CREDIT RISK MANAGEMENT OF COMMERCIAL BANKS

(With reference to Himalayan Bank Limited, Everest Bank Limited and Standard Chartered Bank Nepal Limited)

By:

Sanu Maiya Shakya
Patan Multiple Campus
T.U. Regd. No: 7-1-258-119-2001
Campus Roll No./Batch: 76-2064
Exam Roll No: 220105-66

A Thesis Submitted to

Office of the Dean
Faculty of Management
Tribhuvan University

In partial fulfillment of the requirements for the degree of

Master of Business Studies (M.B.S.)

Kathmandu, Nepal
March, 2014

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RECOMMENDATION

This is to certify that the thesis

Submitted by:

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Entitled:

Credit Risk Management of Commercial Banks

(With reference to Himalayan Bank Limited, Everest Bank Limited and Standard Chartered Bank Nepal Limited)

has been prepared as approved by this Campus in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the viva-voce examination of the thesis

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Credit Risk Management of Commercial Banks

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and found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirements for the degree of

Master of Business Studies (M.B.S.)

Viva-Voce Committee

Head, Research Department: … … … … … … …

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Member (External Expert): … … … … … … ….

Date:

Declaration

I hereby declare that this study entitled **"Credit Risk Management of Commercial Banks (With reference to Himalayan Bank Limited, Everest Bank Limited and Standard Chartered Bank Nepal Limited) "** submitted to the Office of the Dean, Faculty of Management, Tribhuvan University, is my original research work carried out to satisfy the partial fulfillment of the requirements for the degree of Master of Business Studies (M.B.S.) under the supervision of Mr. Arjun Prasad Shrestha Lecturer of Patan Multiple Campus.

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ABBREVIATIONS

a	:	Regression Coefficient
A.D.	:	Anno Domini
ADBN	:	Agriculture Development Bank Nepal
b	:	Regression Coefficient
BOK	:	Bank of Kathmandu
B.S.	:	Bikram Sambat
CAP	:	Inverse of Equity Multiplier
CRM	:	Credit Risk Management
CV	:	Coefficient of Variance
EBL	:	Everest Bank Limited
etc.	:	Etcetera
Fig	:	Figure
FY	:	Fiscal Year
HBL	:	Himalayan Bank Limited
i.e.	:	That is
Ltd	:	Limited
MBS	:	Masters of Business Studies
NABIL	:	Nabil Bank Limited
NIBL	:	Nepal Investment Bank Limited
NIC	:	Nepal Industrial and Commercial Bank Limited
NPA	:	Non Performing Assets
NPL	:	Non Performing Loan
NRB	:	Nepal Rastra Bank
P.E	:	Probable Error
PEST	:	Political , Economic, Social and Technological

PLL	:	Loan and Loss Provision
R	:	Karl Person Coefficient of Correlation
RBB	:	Rastriya Banijaya Bank
RI	:	Risk Index
ROA	:	Return on Assets
ROE	:	Return on Equity
SBI	:	Nepal SBI Bank Limited
SCBNL	:	Standard Chartered Bank Nepal Limited
S.D.	:	Standard Deviation
SWOT	:	Strength Weakness Opportunity and Threat
Sy	:	Standard error of the y value
T.U.	:	Tribhuvan University
Viz.	:	Namely
%	:	Percentage
Www	:	World Wide Web

CHAPTER I
INTRODUCTION

1.1 Background of the Study

It is argued that the financial sector is a lifeline of all economic activities and the sector in itself is just one economic pursuit which thrives on financing to other economic activities. Just like every economic activity it has to use resource efficiently on the one hand and market its products/services on the other across the range of customers outreach and affordability. Financial business is crossing the national boundaries and has encompassing the global spectrum these days. Globalization of the financial sector has instilled further threats and opportunities to improve the level of services offered by these institutions. Therefore, competitive strength has been of paramount importance in the financial institutions *(Adhikary, Pant & Dhungana, 2007).*

Commercial banks are an integral part of the economy in all the countries. In addition to the commercial banking realm, there are several financial institutions affecting the financial operations in a country. The role of the commercial banks in financial system is more significant. It plays increasingly dynamic and vital role in the economy of the least developed countries, which provides economic and financial intermediation in the economy. Prior to the establishment of the Nepal Bank Limited, there was no organized financial institution in Nepal. During the prime ministership of Ranodip Singh, around 1877 A.D., a number of economic and financial reforms were introduced *(Bhandari, 2002).*

1.1.1 Evolution of Banking Industry

The evolution of banking industry had started during ancient times. There was reference to the activities of moneychanger in the temple Jerusalem in the New Testament. In ancient Greece, the famous temples of Delphi and Olympia served as the great depositories for peoples' surplus funds and these were the centres of

money lending transaction. Indeed the traces of “rudimentary banking” in ancient Rome roughly followed the Greek pattern. Banking suffered oblivion after the fall of the Roman Empire after the death of Emperor Justinian in 565 AD, and it was not until the revival of trade and commerce in the Middle Ages that the lessons of finance were learnt anew from the beginning. Money lending is the middle ages was, however, largely confined to the Jews since the Christians were forbidden by the Canon law to indulge in the sinful act of lending money to others on interest. However, as the hold of the Church loosened with the development of trade and commerce about the thirteenth century Christians also took to the lucrative business of money lending, thereby entering into keen competition with the Jews who had hitherto monopolized the business.

As a public enterprise, banking made its first beginning around the middle of the twelfth century in Italy and the Bank of Venice, founded in 1157 was the first the public banking institution. Following it were established the Bank of Barcelona and the Bank of Genoa in 1401 and 1407 respectively. The Bank of Venice and the Bank of Genoa continued to operate until the eighteenth century. With the expansion of commercial activities in Northern Europe there sprang up a number of private banking houses in Europe and slowly it spread throughout the world. In Nepal, modern banking starts from the establishment of Nepal Banking Limited.

1.1.2 Development of Commercial Bank in Nepal

In the country, the development of banking is relatively recent. The record of banking system in Nepal gives detail account of mixture of slow and steady evolution in the financial and global economy of Nepalese life. Involvement of landlords, rich merchants, shopkeepers and other individual money lender has acted as fence to institutional credit in presence of unorganized money market.

It shows that some crude bank operations were in practice even in the ancient times, in Nepalese Chronicle, it was recorded that the new era known as Nepal Sambat was introduced by Shakhadhar Sakhwa, a sudra merchant of Kantipur in 879 or 880 A.D after having paid all the outstanding debts in the country. This shows the basic

of money lending practice in ancient Nepal. Towards the end of 8th century, Gunkam Dev had borrowed money to rebuild the Kathmandu Valley. In 11th century, during Malla regime there was an evidence of professional moneylenders and bankers and money- lending business, particularly for financing the foreign trade with a Tibet.

The establishment of “Tejarath Adda” could be regarded as pioneer foundation of banking in Nepal during the year 1877 AD. It was fully subscribed by the government of Kathmandu valley, which played a vital in the banking system. There was no other financial institution set-up and no efforts to expand the services. Above all of the defects this institution did not accept any deposits from the public. In the absence of saving mobilization the “Adda” faced financial problems making it impossible to Carter to the credit and service need of the general population throughout the country.

Then the government started trade with India and Tibet. Various indigenous bankers handled even the trade, because transfer of the money could be safely made only through these bankers in the absence of modern banking institutions. Hence, the need of banking intuition was realized. This was even strongly supported by the situation caused during 1934 AD. One year after its formulation, it formulated the “Company Act” and “Nepal Bank Act” in 1937 A.D.

In the year 1934 A.D. the establishment of Nepal Bank Ltd, with the Imperial Bank of India came into existence under “Nepal Bank Act, 1937” as the first commercial bank of Nepal, inaugurated by Late King Tribhuwan on November 1937. Rastriya banijya Bank, the second commercial bank was established in the year 1965. RBB being the largest commercial bank plays a major role in the economy that is the reason why these banks still exist in spite of their bad position. Thus we can say that modern banking practices began only before the Second World War the establishment of the first banking institute, Nepal Bank Limited, which was establishment as a joint venture of government and private individuals.

Earlier banks were different from modern commercial banks in many respects. The banks, which operated in the past, combined central banking functions such as issue of currency, with commercial banking operations like accepting deposits and

financing business. In course of time this practice was abandoned and specialized institutions for the central banking functions were created. Now, a central bank can be easily distinguished from a commercial bank due to their objectives and unique functions.

The commercial banks facilitated and supervised by Central bank hold the deposits of millions of persons, government and business units. It exchanges money, accepts deposits, grants loan and operates commercial transaction. They make funds available through their lending activities to borrowers, individuals, business firms and government and investing activities from small average amount to large number of productive and needed sector of the country, so as to develop the nation. With the opening of NABIL bank in 1985 the door of opening commercial banks was opened to the private sector. Then whole lot of commercial banks was opened in Nepal. Today all the Banks except Nepal Bank Ltd. and Rastriya Banijya Bank are making Profit. The inefficiency of these two sector banks has lead to the success of other private banks.

As the commercial bank grew the stopped entertaining small projects. Thus a scope for opening finance companies emerged. In 2042 B.S., finance company Act was passed, but private sector kept stony silence till 2049 B.S. the first break came in month of Shrawan of that year, when first company Nepal Housing and Development Finance Company came. The second came in the Poush of the same year, Nepal Finance and Saving Company.

1.1.3 Profile of Sample Commercial Banks

Himalayan Bank Limited

Himalayan Bank Limited was established on 6th of February 1992 by the distinguished business personalities of Nepal in partnership with Employees Fund and Habib Bank Limited, one of the largest commercial banks of Pakistan. But it actually started its business operation from 18th January. Despite the cut-throat competition in the Nepalese Banking sector, Himalayan Bank has been able to

maintain a lead in the primary banking activities- Loans and Deposits. Products such as Premium Savings Account, HBL Proprietary Card and Millionaire Deposit Scheme besides services such as ATMs and Tele-banking were first introduced by HBL. HBL started its services with 77 employees. Now its employees are over 300. Like any other commercial bank in Nepal, HBL is also engaged in some industrial banking. The bank has experienced dynamic growth over the last nine years. The local Nepalese promoters hold 65% stake in the bank's equity, while 20% of equity is contributed by joint venture partner HBL and remaining 15% is held by the general public.

Himalayan Bank is always committed to providing a quality service, with a personal touch, to its valued customers. All customers are regarded as valued clients and treated with utmost courtesy. The Bank, wherever possible, offers tailored facilities to its clients, to meet unique needs and requirements of different clients. To further extend the reliable and efficient services to its valued customers, Himalayan Bank has adopted the latest banking technology and runs the world class banking software Globus on IBM platform. The Bank can now boast of its state-of-the-art IT infrastructure with an identical Disaster Recovery System, offsite. This has not only helped the Bank to constantly improve its service level but has also prepared the Bank for future adaptation to new technology. The Bank already offers unique services such as Himal Remit, SMS Banking, Pre-paid Credit Cards and Internet Banking to customers and will be introducing more services like these in the near future.

Everest Bank Ltd.

Everest Bank Limited (EBL) was established in 1994 and started its operations with a view and objective of extending professional ideas and efficient banking services to various segments of the society. EBL joined hands with Punjab National Bank (PNB), India as its joint venture partner in 1997. PNB is the largest Public Sector Bank of India having more than 100 years of banking history with more than 4400

offices all over India and is known for its strong systems and procedures and a distinct work culture.

Drawing its strength from its joint venture partner, EBL has been steadily growing in its size and operations ever since its inception and today it has established itself as a leading Private Sector Bank of the nation, reckoned as one of the fastest growing of the country.

The bank's paid-up capital has increased to 1030 million against the Authorized Capital of 1601 million. The local Nepalese promoters hold 50% stake in the bank's equity, while 20% of equity is contributed by joint venture partner PNB and remaining 30% is held by the general public.

The bank provides a wide range of banking facilities through a wide network of 37 branches covering all the five regions of the country and over more than 250 reputed correspondent banks across the globe. All the branches in the valley and as also those at important business centres like Biratnagar, Birgunj, Butwal and Bhairahawa are interconnected through Anywhere Branch Banking Systems (ABBS), a facility which enables its customers to do banking transactions from any of these branches irrespective of their having accounts in the other branch.

Standard Chartered Bank Nepal Ltd.

Standard Chartered Bank Nepal Limited (SCBNL) has been in operation in Nepal since 1987 when it was initially registered as a joint-venture operation. Today the bank is an integral part of Standard Chartered Group that has 75% ownership in the company with 25% shares owned by the Nepalese public. The bank enjoys the status of largest international bank currently operating in Nepal.

Standard Chartered Group employs 89,000 people in over 500 locations in more than 70 countries in the Asia Pacific Region, South Asia, the Middle East, Africa, the United Kingdom and the Americas. It is one of the world most international banks, with a management team comprising of 79 nationalities. The Bank is trusted across its network for its standard of governance and its commitment to making a difference in the communities in which it operates.

