88 =
	= \bar{X}	= \bar{Y}	= \bar{XY}	= $\bar{Y^2}$		$\sum (X - \bar{X})^2$

We have, a = 1.1955 and b = -0.0546 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a \sum Y - b \sum XY}{N-2}} = 0.5767$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{\sum (X - \bar{X})^2}} = 0.0574$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -0.9512$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	1.78	51.23	91.19	2624.51
2004/05	3.28	33.57	110.11	1126.94
2005/06	3.08	10.57	32.56	111.72
2006/07	9.20	15.56	143.15	242.11
2007/08	13.55	9.41	127.51	88.55
n = 5	30.89	120.34	503.52	4193.83
	= X	= Y	= XY	= Y ²

We have, a = 38.7083 and b = -2.3698 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{\sum Y^2 - a \sum Y - b \sum XY}{N-2}} = 15.59$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{\sum (X - \bar{X})^2}} = 1.5528$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = -1.5261$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

E. Nepal S.B.I. Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A. (Y)	XY	Y ²	(X - X/n)	(X - X/n) ²
2003/04	5.29	0.18	0.95	0.03	-1.39	1.93
2004/05	6.21	0.59	3.66	0.35	-0.47	0.22
2005/06	8.90	0.64	5.70	0.41	2.20	4.84
2006/07	7.02	0.72	5.05	0.52	0.34	0.12
2007/08	6.00	0.24	0.24	0.00	-0.68	0.46
n = 5	33.42	2.17	15.60	1.31	0	7.57 =
	= X	= Y	= XY	= Y ²		X(X - X/n) ²

We have, a = -0.5263 and b = 0.1437 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 0.2648$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}} = 0.0962$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = 1.4938$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	5.29	5.24	27.72	27.46
2004/05	6.21	7.29	45.27	53.14
2005/06	8.90	8.55	76.10	73.10
2006/07	7.02	9.72	68.23	94.48
2007/08	6.00	0.67	4.02	00.45
n = 5	33.42	31.47	221.34	248.63
	= X	= Y	= XY	= Y ²

We have, a = -3.4336 and b = 1.4554 from Annex 7.

Here,

Null hypothesis (H₀): b = 0, the slope of the line is zero.

Alternative hypothesis (H₁): b ≠ 0, the slope of the line is not zero.

Now, using the formula for standard error of y, we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 3.3935$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - X/n)^2}} = 1.2334$$

Therefore, t-value of beta (b)

$$T_b = \frac{b-o}{S_b} = 1.18$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

F. Everest Bank Limited.

1. T-test Calculation between R.O.A. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.A (Y)	XY	Y ²	(X- X/n)	(X- X/n) ²
2003/04	2.08	1.30	2.70	1.69	-0.59	0.35
2004/05	1.02	1.30	1.33	1.69	-1.65	2.72
2005/06	2.79	1.16	3.24	1.35	0.12	0.01
2006/07	3.47	1.49	5.17	2.22	0.80	0.64
2007/08	4.01	1.82	7.30	3.31	1.32	1.74
n = 5	13.37	7.07	19.74	10.26	0	5.46 =
	= X	= Y	= XY	= Y ²		X(X- X/n) ²

We have, a = 1.0097 and b = 0.1512 from Annex 7.

Here,

Null hypothesis (H_0): $b = 0$, the slope of the line is zero.

Alternative hypothesis (H_1): $b \neq 0$, the slope of the line is not zero.

Now, using the formula for standard error of y , we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 0.2135$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}} = 0.0914$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = 1.6543$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.

2. T-test Calculation between R.O.E. & P.L.L.

Fiscal Year	P.L.L. (X)	R.O.E. (Y)	XY	Y ²
2003/04	2.08	21.82	45.39	476.11
2004/05	1.02	16.07	16.39	268.63
2005/06	2.79	15.36	42.85	235.93
2006/07	3.47	21.10	73.22	445.21
2007/08	4.01	28.13	112.80	791.30
n = 5	13.37	102.48	290.65	2217.18
	= X	= Y	= XY	= Y ²

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We have, $a = 12.4709$ and $b = 3.0012$ from Annex 7.

Here,

Null hypothesis (H_0): $b = 0$, the slope of the line is zero.

Alternative hypothesis (H_1): $b \neq 0$, the slope of the line is not zero.

Now, using the formula for standard error of y , we have

$$S_y = \sqrt{\frac{Y^2 - a Y - b XY}{N-2}} = 4.72$$

Putting the value of standard error of 'y' in calculating the standard error of estimate for the slope of line, we have

$$S_b = \frac{S_y}{\sqrt{(X - \bar{X})^2}} = 2.0199$$

Therefore, t-value of beta (b)

$$T_b = \frac{b - 0}{S_b} = 1.4858$$

Since, the calculated 't' is less than tabulated 't' at 5 % levels of significance, null hypothesis is accepted.