With 19 points of representation, 23 ATMs across the country and with more than 450 staff, Standard Chartered Bank Nepal Ltd. is in a position to server their customer through an extensive domestic network. In addition, the global network of standard Chartered Group gives the bank a unique opportunity to provide truly international banking services in Nepal.

1.2 Statement of the Problem

Nepal is a small market economic condition of the country is degrading due to 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 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 unhealthy competition among the banks the recovery of the bank's credit is going negative trends. Non- performing credits of the banks are increasing year by year. To control such type of state the regulatory body of the banks and financial institutions NRB has renewed its directives of the credit loss provision since the objective of the commercial banks is wealth maximization and achievement of organizational objectives contributes to the national economy and the success and failure of the commercial bank largely depends or 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 commercial banks of Nepal mange the credit risk. Especially, the study is expected to reveal the following research questions.

- What are the factors that increase credit risk in commercial banks?
- How the commercial banks are managing the credit risk?
- Is the credit risk management affected by the PEST factors?
- Is there any relationship between PLL with ROA and ROE?

1.3 Objective of the Study

Studies are done with some goal or objectives. Without objectives, there is no use of doing a study. Objective acts as a blueprint which gives direction that need to be followed to accomplish it in due course. So, this present study has also been done with taking some objectives. 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 additional objectives should be considered.

- To evaluate factors that increases the credit risk of commercial banks.
- To analyse the SWOT analysis of commercial banks.
- To examine the effect of the PEST factors on credit risk.
- To assess the relationship between PLL with ROA and ROE.

1.4 Significance of the Study

Risk is in evitable factors of any types of business organization. So the business of banking is to measuring managing and accepting risk. We know that default risk is a major factor facing by any commercial banks. It is the uncertainty associated with the borrower's loan payment 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 analyse borrowers planning and ability. Despite of being a very crucial topic of financial management, many researchers have not been made for this topic. At present 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 provides such information which is useful for shareholders management bodies of the bank and outsiders i.e. other financial institutions, potential investors, stock brokers etc.

1.5 Limitation of the Study

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

- The study is based on data and information provided by the banks.
- The study is cover recent few year data regarding with credit management
- Sample size is small, it may not fully represent Nepal as a whole.
- The study largely may be depends upon the published document such as balance sheet, profit and loss account statement etc.
- Statistical and financial technique is used for credit risk management analysis.
- Only 3 banks are taken into account to do the comparative study out of 30 commercial banks of Nepal
- This study concentrates only on credit risk management of selected commercial banks

1.6 Organization of the Study

The study is designed in five chapters. The first chapter of the study describes the basic concept and background of the study. It has served orientation for readers to know about the basic information of the research area, various problems of the study, objective of the study and need or significance of the study. It is oriented for readers for reporting giving them the perspective they need to understand the detailed information about coming chapter. The second chapter of the study, “Review of Literature” assures readers that they are familiar with important research that has been carried out in similar areas. It also establishes that the study as a link in a chain of research that is developing and emerging knowledge about concerned field. Similarly, the third chapter describes about the various source of data related with study and various tools and techniques employed for presenting the data. The fourth chapter analyses the data related with study and presents the finding of the study and also comments briefly on them. And finally, in the fifth chapter of the study, on the basis of the results from data analysis, the researcher concluded about the

performance of the concerned organization in terms of credit management. It also gives important suggestions to the concerned organization for better improvement.

CHAPTER II
REVIEW OF LITERATURE

2.1 Conceptual Framework

Risk is inherent in all aspects of a commercial operation: however for bank and financial institutions, credit risk is essential factor that needs to be managed. Credit risk is the possibility that a borrower or counter party will fail to meet its obligation in accordance with agreed terms. Credit risk, therefore, arises from the bank's dealings with or lending to corporation, individuals, and other banks or financial institutions.

Credit risk management needs to be a robust process that enables banks to proactively manage loan portfolios in order to minimize looses and earn an acceptable level of return for shareholders. Central to this is comprehensive IT system, which should have the ability to capture all key customer data, risk management and tractions information including trade & Forex. Given the fast changing, dynamic global economy and the increasing pressure of globalization, liberalization, consolidation and intermediation, it is essential that banks have robust credit risk management policies and procedures that are sensitive and responsive to these changes. Sound credit management is prerequisite for a financial institution's stability and continuing profitability, while deteriorating credit quality is the most frequent cause of poor financial performance and condition. The prudent

management of credit risk can minimize operational risk while securing reasonable returns.

The board and management should set goals or targets for their loan portfolio mix, as part of their annual planning process. The loan portfolio should be monitored on an ongoing basis, to determine if performance meets the board's expectations, and level of risk remains within acceptable limits.

Standardize lending procedures should be adopted to reduce risk of transactional error, and ensure compliance with regulatory requirements and board policy. Approval and disbursements, documentation lending staff and loan security are just some of the procedures for preventing credit risk.

The purpose of this study is to provide directional guidelines to the banking sector that will improve the risk management culture, establish minimum standards for segregation of duties and responsibilities and assist in the ongoing improvement of the banking sector in Nepal. Credit risk management is of utmost importance to Bank's and as such, policies and procedures should be endorsed and strictly enforced by the MD/CEO and the board of the Bank.

2.1.1 Some Important Terminologies

Risk

Risk is defined the variability of the returns of period. It is also defined as the possibility of meeting danger or suffering harm or loss. Risk in terms of investment means unexpected and unwanted outcomes which are harmful for the business. In every investment there is always equal chance of loss and gain. Therefore, risk is a chance if suffering a loss. Risk can also be defined in Webster's Dictionary as "a hazards; a peril; exposure to loss or injury." Thus for most, risk refers to the chance that some unfavorable event will occur. Risk occurs of a particular activity or event, so not sure what will occur in the future. Consequently risk results from the facts that an action such as investing can produce more than one outcome in the future.

Risk can define as the chance of receiving an actual return other than expected, which simply means there is variability in the returns or outcomes from investment

Measuring Risk in Banking

Risk to a banker means the perceived uncertainty connected with some event. For example, will the customer renew his or her loan? Will deposits grow next months? Will the bank's stock price rise and its earnings increase? Are interest rates going to rise or fall next week and will the bank lose income or value if they do?

Bankers may be most interested in achieving high stock value and high profitability, but none can fail to pay attention to the risks they are accepting as well. A volatile economy and recent problems with loans have led bankers in recent years to focus increased attention on how banking risk can be measured and keep under control. Bankers are concerned with six main types of risk.

1. Credit risk
2. Liquidity risk
3. Market risk
4. Interest rate risk
5. Earning risk
6. Solvency risk

1. Credit risk

The probability that some of banks assets, especially its loans will decline in value and perhaps become worthless is known as credit risk. Because banks hold little owners capital relative to the aggregate value of their assets. Only a relatively small percentage of total loans need to turn bad to push any bank to the brink of failure. It means the danger of default by a borrower to whom a bank has extended credit.

2. Liquidity risk

Bankers are also concerned about the danger the danger of not having sufficient cash and borrowing capacity to meet deposit withdrawals, loan demand and other cash needs. Liquidity risk means the danger of having insufficient cash to meet a bank's obligation when due. A bank may be forced to borrow emergency funds at excessive cost to cover its immediate cash needs reducing its earnings.

3. Market risk

In market oriented economies, where most of the world's banks offer their services today, the market values of bank assets, liabilities and net worth are constantly in a state of influx, creating market risk changes in market interest rates and currency prices. Shifting public demands for bank services relative to the services offered by non bank firms.

4. Interest rate risk

Movements in market interest rates can also gave patent effect on a banks margin of revenues over costs. If the bank has an excess of flexible- rate assets over flexible rate liabilities, falling interest rates will erode the bank's profit margin in the case asset revenues will drop faster than borrowing costs. The impact of changing inters rates on a bank's margin of profit is usually called interest rate risk.

5. Earnings risk

The risk to the bank's bottom line its net income after all expenses are covered is known as earning risk. Earnings may decline unexpectedly due to factors inside the bank or due to external factors. Such as changes in economic conditions or in laws and regulations.

6. Solvency (or Default) risk

Bankers must be directly concerned about risks to their institutions long run survival, usually called solvency risk. If the bank takes on an excessive number of bad loans or if a large portion of its security portfolio declines in market value.

2.1.2 An Overview on Credit Risk

Credit risk is the possibility that the actual return on an investment or loan extended will deviate from that, which was expected (Conford, 2000). Coyle (2000) defines credit risk as losses from the refusal or inability of credit customers to pay what is owed in full and on time. The main sources of credit risk include, limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending, suasive licensing of banks, poor loan underwriting, reckless lending, poor credit assessment., no non-executive directors, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank. To minimize these risks, it is necessary for the financial system to have; well capitalized banks, service to a wide range of customers, sharing of information about borrowers, stabilization of interest rates, reduction in non-performing loans, increased bank deposits and increased credit extended to borrowers.

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 CRM is to maximize the bank risk adjusted rate of return by maintaining the CRM within acceptable parameters. For most banks, loan is the largest and most oblivious 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 counterpart 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 regard 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 affect on national economy in some extent because if the bank provides credit to retailed, it will make the customer status. Similarly, it provides

cash to trade and industry too. The government will get tax from them and held 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 is commercial banking. Thus effective management of credit should seriously be considered. Management is the system which helps to complete the test 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.

2.1.3 Credit Risk Management

Credit risk management is defined as identification, measurement, monitoring and control of risk arising from the possibility of default in loan repayments (Early, 1996; Coyle, 2000). Credit extended to borrowers may be at the risk of default such that whereas banks extend credit on the understanding that borrowers will repay their loans, some borrowers usually default and as a result, banks income decrease due to the need to provision for the loans. Where commercial banks do not have an indication of what proportion of their borrowers will default, earnings will vary thus exposing the banks to an additional risk of variability of their profits. Every financial institution bears a degree of risk when the institution lends to business and consumers and hence experiences some loan losses when certain borrowers fail to repay their loans as agreed. Principally, the credit risk of a bank is the possibility of loss arising from non-repayment of interest and the principle, or both, or non-realization of securities on the loans.

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, neighbours 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 analysed whether the borrower lives on salary/wages or any forms of income sources. Whether the borrower has extra income source other than usual based which should be used to repay the scheduled instalments 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 unfavourable economic conditions beyond their control. Repayment depends not only upon character, capacity and collateral but those factors over which the borrower exercise little or no 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 1.1

Guidelines of Assessing Risk

Applicant character	**Credit risk**
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
Character + No character +No capacity	Very high
Character + No character +No capital	Fraudulent

2.1.4 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 and historical loan loss experience. In practise, 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 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.

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

2.1.5 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 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'.

The risk management framework rests on three pillars, 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 takeover 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.

2.1.6 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 analysing and managing the credit risk. Generally the following factors are to be considered to make effective credit risk management. It is also called the factors of credit policy. It helps to get effective credit worthiness.

- **Industry environment**

It determines the nature of the industry structure its attractiveness and the company's position within the industry, structural weakness of a company which is disadvantaged, theatres 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 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 Directives of NRB on Credit Aspect

Commercial banks are heavily regulated than its non-bank competitors in the financial service industry. They are subjected to follow the updated regulations issued by the regulation authority N.R.B is the regulation 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 a 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 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 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 Related Studies

2.3.1 Review of Journals and Articles

Rana (2001) alerts commercial banks of the directives issued by Nepal Rastra Bank on 2002. The article gives bird's eye view of major changes made in the new directive and suggests measures to be taken by commercial bank to comply with the new directives. Mr Rana has highlighted the following points in his article:

- Capital adequacy ratio for commercial bank prescribed by Nepal Rastra Bank is even higher than the requirement in India.
- Classification of loans and advances into four category instead of six categories prescribed earlier.
- The newly prescribed change in income recognition system will require most of the banks to either upgrade or change their banking software.
- Banks will find it very difficult to maintain records of all persons, who are included in the definition of family relative.

In order to comply with the new NRB directives, he has suggested following measures:

- Upgrade/change the banking software, which facilitates generating numerous reports required by Nepal Rastra Bank.
- Foresee capital adequacy position for a number of years ahead and initiate measures for increasing the capital if required.
- Review and revise overall credit policies to address new directives governing loan classification and loan loss provisioning.
- Strengthen bank's monitoring and follow-up department. Time has come to inculcate financial discipline to the customers. A number of interaction programs should be

organized with credit customers so that NRB's new directives could be explained to them.

- Updated their record with Credit Information Bureau (CIB). Also Banks should timely submit required return to CIB for its effective functioning.

Vodova (2003), in her article, "Credit Risk as a Banking Crises" has stated that the enormous demand for credits needed to privatization has been satisfied under the conditions of insufficiently prepared legislative and under the lack of needed knowledge and experiences with credit risk management and assessing of creditworthiness of borrowers. The situation was complicated by the macroeconocic instability and relatively high level of interest rates, which deteriorates the problem of adverse selection, and by the fact that the state ownership of some worsened the moral hazard of the banks management.

Winner, Navaraj, Trivelli & Tarazona (2007), in their article, "*Managing Credit Risk in Rural Financial in Latin America*", have stated that credit risk management in Latin America rural financial institutions is improving and evolving, but much still needs to be done. Many of the institutions surveyed demonstrated success as measured by high overall rates of profitability, low delinquency rates in both general and agricultural portfolios, and sustained growth rates in agricultural portfolios over time. Nonetheless, the paucity of institutions active in rural areas and expressed desires for better risk management systems, the relatively small loan sizes, and restricted terms indicate that the situation is less than optimal.

Massive credit expansion in developed countries has been due in large part to the introduction and wide diffusion of risk transfer techniques (insurance, securitization, derivates, etc.) and the wide acceptance of different types of collateral (inventories, accounts receivables, warehouse receipts etc.). In Latin America, the most common risk transfer instruments available are publicly financial loan guarantee funds; however, they are used only modestly (25 percent). Historically, guarantee funds have been plagued with problems of high costs, limited additionality, and moral hazard. Recent work has shown that the most successful guarantee funds in Latin America (in terms of additional) are those in Chile, and that much of the positive impact is due to adequate regulation. In order to introduce some of the other risk

transfer instruments more commonly found in developed financial markets, investments will be needed to reform and strengthen the insurance industry, capital markets, credit bureaus, commercial codes, secured transaction frameworks, and information disclosure rules.

Adhikari, Maha Prasad (2008) (Director, Bank Supervision Department, NRB) wrote an article on *Non-Performing Loan & its Management* which was published in NRB News letter Volume 4 (Publication of Central Bank of Nepal). In the article he describes the reasons of NPL and its resolution as under.

Reason behind High Level of NPA**:** The process of credit risk management starts from the formation of appropriate credit policy/guidelines/rules and also comprises of credit appraisal, mitigation of the credit, credit documentation, processing, credit control, monitoring, follow-ups, counselling, board oversight and timely recovery actions. When any of these steps in compromised, the loan may convert into NPL. Lack of guiding rules at the beginning, Inadequate project appraisal, Inadequate equity contribution, Inadequate credit risk mitigates especially for peculiar new projects, “Consortium financing” without the spirit, Business failure due to conflict and some other reasons, Lack of internal control on credit operation, Poor credit monitoring, Lack of special purpose vehicles to reduce NPA, Lack of timely recovery action, Traditional supervision in the past and Insider lending and other poor governance issue are the important factors that contributed for creating NPA and retention of high level of NPA for long period of time.

NPL Resolution: once the loan is converted in to the NPL, it must be resolved on time with appropriate NPL management strategy and methodology. The following are some of the NPL management mechanism:

- Creation of special unit for NPA management to manage the NPA by specialized people concentrating on nonperforming loans.
- Formulation of special recovery policies for short period of time to resolve the accumulated NPA.

- Formation of National Credit Restructuring Cell to restructure the loan of those borrowers with national interest, which are feasible in future but not able to serve the loan and run the business due to debt trap.
- Formation of Special purpose Vehicles (SPVs) for a certain period of time and reduce the level of NPL substantially. It can be done by way of formation of specific Assets Management Company (AMC) for a bank or national level AMC.
- Timely recovery actions & timely write-offs of dead accounts. Un-due time for the recovery actions to the borrower further complicates the accounts. Once the account get defaulted starts recovery action immediately. It must be rule based. Similarly write-off should be done regularly. Once the account of a borrower gets dead, it's a business loss. It has to provide for and removed from the assets without bailing out the defaulted borrower.

Takang (2008), Felix Achou (University of Skovde, School of Technology and Society) Ntui, Claudine Tenguh (University of Skovde, School of Technology and Society) wrote an article on *Bank Performance and Credit Risk Management*. The axle of his article is to have a clearer picture of how banks manage their credit risk. In this light, the study in its first section gives a background to the study and second part is a detailed literature review on banking and credit risk management tools and assessment models. The third part of this study is on hypothesis testing and use is made of a simple regression model. This leads us to conclude in the last section that banks with good credit risk management policies have a lower loan default rate and relatively higher.

Fatemi & Fooladi (2009), in their article, "*Credit Risk Management: A survey of practices*", have state that credit risk arises from uncertainty in a give counterparty's ability to meet its obligations. The increasing variety in the types of counterparties (from individuals to sovereign governments) and the even- expanding variety in the forms of obligations (from auto loan to complex derivatives transactions) has meant that risk management has jumped to the forefront of risk management activities carried out by firm in the financial services industry.

In a survey of the largest financial institution based in the US, the study find that identifying counterparty default risk is the single most-important purpose served by the credit risk models utilized. Close to half of the responding institutions utilize models that are also capable of dealing with counterparty migration risk. Surprisingly, only a minority of banks currently utilize either a proprietary or a vendor- marketed model for the management of their credit risk. Interestingly, those that utilize their own in-house model also utilize a vendor-marketed model for the management of their credit risk. Interestingly, those that utilize their own in-house model also utilize a vendor-marketed model. Not surprisingly, such models are more widely used for the management of non-traded credit loan portfolios than they are for the management of traded bonds.

Gillespie, Hackwood & Mihos (2010), in their article, "*Management Credit Risk for Global Commodity Producers*," have stated that commodity producers require robust systems, processes and a cross functional involvement in credit management to minimize credit risk at the customer and portfolio level. Despite the recent financial crisis, many exporting producers still lack the basic system and processes required to actively manage credit risk. Manage credit risk has become increasing difficult for commodity producers due to increased default risk from buyers, no customer to arrange payment guarantees, widening variation in sovereign and sector risk profile and poor credit risk culture within the marketing and sales groups.

However, many leading commodity producers have implemented robust controls and tools to manage the credit risk process. This study has sought to highlight five areas of focus to improve the management of credit risk; a) producers should develop an internal credit rating system for customers, b) internal credit limits should be used as the main control point in the export process, c) close relationship should be maintained with credit insurers and banks, d) a standard credit risk process and set of tools should be used by all marketing and sales personnel, and e) a portfolio view of credit risk should be reviewed regularly by a senior executive team.

Ganzi & Huppman (2010) in their article, "*Credit Risk Management: How the Banking Industry in Integrating Environmental & social Issues: Is Being Financially Responsible?*" have stated that credit risk management is undergoing an important

transition. Banks are no longer treating environmental and other social issues as peripheral to their business concerns; they no longer focus simply on recycling paper or using energy- efficient light bulbs. Based on meeting with 80 officers at 38 leading financial institutions, a study financially supported by Environmental Resources Management (ERM), indicates that the majority of the world's large banks agree that integrating environmental and broader social issue into their core credit risk management process in essential to management credit risk in the 21st century. Leading banks such as Citigroup, ABN AMRO, Westpac, Barclays, to name a few, now view these "non-traditional" issues as real credit risk variables that may potentially affect their client's bottom lines as well as their own.

In summary, it now appears that a growing number of leading global credit providers are in varying stages of consideration and/ or implementation of industry best practices for addressing environmental issue and, in many cases, social issues. These action are being taken by the credit providers, not just because it is good for their image or because they see it as their moral obligation, but because they believe it makes sound bottom-line economic sense for their long-term credit portfolio quality (delinquency, write-offs and recovery) and overall financial performance. The two big unknowns appear to be: (1) will these financial institutions (and, in particular, their Boards and Executive Management terms) make the needed financial commitment to establish and implement effective internal and external (i.e., at client level) programs and processes, and 2) if they make the commitment, will it lead to be tipping point where all global credit providers will follow suit (levelling of the playing field).

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:

Aryal (2001) has submitted a thesis named, "*An evaluation of credit investment and recovery of financial public enterprise in Nepal*", a case study of ADBN. In this 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. ADBN is one of the major financial institutions supporting for the people for the different purpose like agro, industry, tea, coffee, livestock farming etc. ADBN 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, ADBN has increased its effort to collect its credit. It is said that those people who really need to do sufficient amount of credit from ADBN. So, Mr. Aryal chose this bank to analyse the credit disbursement and recovery pattern of ADBN

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.

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 behaviour 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.

Pandey (2002) has carried out in his study *"Credit Risk Management of Himalayan Bank Limited with reference to other Commercial Banks*" with the objective to find out the impact of changes in NRB directives on the performance of the commercial

banks and to find out whether the directives were implemented or not. According to his findings the directives if not properly addressed have potential to wreck the financial system of the country? The directives in themselves are not that important unless properly implemented. The implementation part depends upon the commercial banks. In case commercial banks are making such huge profit with full compliance of NRB directives, then the commercial banks would deserve votes of praise because they would then be instrumental in the economic development of the country. All the changes in NRB directives made impacts on the bank and the result are the followings:

- Increase in operational procedures of the bank, which increase the operational cost of the bank.
- A short term decreases in profitability, which result to fewer dividends to shareholders and less bonus to the employees.
- Reduction in the loan exposure of the bank, which decreases the interest income but increase the protection of the depositor's money.
- Increase protection to the money of the depositors through increased capital adequacy ratios and more stringent loan related documents.
- Increase demand from shareholder's contribution in the bank by foregoing dividends for loan loss provisions and various other reserves to increase core capital.

All the aforesaid result lead to one direction the bank will be financially healthy and stronger in the future. HBL will be able to withstand tougher economic situation in the future with adequate capital and provision for losses. The tough time through which the bank is undergoing at present will prevail only for a couple of years but in the long run, it will be strong enough to attract more deposits and expose itself to more risk with capital cushion behind it. The quality of the asset of the banks will become better as banks will be careful before creation credit. Ultimately, the changes in the directives will bring prosperity not only to the shareholders but also the depositors and the employees and the economy of the country as a whole.

Pandey has made his research on the impact on changes in directives. In his study, he has studied only the provision related to loan provisioning and capital adequacy. However, besides Loan Loss Provision and Capital Adequacy, the other factors like concentration risk, sector-wise lending risk can further be discussed. A study on the

organizational structure or management techniques applied for the proper implementation of NRB directives and for management of credit risk can also be made.

Regmi (2003) has submitted a thesis named "*Credit management of commercial banks with reference to Nepal Bangladesh Bank Ltd. And Bank of Kathmandu*". 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 and increasing. So, he conclude that credit it not satisfactory; because of increasing in non-performing credit bank should increase its provision for credit loss; lackness 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 panelise by N.R.B.
- Few customers are unsatisfied with the service charges and interest of credit; therefore he suggested that should decrease service charges and interest charges.

Mirsra (2007), entitled her thesis "*Credit Management of Everest Bank Limited*" illustrate that liquidity position; cash reserve ratio shows the more liquidity position. Cash and bank balance to current assets ratio shows that the bank's ability to meet the daily cash requirement of their customer's deposit. That is why liquidity position of the bank is better.

In the aspect of profitability position, interest expenses ratio shows the more profitable salivation. In addition, total income to total expenses ratio shows that the overall predominance of the bank is satisfactory. Return on loan and advances shows profitable position of EBL. Analysis of assets management ratio, loan advance to total assets ratio shows the better performance but loan and advance to total deposit position is minimum than the averages. Whereas, investment in loan and advances is safe and does not take any risk. That's why, assets management position of the bank shows better performance in the latest year.

After analysing the lending efficiency of the bank, the loan to provision to loan advances indicates the better performance in the latest year. The interest expenses to total deposit ratio shows the improving efficiency of the bank EBL has sufficient liquidity. It shows that the bank has not got investment sectors to utilize their liquid money. This is to recommend that cash and bank balance of EBL is high bank's efficiency should be increased to satisfy the demand of depositors at low level of cash and bank balance does not provide returns to the bank. Therefore, some percentage of the cash and bank balance should be invested in profitable sectors. Bank should open up its remote areas with the objective to provide the banking services and minimum deposit amount should be reduced. The main objectives of this study are to evaluate the credit management and to examine the impact of deposit in liquidity.

Shrestha, Sumnima (2009) on "*Credit Risk Management of Nabil Bank Limited and Nepal Investment Bank Limited*" has made study about a part of credit risk associated with those banks. The study aims to examine the status of the loan portfolio of the banks, problems and weakness in credit risk management. The study of credit risk management, following major findings have been obtained:

- The overall aspect of liquidity position, Liquidity position of NIBL is comparatively better than NABIL. The mean current ratio of NABIL is 1.89 and NIBL is 1.99 the current ratio of NIBL is higher than NABIL. Cash and bank balance to total deposit ratio of NIBL has higher than NABIL i.e. 10.65%>5.67% which indicates that the bank has higher liquidity of NIBL as compare to NABIL. Cash and bank balance to current assets ratio of NIBL is higher than NABIL i.e. 10.99%>8.20%.

    - Investment on government securities to current assets of NABIL has higher than NIBL i.e. 30.95%>13.76%. It shows NABIL has invested more fund in government securities. So, Liquidity position of NIBL is comparatively better than NABIL.

    - An asset management aspect of NABIL is better than NIBL, which is justified following ratio. The loan & advances to total deposit ratio of NABIL is lower than NIBL 68.11 %< 71.8. The total investment to total deposit of NABIL is higher NIBL i.e. 34.40%>27.45%. It shows the NABIL is mobilizing its funds on investment in various securities efficiently. The loan & advances to total assets ratio of NIBL is greater than NABIL.

    - The profitability position of NABIL and NIBL are Return on loan & advances ratio of NABIL is higher than that of NIBL i.e. 4.64%>2.64%. Return on total assets ratio of NABIL is slightly higher than NIBL i.e. 2.61%>1.79%. However, NABIL seems successful in managing and utilizing the available assets in order to generate revenue. Return on equity of NABIL is higher than NIBL, which shows that NABIL is more successful to earn high profit through the efficient utilization of its equity capital. Total interest earned to total assets ratio of NABIL is higher than NIBL, which shows that NABIL is more successful to earn high profit through the efficient utilization of its equity capital. Total interest earned to total assets ratio of NABIL is relatively little higher than that of NIBL i.e. 5.85%>5.52%. Total interest earned to total operating income ratio of NABIL is lower than NIBL. It means the greater portion of total assets ratio of NIBL is higher than NABIL i.e. 2.38%>1.76%. it shows NIBL has high interest expenditure to total assets. It supports NIBL to

increase to interest paid to operating income. Overall findings of profitability ratios show that NABIL has utilized its fund in risk free asset and NIBL has earned profit by interest mobilization.

- Average credit risk ratio of NIBL is higher than NABIL i.e. 2.15>1.58. These Ratios indicate the more efficient operating of credit management of both banks according to NRB directives because according to NRB directives NPL ratio must be less than 5%. The liquidity risk of the bank defines its liquidity need for deposit. The average mean ratio of NIBL is greater than that of NABIL. Asset Risk Ratio analysed the Asset Risk Ratio of NABIL and NIBL. The analysis shows that both banks have the Asset Risk Ratio in fluctuating trend. The mean ratio of NIBL is higher than that of NABIL (i.e. 87.10 %< 85.98). So its reveals that both the banks have high interest rate risk which is not desirable for any commercial bank.

- Coefficient of correlation between total deposit and loan & advances of NABIL and NIBL have highly positive correlated. The correlation between total deposit and loan &advances are 0.989 and 0.997. The relationships of both banks are significant. There is positive correlation between total deposit and total investment of NABIL and NIBL. NABIL has little low degree of positive co-relation i.e. 0.926 than NIBL i.e. 0.928. Both banks correlation coefficient is significant because the correlation coefficient is more than 6 PE r. Correlation between Loan and advance and net profit of NABIL is 0.955 and NIBL is 0.989. The relationship between Loan and advance and net profit of NABIL has significant and NIBL has insignificant due to more and less than 6 P.Er. The degree of relationship between total investment and net profit of NIBL is high than NABIL. The relationship between Loan and advance and net profit of NABIL and NIBL shows high positive correlation i.e. 0.996. Correlation coefficient is also significant. Similarly, the correlation of total investment between NABIL and NIBL is positive correlation. It implies that the total investment of both banks move in the same direction but less proportionately. The degree of relationship of loan & advances between the NABIL and NIBL is high because correlation coefficient between loan & advances of these two

banks is 0.997. the correlation of net profit between NABIL and NIBL is positive i.e. 0.996. It implies that the Net profit of both banks move in the same direction. The relationship between two banks is significant. From the above analysis both bank has positively correlated.

- Time Series Analysis revealed following analysis. NABIL and NIBL seem to be higher than that of NABIL Here NIBL has better position in collection deposit than NABIL. The trend line of loan & advances for both banks is upward slopping. It refers that both the banks are increasing in disbursement of loan & advances. The total investment trend line of NABIL and NIBL is upward slopping where as NABIL has little high upward slopping of total investment trend line than NIBL. The trend line of Net profit for NABIL and NIBL is upward slopping, But NIBL has little high than NABIL. Trend of both banks has increasing trend.

Simkhada (2010), in her thesis, "*Credit Policy of Commercial Banks in Nepal*", has the objective to provide the credit practices in NIBL and SBI bank.

His Main objectives:

- To examine the liquidity and assets management of NIBL and SBI
- To evaluate the investment policy of NIBL and SBI.
- To study the growth ratio of loan and advances.
- To analyse the investment to total deposit and net profit NIBL and SBI.

His Major Findings:

- Both banks current have exceeded the current liabilities therefore the ratio is considered satisfactory. But the cash reserve ratios have fluctuated in high degree.
- NIBL has maintained both current ratio and cash reserve ratio better than that of SBI.

- The assets management ratio shows that deposit utilization of NIBL is less effective than SBI.
- NIBL has invested lower amount of government securities and share and debenture than that of NIBL.
- The growth ratio of total deposit, loan and advance, total investment and net profit of NIBL are less than that of SBI.

Panday, Sharmila (2012) on "*Core Credit Risk Management Practices in Commercial Bank of Nepal*", special reference to Bank of Kathmandu Ltd. & Nepal Industrial and Commercial Bank Ltd. has made study about a part of credit risk associated with those banks. The study aims to examine the status of the loan portfolio of the banks, problems and weakness in credit risk management. The study of credit risk management, following major findings have been obtained:

- Ubiquitously credit has been the major use of total fund of both the banks. In average BOK bank has mobilized 67.01% of its total assets and NIC bank has mobilized 71.89% of its total assets in granting loan.
- The preponderance of non performing credit in total credit amount is in decreasing trend in both the banks. The non performing credit has occupied 2.67% of the total credit in BOK and 1.85% of the total credit in NIC in average.
- In average, the substandard credit, doubtful credit and credit loss has covered 28.38%, 13.53% and 58.09% of the total credit respectively in BOK, while 8.58%, 14.15% and 77.27% of the total credit has been occupied by substandard credit, doubtful credit and credit loss respectively in NIC.
- The credit risk in BOK bank is higher than in NIC, as a result the BOK has to keep credit loss provision higher then NIC in respect to total credit. The average credit loss provision to total credit of BOK is 2.94% and NIC is 2.62%.
- NIC bank has regularly written of the credit and interest suspense, while such even irregular in BOK. The credit and interest suspense written off by BOK is 1.00% of the credit and that of NIC is 0.51% of total credit in average.

- BOK has been more dependent in single borrower than NIC. The average maximum exposure to single borrower to total credit of BOK is 2.81% and that of NIC is 2.33%.
- Though the relationship between no performing credit and net profit is negative, the relationship is statically insignificant. Similarly, the relationship between credit written off and maximum exposure to single borrower is also insignificant in both the banks. However, the relationship between net profit and exposure to single borrower significant in NIC and insignificant in BOK.
- The pace of decrease in doubtful credit will be highest than others in the forthcoming fiscal years in BOK, while such pace of decrease will be highest in credit loss of NIC.
- The majority of respondents, 40% have stated that the bank should consider most on the amount to be disbursed to single borrower while making effective credit guideline. Similarly, 33% of the respondents have said that perfect covenant between the banks and the borrower is the best method for alleviating the credit risk. Likewise analysing the capacity of the borrower is important factor for credit assessment and risk grading.
- 43% of the respondents have suggested credit scoring system as the effective approach for credit management and risk reduction. Also, 40% of the respondents have inferred that ineffectiveness in credit assessment and evaluation invites major credit risk. Further, 43% of the respondents have stated that the bank would be more interested in curing credit after analysing sort of credit.
- 65% of the respondents have opined that the bank is not efficient in credit management further, 44% of the respondents have stated that the credit granted for household purpose carries highest risk. In additional, 42% of the respondents have affirmed that the non performing credit moderately affects the banking performance.
- 44% of the respondents have stated that monitoring of the borrower activities is the best method for preventing the nonperforming credit. Also, 38% of the respondents have said that the bank should make follow up within one month after the due date of recovery.

- Similarly, 38% of the respondents have opined that the interest rate on credit is the main influencing factor in disbursing the credit. Also, 38% of the respondents have said that the bank should sell collateral pledged by the borrower immediately as a remedy for recovering credit. And finally 40% of the respondents have suggested that the bank should make careful evaluation of the credit proposal for having effective credit management rather than performing other post credit activities.

2.4 Concluding Remarks

Earlier works conducted by the previous researchers are very useful and appreciated by personnel in various relate 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 study, 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 III

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.

A Systematic methodology is required to pick an actual result of any study Research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objective in views. “Research methodology is a way systematically solves 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 without 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. It 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

commercial banks. So, in this study, the analytical and descriptive research design have been used.

3.3 Population and Sample

During the past decade, central bank has licensed more than two dozen of commercial banks to get established. So, all the commercial banks operating in Nepal are considered as the population. The study has selected only three commercial banks as sample.

Similarly, financial statements of three banks for period have been taken as sample for the same purpose.

Table 3.1

Sample Banks

S.N.	Banks Chosen as Sample	Study Covered
1.	Himalayan Bank Ltd	2005 to 2012
2.	Everest Bank Ltd	2005 to 2012
3.	Standard Chartered Bank	2005 to 2012

3.4 Types and Source 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 is character. Secondary data on another 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 NRB 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 form 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 analyse 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.”

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 in 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 is no common standard of comparison; it is only one method of analysis. But despite that its significance is much accepted in analysing 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 ratios 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

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 fund for the profit generate purpose on the credit and advances or not. Generally a high ratio reflects higher efficiency outsider funds and vice-versa. The ratio can be calculated by using the following formula.

Cash and Advance to Deposit Ratio = $\frac{\boldsymbol{Credit\ and\ Advance}}{\boldsymbol{Total\ Deposit}}$

2. Credits and Advance to Fixed Deposit Ratio

Fixed deposits are the long-team interest bearing obligations. Credit and advances are the major sources of the 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. A high ratio indicates idle cash balance meaning is not being utilized properly.
To calculate the ratio, the following formula should be used

Credit and advance to Fixed Deposit Ratio = $\frac{\boldsymbol{Credit\ and\ advances}}{\boldsymbol{Fixed\ Deposit}}$

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.

Credit and Advance to Total Assets Ratio = $\frac{\boldsymbol{Credit\ and\ Advance}}{\boldsymbol{Total\ Assets}}$

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.

Performing Assets to Total Assets Ratio = $\frac{\boldsymbol{Performing\ Assets}}{\boldsymbol{Total\ Assets}}$

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.

$$\text{Return on Total Assets Ratio} = \frac{\boldsymbol{Net\ Profit\ after\ tax}}{\boldsymbol{Total\ Assets}}$$

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.

$$\text{Return on Equity} = \frac{\boldsymbol{Net\ Profit\ After\ Tax}}{\boldsymbol{Share\ holder's\ equity}}$$

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 formulate.

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

Where,
E (ROA) = expected return on assets.
C.A.P. = inverse of equity multiplier.
S.D. (ROA) = standard deviation of ROA

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 i.e. $[0.5(R.I)^2]$. 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 ROA 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.

Profitability of Book Value Insolvency. $= [0.5(R.I)^2]$
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 simplest of ascertaining the correlation between two variables. It is not influences by the size of the extreme items. Karl Person coefficient of correlation is usually denoted by 'r'.

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

Where,

n= no. of observation of X and Y.

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

∑X= sum of the observations in series X.

∑Y=sum of the observations in series Y.

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

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

4. Probable Error

Probable error of the 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.

$$P.E = \frac{[0.6745(1-r2)]}{\sqrt{n}}$$

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).

Null Hypothesis

A statistical hypothesis or assumption made about the population parameter to testing its validity for the purpose of possible acceptance is called null hypothesis. Null hypothesis is also called hypothesis of no difference. we should adopt neutral or null altitude regarding the outcome of the sample while setting up the null hypothesis. the null hypothesis is usually denoted by H0.

Alternative Hypothesis

A complementary hypothesis to the null hypothesis is called an alternative hypothesis. In other words, a hypothesis which is set up against the null hypothesis is called an alternative hypothesis. An alternative hypothesis is also called hypothesis of difference. It is usually denoted by H1.

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.

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

Where,

Sy indicates the standard error of the y value.

The Sy value results are again put in calculation the standard error of estimate of the slope of the line. That is:

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

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

$$T_b = \frac{\boldsymbol{b-0}}{\mathrm{Sb}}$$

Where,

T_b indicates the calculated T-value.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with the presentation and analysis of relevant data of banking industry in Nepal in order to fulfilled the objectives of the study. To obtain best result, the data have been analysed according to the research methodology as mentioned in third chapter.

The purpose of this chapter is too introduced 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. In this chapter, data collected from secondary sources are presented and analysed by using financial and statistical tools and its findings have been discussed in this chapter.

4.1 Presentation and Analysis of Secondary Data

4.1.1. Company Wise Analysis

As per directives issued by NRB, 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 4.1

Loan and Loss Provision of HBL

(Figure in Million Rs)

Fiscal Year	Performing Loan	Non Performing Loan	Provision
2004/05	11772.16	1147.46	967.76
2005/06	14721.22	1040.76	1119.42
2006/07	17152.19	641.62	795.72
2007/08	19702.38	477.22	682.09
2008/09	24968.21	551.30	726.36
2009/10	28098.92	1024.83	1143.12
2010/11	31576.52	1391.74	1401.29
2011/12	35217.30	751.16	1003.03

Sources: Annual report of HBL

Figure 4.1

Loan and Loss Provision of HBL

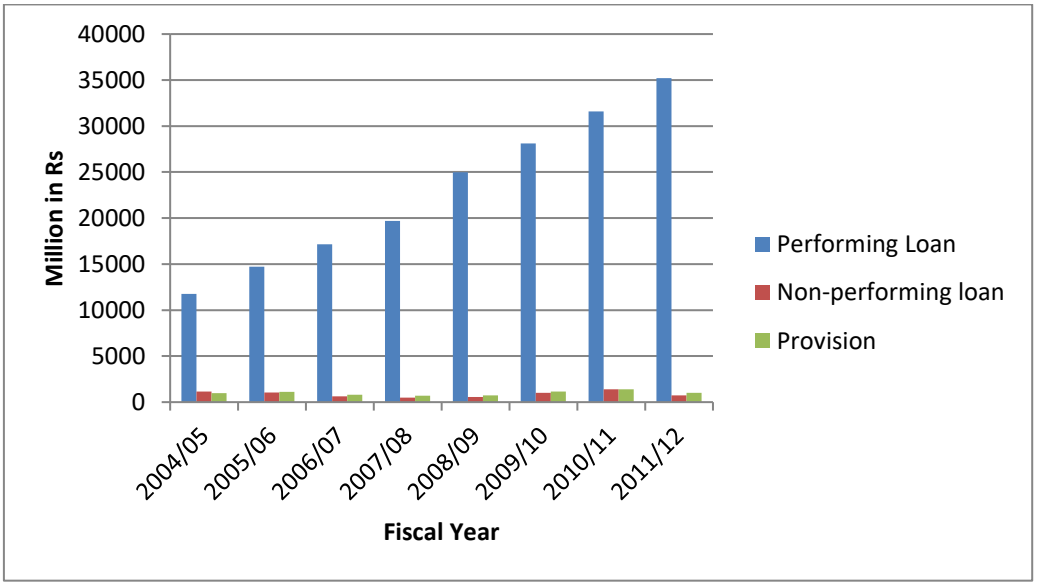

Figure 4.1 shows that the loan loss provision of HBL, its performing loan is in increasing trend and difference between the performing and non-performing loan is very high which indicates that bank is able to maintain good ratio of performing loan and the percentage of loan loss provision is also as per N.R.B. rules, and its credit risk position is also maintained.

Table 4.2

Return Analysis of HBL

Fiscal Year	R.O.A	R.O.E	P.L.L
2004/05	1.11	19.99	2.48
2005/06	1.55	25.90	3.12
2006/07	1.47	22.91	2.98
2007/08	1.76	25.30	3.26
2008/09	1.91	24.13	3.04
2009/10	1.19	14.79	1.82
2010/11	1.91	22.35	2.83
2011/12	1.76	20.69	2.74

Sources: Annual report of HBL

Figure 4.2

Return Analysis of HBL

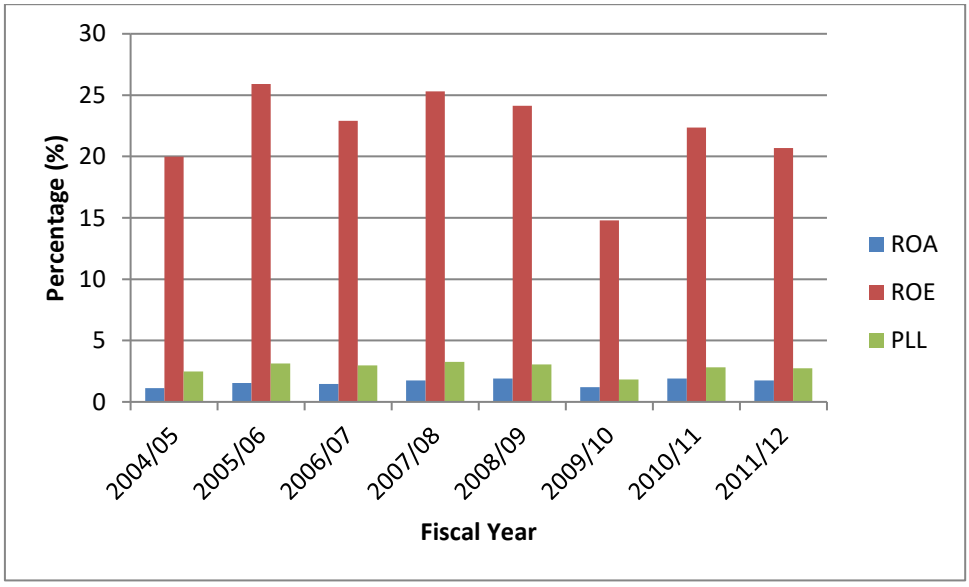

Figure 4.2 reveals that the trend of return on assets and equity is little fluctuated. In fiscal year 2005/06, both ROA and ROE are highly in increasing way. There is no negative effect of loan loss provision on ROA and ROE which proved that there is no negative impact of PLL on ROA and ROE.

Table 4.3

Loan and Loss Provision of EBL

(Figure in Million Rs)

Fiscal Year	Performing Loan	Non Performing Loan	Provision
2004/05	7775.51	124.5	281.41
2005/06	10007.01	129.23	334.95
2006/07	13969.50	113.18	418.60
2007/08	18709.12	127.31	497.35
2008/09	24351.57	117.98	584.88
2009/10	28112.69	125.56	600.04
2010/11	31553.32	108.51	604.15
2011/12	36309.33	307.49	705.85

Sources: Annual report of EBL

Figure 4.3

Loan and Loss Provision of EBL

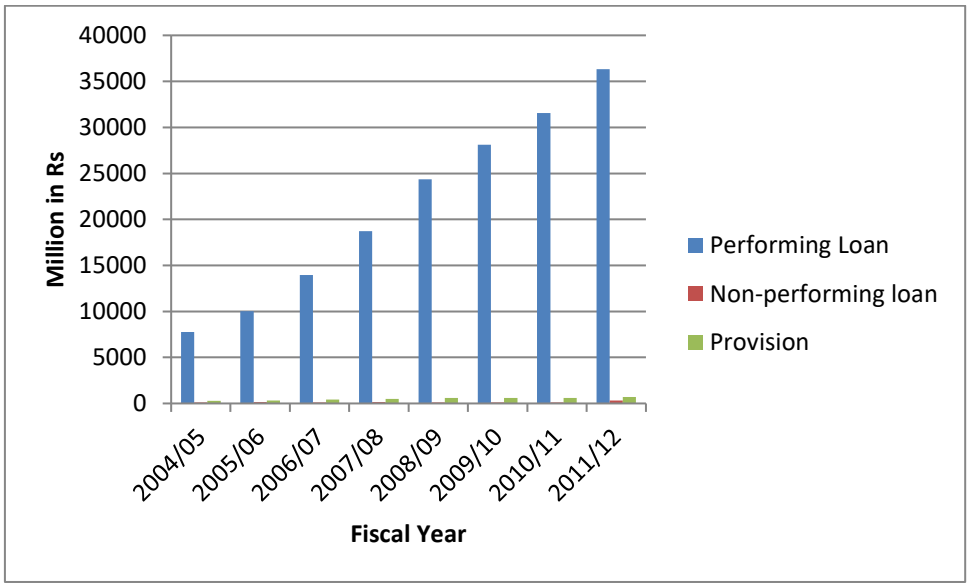

Figure 4.3 shows loan and loss provision of EBL, its performing loan is in increasing trend and and difference between the performing and non-performing loan is very high which indicates that bank is able to maintain good ratio of performing loan. Bank's loan position shows that it is able to manage the credit risk position and it is

also following the NRB regulation which is shown by the amount of loan loss provision.

Table 4.4

Return Analysis of EBL

Fiscal Year	R.O.A	R.O.E	P.L.L
2004/05	1.4	17.11	2.16
2005/06	1.48	19.82	2.34
2006/07	1.38	19.57	2.10
2007/08	1.65	21.37	2.40
2008/09	1.73	24.38	2.61
2009/10	2.09	26.25	2.95
2010/11	2.10	26.37	2.94
2011/12	2.11	22.84	2.98

Sources: Annual report of EBL

Figure 4.4

Return Analysis of EBL

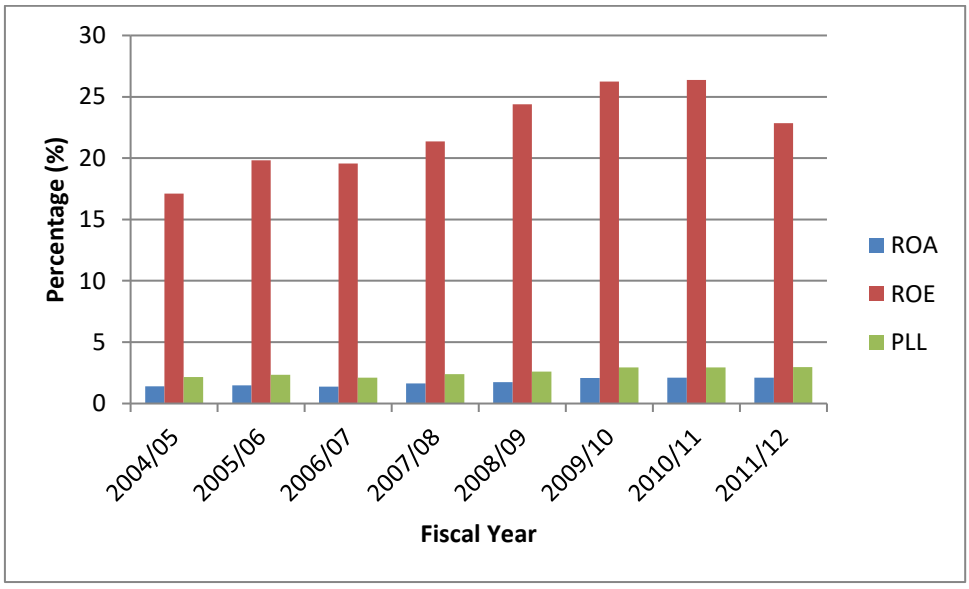

Figure 4.4 shows return on analysis and equity of EBL, the trend of return on assets and return on equity is increasing trend from 2004/05 to 2010/11 but its slightly decrease in 2011/12 but there is no negative effect of loan loss provision on return on equity and return on assets which proves that there is no negative impact of PLL on ROA and ROE.

Table 4.5

Loan and Loss Provision of SCBNL

(Figure in Million Rs)

Fiscal Year	Performing Loan	Non Performing Loan	Provision
2004/05	7916.8	226.30	277.66
2005/06	8739.48	195.93	270.86
2006/07	10305.61	197.01	287.51
2007/08	13589.87	128.71	245.38
2008/09	13588.71	91.04	200.94
2009/10	16078.44	98.13	219.62
2010/11	18546.67	115.80	235.20
2011/12	19674.02	154.48	252.54

Sources: Annual report of SCBNL

Figure 4.5

Loan and Loss Provision of SCBNL

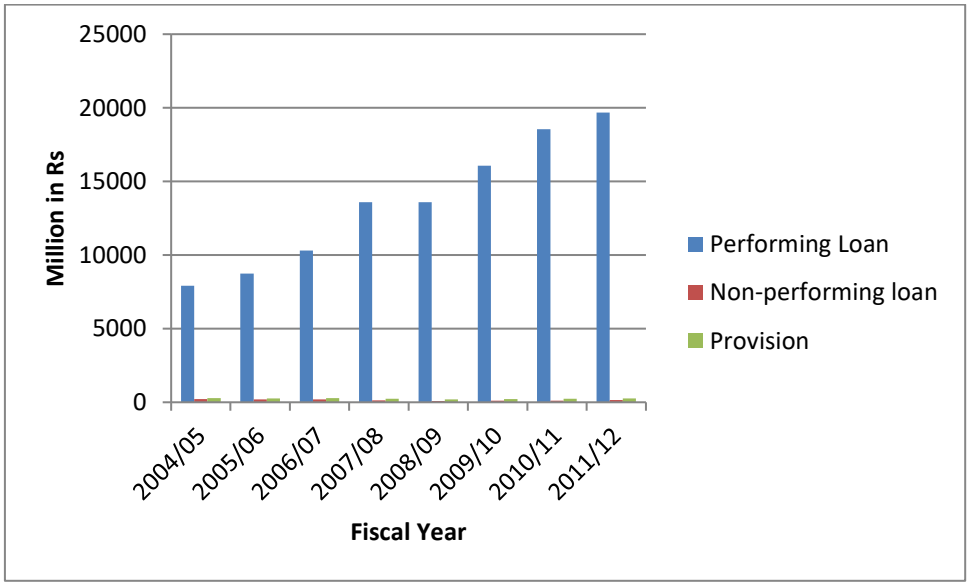

Figure 4.5 shows loan and loss provision of SCBNL, its performing loan is in increasing trend and difference between the performing loan and non performing loan is very high which show that the bank is maintaining good loan position and its credit risk position is maintained.

Table 4.6

Return Analysis of SCBNL

Fiscal Year	R.O.A	R.O.E	P.L.L
2004/05	2.46	33.88	6.85
2005/06	2.56	37.57	7.63
2006/07	2.42	32.68	6.75
2007/08	2.46	32.85	6.24
2008/09	2.56	33.58	7.93
2009/10	2.70	32.22	6.91
2010/11	2.55	30.43	6.41
2011/12	2.80	28.36	6.44

Sources: Annual report of SCBNL

Figure 4.6

Return Analysis of SCBNL

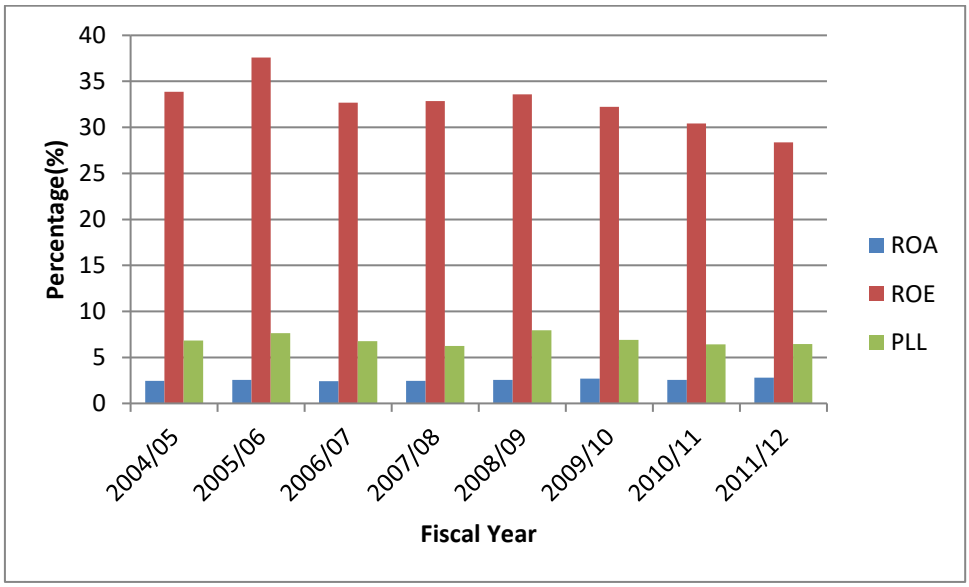

Figure 4.6 shows return analysis of SCBNL, it shows that there is no negative effect of loan loss provision on return on assets and return on equity. Trend of return on equity and assets is stable. It is slightly high in fiscal year 2005/06.

4.2 Financial Statement Analysis

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

Table 4.7

Analysis of Credit and Advances to Total Deposit Ratio

Fiscal Year	HBL	EBL	SCBNL
2004/05	50.07	78.24	43.49
2005/06	59.49	71.01	39.92
2006/07	59.22	77.44	43.78
2007/08	63.37	78.56	46.95
2008/09	73.58	73.43	39.27
2009/10	77.43	76.24	45.98
2010/11	80.57	76.98	49.11
2011/12	75.26	73.22	54.43
Total	538.99	607.55	362.93
Average	67.37	75.94	45.37
Standard deviation	10.12	2.57	4.63
C.V.	0.1502	0.0340	0.1021

Sources: Annex1

Table 4.7 shows that the average ratio of HBL is 67.37%. The lowest ratio is 50.07 and the highest ratio is 80.57% in fiscal year 2004/05 and 2010/11 respectively. Standard deviation and coefficient of variation of HBL are 10.12 and 0.1502% respectively.

The average ratio of credit and advances to total deposits of EBL is 75.94%. Fluctuation in the ratio is high. The lowest and highest ratios are 71.01 and 78.56 % in fiscal year 2005/06 and 2007/08 respectively. Standard deviation and coefficient of variation of the ratios are 2.57 and 0.0340 % respectively.

The average ratio of SCBNL is 45.37%. There is medium level of fluctuation in bank's credit and advances to total deposits. Under the study period the lowest ratio is 39.27 and the highest ratio is 54.43% in fiscal year 2008/09 and 2011/12 respectively. Standard deviation and coefficient of variation of SCBNL are 4.63 and 0.1021 % respectively.

It is clear from the table 4.7 that the combine average ratio is 62.89%. Total deposits are the main source of bank to provide credit and advances and 62.10% 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 4.8

Analysis of Credit and Advances to Total Assets Ratio

Fiscal Year	**HBL**	**EBL**	**SCBNL**
2004/05	46.59	64.75	28.20
2005/06	51.54	64.05	34.68
2006/07	51.85	61.41	36.73
2007/08	54.75	63.75	41.15
2008/09	63.72	66.28	34.14
2009/10	66.40	66.59	39.68
2010/11	68.49	67.17	42.06
2011/12	66.16	65.61	46.97
Total	469.50	523.37	303.62
Average	58.69	65.42	37.95
Standard deviation	7.88	1.75	5.39
C.V.	0.1343	0.0269	0.1420

Sources: Annex2

Table 4.8 shows that HBL has increasing trend on utilization of its assets through credit and advance. The highest ratio is 68.49 and the lowest ratio is 46.59 % in fiscal year 2010/11 and 2004/05 respectively. The average ratio under the study period is 58.69% which shows that the bank has capability to utilize its total assets to gain income. Bank's standard deviation and C.V. as the credit and advances to total

assets ratio are 7.88 and 0.1343% respectively which indicates that the consistency in the utilization of assets in the form of credit and advances by HBL is good.

EBL has mixed trend of the ratios under the study period. The highest ratio is 67.17 % and the lowest ratio is 61.41% in fiscal year 2010/11 and 2006/07 respectively and the fluctuation ratio is also little. The average ratio is 65.42% 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 1.75 and 0.0269% respectively. It shows that the bank has uses its assets at satisfactory level.

SCBNL has increasing trend on utilization of its assets through credit and advances except in fiscal year 2004/05. The highest ratio is in fiscal year 2011/12 i.e. 46.97 % and the lowest is in fiscal year 2004/05 i.e. 28.20%. The average ratio under the study period is 37.95% 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 5.39 and 0.1420% respectively which shows that the consistency in the utilization of assets on the form of credit and advances is good.

The combined average ratio is 54.02%. Standard deviation and coefficient of variation are 5.00 and 0.101 % respectively. It shows that in and average, banks have utilized their total assets as credit and advances around 54%. It will be the good investment for bank if there is not any default situation emerge.

Table 4.9

Analysis of Performing Assets to Total Assets Ratio

Fiscal Year	HBL	EBL	SCBNL
2004/05	43.12	63.73	27.42
2005/06	48.14	63.23	33.92
2006/07	49.98	60.92	36.04
2007/08	53.46	63.32	40.76
2008/09	62.35	65.96	33.91
2009/10	64.06	66.96	39.98
2010/11	65.60	66.94	42.33
2011/12	64.78	65.06	47.21

Total	386.71	515.64	254.37
Average	56.44	64.46	37.70
Standard Deviation	8.24	1.89	5.73
C.V.	0.1460	0.0293	0.1520

Sources: Annex3

Table 4.9 shows that performing assets to total assets ratio of HBL is 43.12, 48.14, 49.98, 53.46, 62.35, 64.06, 65.60 and 64.78 % in their respective year. It shows that the performing asset of the HBL is in increasing way. The average ratio is 56.44 %. Standard deviation and C.V of the bank are 8.24 and 0.1460 % respectively.

Performing assets to total assets ratio of EBL is in increasing way i.e. 63.73, 63.23, 60.92, 63.32, 65.96, 66.96, 66.94 and 65.06 % in their respective year. The average ratio is 64.46%. Standard deviation and C.V. of the bank are 1.89 and 0.0293 % respectively.

SCBNL performing asset ratio has volatile trend in the study period i.e. 27.42, 33.92, 33.92, 36.04, 40.76, 33.91, 39.98, 42.33 and 47.21% in their respective year. The average ratio is 37.70 %. Standard deviation and C.V. of the bank are 5.73 and 0.1520% respectively.

The combined average ratio also shows that the performing assets ratio is 51.86 % in the research period. All banks should increase their performing assets for prosperity of the bank.

Table 4.10

Trend Analysis of Combined Ratios

Fiscal Year	Trend values of combined credit and advances to total deposit	Trend values of combined credit and advances to total assets ratio (%)	Trend values of combined performing assets to total assets ratio (%)
2004/05	0.5678	0.4744	0.4560
2005/06	0.5853	0.4932	0.4768
2006/07	0.6028	0.5120	0.4975
2007/08	0.6203	0.5308	0.5182
2008/09	0.6378	0.5496	0.5390
2009/10	0.6553	0.5684	0.5597
2010/11	0.6728	0.5872	0.5805
2011/12	0.6903	0.6060	0.6012

Sources: Annex 4

Figure 4.7

Trend Analysis of Combined Ratios

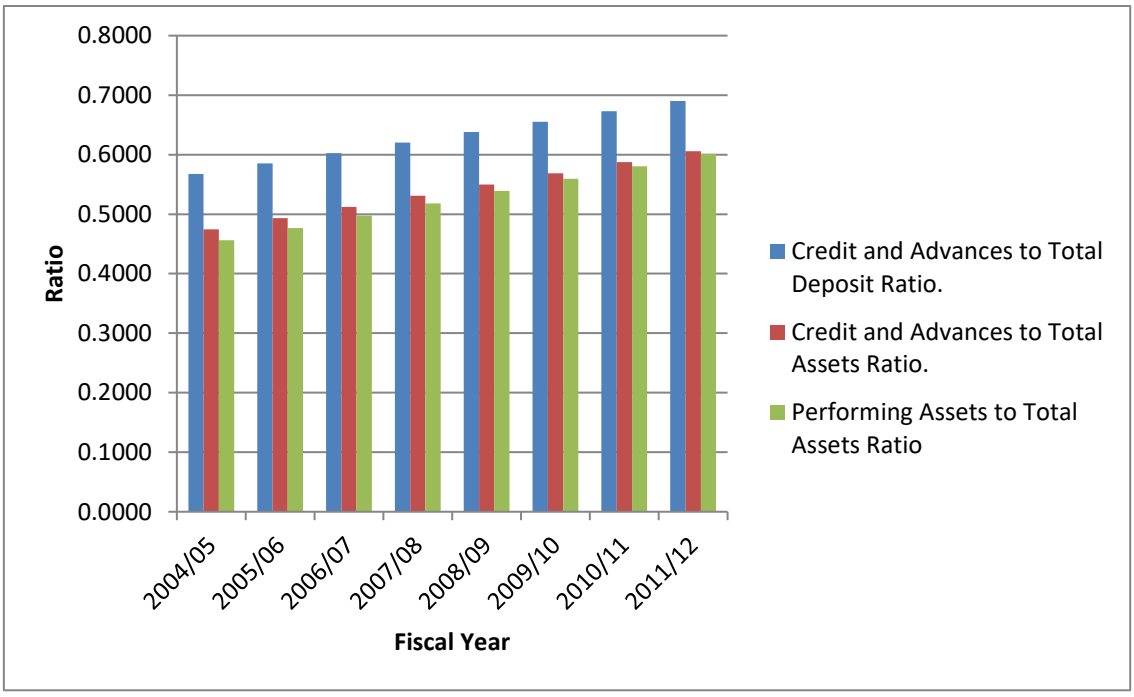

Figure 4.7 shows that the trend values of combined credit and advances to total deposit are increasing very year. It also reveals that the trend value is 0.5678, 5853, 0.6028, 0.6203, 0.6378, 0.6553, 0.6728 and 0.6903 in financial year 2004/05, 2005/06, 2006/07, 2007/08, 2008/09, 2009/10, 2010/11 and 2011/12 respectively in the research period. The trend value of the combined credit and advances to total assets ratio is in increasing trend i.e. 0.4744, 0.4932, 0.5120, 0.5308, 0.5496, 0.5684, 0.5872 and 0.6060 times respectively in the eight year of the research period. The trend values of combined performing assets to total assets are also in increasing trend i.e. 0.4560, 0.4768, 0.4975, 0.5182, 0.5390, 0.5597, 0.5805 and 0.6012 in respectively.

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.

4.3 Statistical Analysis

A. Himalayan Bank Limited

The date related to overall credit risk management is given below. Table 4.11 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 starting from fiscal year 2004/05 up to 2011/12

Table 4.11

Risk Index and Book Value Insolvency of HBL

S. No.	Description	Figure.
1.	Risk Index.	30.53
2.	Probability of Book Value Insolvency. (%)	0.05

Sources: Annex 5.

Table 4.11 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 ROA, strong capital position and stable earning ROA. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.12

Correlation Coefficient of HBL

S.No.	PLL	Correlation	P.E	Conclusion	Remarks.
1.	ROA	0.6706	0.1312	Significant	r>P.E.
2.	ROE	0.9812	0.0089	Significant	r>P.E.

Sources: Annex 6

Table 4.12 reveals that the correlation between loan and loan loss provision to ROA and ROE. The calculation in the table clearly shows that there is positive correlation between PLL and ROA as well as PLL and ROE but the result is too small and considers it as insignificant.

Table 4.13

Regression Coefficient of HBL

S.No	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T-value.	Remarks.
1.	PLL	ROA	0.4526	0.3226	2.412	Significant.
2.	PLL	ROE	0.9114	7.62	0.5226	Significant.

Sources: Annex 6&7

Table 4.13 reveals that the regression coefficient of provision of loan loss for ROA and ROE are positive but the value is not significant at 5% level of significance, which indicates very low association between the independent variable PLL and dependent variable ROA and ROE. Thus null hypothesis of no relationship between PLL on ROA and PLL on ROE was accepted.

B. Everest Bank Limited

The date 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 2004/05 up to 2010/11

Table 4.14

Risk Index and Book Value Insolvency of EBL

S. No.	Description	Figure.
1.	Risk Index.	32.14
2.	Probability of Book Value Insolvency. (%)	0.05

Sources: Annex 5.

Table 4.14 indicates the following decisions.

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

Table 4.15

Correlation Coefficient of EBL

S.No.	PLL	Correlation	P.E	Conclusion	Remarks.
1.	ROA	0.9911	0.0042	Significant	r>P.E.
2.	ROE	0.8776	0.0548	Significant	r>P.E.

Sources: Annex 6

Table 4.15 shows that the correlation between loan and loan loss provision to ROA and ROE. The calculation in the table clearly shows that there is positive correlation between PLL and ROA as well as PLL and ROE but the result is too small and considers it as insignificant.

Table 4.16

Regression Coefficient of EBL

S.No.	**Independent Variable.**	**Dependent Variable.**	**Beta (b) Coefficient.**	**Constant. (a)**	**T-value.**	**Remarks.**
1.	PLL	ROA	0.6545	0.05382	1.0421	Significant.
2.	PLL	ROE	10.205	3.3882	8.88	Significant.

Sources: Annex 6&7

Table 4.16 reveals that the regression coefficient of provision of loan loss for ROA and ROE are positive but the value is not significant at 5% level of significance, which indicates very low association between the independent variable PLL and dependent variable ROA and ROE. Thus null hypothesis of no relationship between PLL on ROA and PLL on ROE was accepted.

C. Standard Chartered Bank Nepal Limited

The date 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 2004/05 up to 2010/11.

Table 4.17

Risk Index and Book Value Insolvency of SCBNL

S. No.	Description	Figure.
1.	Risk Index.	86.51
2.	Probability of Book Value Insolvency. (%)	0.37

Sources: Annex 5

Table 4.17 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 ROA, strong capital position and stable earning ROA. It current position shows that it has a high level of cushion to absorb accounting losses.

Table 4.18

Correlation Coefficient of SCBNL

S.No.	PLL	Correlation	P.E	Conclusion	Remarks.
1.	ROA	-0.0221	0.2383	insignificant	r<P.E.
2.	ROE	0.6612	0.1342	Significant	r>P.E.

Sources: Annex 6

Table 4.18 shows that the correlation between loan and loan loss provision to ROA is insignificant. It reveals that r is less than P.E. but the correlation between loan and loan loss provision to ROE is significant. The calculation in the table clearly shows that there is negative correlation between PLL and ROA and there is positive correlation between PLL and ROE but the result is too small and considers it as insignificant.

Table 4.19

Regression Coefficient of SCBNL

S.No.	Independent Variable.	Dependent Variable.	Beta (b) Coefficient.	Constant. (a)	T-value.	Remarks.
1.	PLL	ROA	0.0569	2.1339	0.00804	Significant.
2.	PLL	ROE	2.64	14.90	6.2423	Insignificant.

Sources: Annex 6&7

Table 4.19 reveals that the regression coefficient of provision of loan loss for ROA and ROE are positive but the value is not significant at 5% level of significance, which indicates very low association between the independent variable PLL and dependent variable ROA and ROE. Thus null hypothesis of no relationship between PLL on ROA and PLL on ROE was accepted.

4.4. Major Findings

The present section deals about some meaning results on credit risk management in selected commercial banks resulted from analysis of data. Primary objectives of the study were designed to assess the financial conditions of the selected banks in terms of their creditability. Similarly, it was also specified to explore the position of the banks at their environment. Both secondary as well as primary sources of information were used to meet the stated objective of the study. Details of findings are as below:

From the stand point of loan and loss provision and return analysis

The loan loss provision of HBL, its performing loan is in increasing trend and difference between performing and non-performing loan is very high which indicates that bank is able to maintain good ratio of performing loan. The trend of ROA and ROE is little fluctuated but there is no negative effect of loan loss provision on ROA and ROE which proves that there is no negative impact of PLL on ROA and ROE.

EBL is able to maintain good ratio of performing loan. Bank's loan position shows that it is able to manage the credit risk position. The ROA and ROE of EBL is in increasing trend so there is no negative effect of loan loss provision on ROA and ROE which proves that there is no negative impact of PLL on ROA and ROE.

SCBNL is able to maintain good loan position and its credit risk position is also maintained. The difference between performing loan and non performing loan is very high. The trend of return on equity and assets is stable. There is no negative effect of loan loss provision on ROA and ROE which proves that there is no negative impact of PLL on ROA and ROE.

From the stand point of financial ratio analysis

The average ratio of credit and advances to total deposits of HBL is 66.25%. The standard deviation and coefficient of variation are 10.34 and 0.1561%. The average ratio of credit and advances to total deposits of EBL is 75.99%. The standard

deviation and coefficient of variation are 2.57 and 0.0038%. The average ratio of SCBNL is 44.07% and standard deviation and coefficient of variation are 3.34 and 0.0758%. The combine average ratio is 62.10%. Therefore it seems that the banks are heavily depending on credit and advances to make profit from their investment. It reveals that there is a strong relationship between total deposit and total credit and advances.

The average ratio of credit and advance to total assets ratio of HBL is 57.62%. Bank's standard deviation and C.V. are 7.87 and 0.1365%. The average ratio of credit and advance to total assets ratio of EBL is 64.86%. The standard deviation and C.V. are 1.86 and 0.0286%. The average ratio of credit and advance to total assets ratio of SCVBL is 36.66%. Bank's standard deviation and C.V. are 4.48 and 0.1221%. The combined average ratio is 53.05%. Standard deviation and coefficient of variation are 4.74 and 0.096%. It reveals that banks have good utilized of their total assets as credit and advances.

The average ratio of performing assets to total assets ratio of HBL is 55.24%. The standard deviation and C.V. of bank are 8.13 and 0.1472%. The average ratio of performing assets to total assets ratio of EBL is 64.52%. The standard deviation and C.V. of bank are 2.01 and 0.0312%. The average ratio of performing assets to total assets ratio of SCBNL is 36.34%. The standard deviation and C.V. of bank are 4.78 and 0.1315%. The combined average ratio is 52.03%. All banks should increase their performing assets for prosperity of the bank.

From the stand point of risk index and probability of book value insolvency

1. Risk index and the probability of book value insolvency of Himalayan Bank Limited indicates that the bank has high 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 eight years is just 4.05% (combined) which is high. Correlation coefficient regarding PLL with ROA and ROE indicate that there is positive relationship between them but the result is small and considered it as

insignificant. Regression coefficient of PLL is also positive and its value is not significant at 5% level of significance.

2. In the case of Everest Bank Limited, risk index is little high and probability of book value insolvency is less than one percent. Relatively its risk index is lowest among other bank and probability of book value insolvency is lowest among others. Bank's non-performing loan to net loan for eight years is just 0.614% Which is tremendous performance by the bank as view point of credit risk management. Correlation coefficient regarding to PLL with ROA and ROE 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 PLL is positive but the value is not significant at 5% level of significance.

3. Standard Chartered Bank Nepal 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 eight years is 1.16% (combined), which is very good situation. It is the good sign for the bank. Again by analysing from statistical aspect, there is insignificant relationship between independent variable PLL and dependent variable ROA and ROE though regression coefficient of PLL is positive for ROE and negative for ROA. It t-value is not significant at 5% level of significance.

4. 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.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Present study seems very successful to meet the stated objectives designed for study. The study has been designed to overcome the various issues relating to credit risk management in commercial banks. It was aimed to find out comparative credit risk management in Himalayan Bank Limited, Everest bank Limited and Standard Chartered Bank Nepal Limited. The prime components of credit risk management is the financial condition in terms of credit risk as losses from the refusal or inability of credit customers to pay what is owed in full and on time management quality in terms of analysing and managing the credit risk designed for study to meet the objectives. The study successfully explored the financial condition in terms of credit risk of selected banks and management quality to support credit risk management. It is clear evident that the bank having good financial position or condition has high quality of management.

5.1. Summary

Present study is very successful to meet the stated objectives designed for the study. The researcher highlights or introduces the meaning and importance of research paper and meets the objectives followed by various sequential steps.

First chapter of the study dealt about basic assumption of the study. Basically it highlights the concept and importance or significance of the study. It also presents research issues, research problems, basic objectives of the study, rationality of the study, limitation of the study, process of the study and introduction of the study. Lastly, it discusses about the organizational structure of the study.

Second chapter helped the researcher to provide knowledge about the development and progress made by the earlier researcher on the concerned field or topic of the study. It helped to know the research work undertaken by them. It also tried to know some concept used in this study. Moreover, it summarized the finding of the previous findings of the study to provide knowledge about the background of the work done by

them and to step the duplicate of previous work. Lastly, earlier international research related to concept is also attempted to review the finding of the study.

Third chapter of the study discussed about various research methodologies used for the study. Basically, research methodology here signifies the research design, sources of date, population and sample of data, data collection procedure, data collection techniques, data collection methods and tools and techniques employed etc.

Fourth chapter of the study dealt about data presentation and analysis. It first presented the generated data in tabular form and analysed it in systematically as per the objectives mentioned above. The researcher tried to analyse the comparative financial condition or position of bank in terms of credit risk management practices, comparative industrial environment of bank with respect to credit risk and comparative management quality in terms of credit risk. Detail of the findings can be presented as below.

The cursory looking for these selected banks in terms of credit risk reveals that all three banks performing loans are increasing trend and difference between the performing and non-performing loan is very high which indicates that all three banks are able to maintain good ratio of performing loan the percentage of loan loss provision is also as per N.R.B rules, and credit risk position are also maintained.

The overall evaluation of selected banks on the basis of return analysis, the return on assets and return on equity of HBL is little fluctuating . It has high ROA and ROE in fiscal year 2005/06. The ROA and ROE of EBL is in increasing trend and the ROA and ROE of SCBNL is stable and it's slightly high on fiscal year 2005/06. The select banks have no negative impact of PLL on ROA and ROE.

On an average of of research period, credit and advances to total deposit ratio of Himalayan Bank, Everest Bank and Standard Charter Bank Nepal Limited are 66.25, 75.99 and 44.07 percent respectively. Likewise Himalayan Bank, Everest Bank and Standard Chartered Bank Nepal Limited have credit and advances to total assets ratio for the eight years of research periods are 57.64, 64.86 and 36.66 percent respectively. At the same time, the average performing assets to total assets ratio for

the eight years research period of Himalayan Bank, Everest Bank and Standard Chartered Bank Nepal are 55.24, 64.52 and 36.34 percent respectively. This indicates that performing assets are increasing regularly in the research period. As the non-performing credit ratio is not so high of any commercial banks are generating lower credit risk which is good sign for any banks.

Risk index and the probability of book value insolvency of HBL indicate that the bank has high risk. Bank's non-performing loan to net loan for eight years is just 4.05% which is high. Correlation coefficient regarding PLL with ROA and ROE indicate that there is positive relationship between them. Regression coefficient of PLL is also positive.

Risk index of EBL is little high and probability of book value insolvency is less than one percent. Bank's non-performing loan to net loan for eight years is just 0.614%. Correlation coefficient regarding PLL with ROA and ROE indicate that there is positive relationship between them. Regression coefficient of PLL is also positive.

Risk index of SCBNL is high and probability of book value insolvency is less than one percent. Bank's non-performing loan to net loan for eight years is just 1.16%. There is insignificant relationship between independent variable PLL and dependent variable ROA and ROE though regression coefficient of PLL is positive for ROE and negative for ROA.

Finally, conclusion and summary and various suggestions were described in fifth chapter. It drew the conclusion from the findings of the study and explained the summary of the research paper. Besides, it also provides various suggestions to give further improvement.

5.2 Conclusion

After analysing the credit portfolio of commercial banks of Nepal from both financial and statistical aspect we can draw some major conclusion from the study which is as follows:

All commercial banks have insufficient liquidity. It shows that banks have not got proper investment sector to utilize their liquid money after recession of share market

and real state. 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 cries, 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 commercial 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 banking industry. 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 commercial bank 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. 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 bank 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 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 favouritism. 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. NRB 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.
- Banks are one of the most reputed organizations of our country. So, banks should fulfil 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 remote areas with the objective of providing cheaper charge banking services.

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APPENDICES

Annex 1

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

Fiscal Year	HBL			EBL		
	Total Credit and Advance	Total Deposits	Ratio (%)	Total Credit and Advance	Total Deposits	Ratio (%)
2004/05	13451.17	26864.73	50.07	7900.01	10097.69	78.24
2005/06	15761.97	26490.85	59.49	10136.2	13802.44	71.01
2006/07	17793.72	30046.81	59.22	14082.7	18185.30	77.44
2007/08	20179.61	31844.11	63.37	18836.4	23977.09	78.56
2008/09	25519.52	27425.40	73.58	24469.6	33323.71	73.43
2009/10	29123.76	37613.02	77.43	28156.4	36931.27	76.24
2010/11	32968.27	40918.79	80.57	31661.8	41129.90	76.98
2011/12	35968.47	47790.99	75.26	36616.8	50006.10	73.22

Fiscal Year	SCBNL		
	Total Credit and Advance	Total Deposits	Ratio (%)
2004/05	7943.19	18264.4	43.49
2005/06	8935.42	22383.32	39.92
2006/07	10502.64	23989.58	43.78
2007/08	13718.6	29219.60	46.95
2008/09	13679.76	34835.14	39.27
2009/10	15956.95	34704.11	45.98
2010/11	18427.27	37522.44	49.11
2011/12	19575.96	35965.63	54.43

Annex 2

Credit and Advances to Total Assets Ratio (Fig. in Million Rs.)

Fiscal Year	HBL			EBL		
	Total Credit and Advance	Total Assets	Ratio (%)	Total Credit and Advance	Total Assets	Ratio (%)
2004/05	13451.17	28871.34	46.59	7900.01	12200.71	64.75
2005/06	15761.97	30582.01	51.54	10136.2	15959.28	64.05
2006/07	17793.72	34317.69	51.85	14082.7	21432.57	61.41
2007/08	20179.61	36857.74	54.75	18836.4	29547.29	63.75
2008/09	25519.52	40049.47	63.72	24469.6	36918.53	66.28
2009/10	29123.76	43861.08	66.40	28156.4	42283.23	66.59
2010/11	32968.27	48135.89	68.49	31661.8	47136.82	67.17
2011/12	35968.47	54364.42	66.16	36616.8	55813.12	65.61

Fiscal Year	SCBNL		
	Total Credit and Advance	Total Assets	Ratio (%)
2004/05	7943.19	28871.34	27.51
2005/06	8935.42	25735.34	34.68
2006/07	10502.64	28594.17	36.73
2007/08	13718.6	33338.03	41.15
2008/09	13679.76	40069.60	34.14
2009/10	15956.95	40214.09	39.68
2010/11	18427.27	43811.86	42.06
2011/12	19575.96	41677.05	46.97

Annex 3

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

Fiscal Year	HBL			EBL		
	Performing Assets	Total Assets	Ratio (%)	Performing Assets	Total Assets	Ratio (%)
2004/05	12449.82	28871.34	43.12	7775.51	12200.71	63.73
2005/06	14721.22	30582.01	48.14	10007.01	15959.28	63.23
2006/07	17152.19	34317.69	49.98	13969.5	21432.57	60.92
2007/08	19702.38	36857.74	53.46	18709.12	29547.29	63.32
2008/09	24968.2	40049.47	62.35	24351.57	36918.53	65.96
2009/10	28098.92	43861.08	64.06	281112.69	42283.23	66.49
2010/11	31576.52	48135.89	65.06	31553.32	47136.82	66.94
2011/12	35217.3	54364.42	64.78	36309.33	55813.12	65.06

Fiscal Year	SCBNL		
	Performing Assets	Total Assets	Ratio (%)
2004/05	7916.89	28871.34	27.42
2005/06	8739.48	25735.34	33.92
2006/07	10305.61	28594.17	36.04
2007/08	13589.87	33338.03	40.76
2008/09	13588.71	40069.60	33.91
2009/10	16078.44	40214.09	39.98
2010/11	18546.67	43811.86	42.33
2011/12	19674.02	41677.05	47.21

Calculation of Standard Deviation and C.V for Annex 1,2 and 3 Purpose

HBL

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	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$
2004/05	50.07	299.42	46.56	146.99	43.12	177.32
2005/06	59.49	62.15	51.54	51.03	48.14	68.83
2006/07	59.22	66.48	51.85	46.07	49.98	41.68
2007/08	63.37	16.03	54.75	15.47	53.46	8.86
2008/09	73.58	38.52	63.72	25.36	62.35	34.97
2009/10	77.43	101.13	66.40	59.54	64.06	58.12
2010/11	80.57	174.14	68.49	96.16	65.60	83.97
2011/12	75.26	62.19	66.16	55.89	64.78	69.62
Total	538.99	820.07	469.47	497.15	451.49	543.38
Mean	67.37		58.68		56.44	
S.D.	10.12		7.88		8.24	
C.V.	0.1502		0.1343		0.1460	

EBL

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	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$
2004/05	78.24	6.76	64.75	0.04	63.73	0.53
2005/06	71.01	21.44	64.05	0.81	63.23	1.50
2006/07	77.44	3.24	61.41	12.54	60.92	12.51
2007/08	78.56	8.53	63.75	1.44	63.32	1.29
2008/09	73.43	4.88	66.28	1.77	65.96	2.26
2009/10	76.24	0.36	66.59	2.69	66.49	4.14
2010/11	76.98	1.80	67.17	4.92	66.94	6.17
2011/12	73.22	5.86	65.61	0.43	65.06	0.36
Total	605.12	52.86	519.61	24.64	515.65	28.76
Mean	75.99		64.95		64.46	
S.D.	2.57		1.75		1.89	
C.V.	0.0338		0.0269		0.0293	

SCBNL

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	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$	X	$(X-\overline{X})^2$
2004/05	43.49	3.52	28.20	95.09	27.42	105.60
2005/06	39.92	29.66	34.68	10.70	33.92	14.26
2006/07	43.78	2.52	36.73	1.49	36.04	2.74
2007/08	46.95	2.51	41.15	10.23	40.76	9.39
2008/09	39.27	37.16	34.14	14.53	33.91	14.34
2009/10	45.98	0.38	39.68	2.99	39.98	5.22
2010/11	49.11	14.02	42.06	16.88	42.33	21.47
2011/12	54.43	82.15	46.97	81.34	47.21	90.51
Total	362.93	171.91	303.61	233.25	301.57	263.53
Mean	45.37		37.95		37.70	
S.D.	4.63		5.39		5.73	
C.V.	0.1021		0.1420		0.1520	

Annex 4

Trend Analysis of Combined Ratios

5.1 Credit and Advances to Total Deposit Ratio

Fiscal Year	X (Deviation from 07/08.5)	Y	X^2	XY	Trend Value. (y=a + bx)
2004/05	-3.5	0.5727	12.25	-2.0045	0.5678
2005/06	-2.5	0.5762	6.25	-1.4405	0.5853
2006/07	-1.5	0.6015	2.25	-0.9023	0.6028
2007/08	-0.5	0.6296	0.25	-0.3148	0.6203
2008/09	0.5	0.6209	0.25	0.3105	0.6378
2009/10	1.5	0.6655	2.25	0.9983	0.6553
2010/11	2.5	0.6889	6.25	1.7222	0.6728
2011/12	3.5	0.6764	12.25	2.3674	0.6903
N=8	∑X=0	∑Y=5.0317	∑X2=42	∑XY=0.7364	

a=∑Y/n = 4.3472/8 = 0.6290

b=∑XY/∑X^2= 0.7364/8 = 0.0175

5.2 Credit and Advances to Total Assets Ratio

Fiscal Year	X (Deviation from 07/08.5)	Y	X^2	XY	Trend Value. (y=a + bx)
2004/05	-3.5	0.4652	12.25	-1.6282	0.4744
2005/06	-2.5	0.4991	6.25	-1.2477	0.4932
2006/07	-1.5	0.5143	2.25	-0.7714	0.5120
2007/08	-0.5	0.5322	0.25	-0.2661	0.5308
2008/09	0.5	0.5471	0.25	0.2735	0.5496
2009/10	1.5	0.5756	2.25	0.8634	0.5684
2010/11	2.5	0.5924	6.25	1.481	0.5872
2011/12	3.5	0.5958	12.25	2.0853	0.6060
N=8	∑X=0	∑Y=4.3217	∑X2=42	∑XY=0.7897	

a=∑Y/n = 4.3217/8 =0.5402

b=∑XY/∑X2= 0.7897/8 =0.0188

5.3 Performing Assets to Total Assets Ratio

Fiscal Year	X (Deviation from 07/08)	Y	X^2	XY	Trend Value. (y=a + bx)
2004/05	-3.5	0.4476	12.25	-1.5666	0.4560
2005/06	-2.5	0.4843	6.25	-1.2107	0.4768
2006/07	-1.5	0.4898	2.25	-0.7347	0.4975
2007/08	-0.5	0.5251	0.25	-0.2625	0.5182
2008/09	0.5	0.5407	0.25	0.2703	0.5390
2009/10	1.5	0.5684	2.25	0.8526	0.5597
2010/11	2.5	0.5829	6.25	1.4572	0.5805
2011/12	3.5	0.5901	12.25	2.0653	0.6012
N=8	∑X=0	∑Y=4.2289	∑X2=42	∑XY=0.8709	

a=∑Y/n= 4.2289/8 = 0.5286

b=∑XY/∑X2 = 0.8709/8 = 0.0207

Annex 5

Calculation of Risk Index and Book Value Insolvency

Fiscal Year	HBL			EBL		
	ROA	ROE	Equity Multiplier	ROA	ROE	Equity Multiplier
2004/05	1.11	19.99	18.01	1.4	17.11	12.22
2005/06	1.55	25.9	16.71	1.48	19.82	13.39
2006/07	1.47	22.91	15.59	1.38	19.57	14.18
2007/08	1.76	25.3	14.38	1.65	21.37	12.95
2008/09	1.91	24.13	12.63	1.73	24.38	14.09
2009/10	1.19	14.79	12.43	2.09	26.25	12.56
2010/11	1.91	22.35	11.70	2.1	26.37	12.56
2011/12	1.76	20.69	11.76	2.11	22.84	10.82
N=8	∑R.O.A =12.66	∑R.O.E=176.06		∑R.O.A=13.94	∑R.O.E=177.71	
Risk Index		30.53%		32.14%		
Prob.of B.V. Insol.		0.05%		0.05%		

Fiscal Year	SCBNL		
	ROA	ROE	Equity Multiplier
2004/05	2.46	33.88	13.77
2005/06	2.56	37.57	14.68
2006/07	2.42	32.68	13.50
2007/08	2.46	32.85	13.35
2008/09	2.56	33.58	13.12
2009/10	2.7	32.22	11.93
2010/11	2.55	30.43	11.93
2011/12	2.80	28.36	10.13
N=8	∑R.O.A=20.51	∑R.O.E=261.57	
Risk Index		86.51%	
Prob.of B.V. Insol.		0.37%	

Where,

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

Risk Index = $\frac{[E(ROA)+ CAP\ ]}{S.D\ (ROA)}$ CAP= $\frac{1}{EM}\ X\ 100$

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

Calculation of S.D of ROA for Annex 6 Purpose

Fiscal Year	HBL		EBL	
	ROA	(ROA- $\overline{ROA}$)²	ROA	(ROA- $\overline{ROA}$)²
2004/05	1.11	0.2233	1.4	0.1173
2005/06	1.55	0.0011	1.48	0.0689
2006/07	1.47	0.0127	1.38	0.1314
2007/08	1.76	0.0315	1.65	0.0086
2008/09	1.91	0.1073	1.73	0.0002
2009/10	1.19	0.1541	2.09	0.1208
2010/11	1.91	0.1073	2.1	0.1278
2011/12	1.76	0.0315	2.11	0.1351
N=7	∑R.O.A=12.66		∑R.O.A=13.94	
S.D.	0.289		0.298	

Fiscal Year	SCBNL	
	ROA	(ROA- $\overline{ROA}$)²
2004/05	2.46	0.0108
2005/06	2.56	0.0000
2006/07	2.42	0.0207
2007/08	2.46	0.0108
2008/09	2.56	0.0000
2009/10	2.7	0.0185
2010/11	2.55	0.0002
2011/12	2.8	0.0557
N=7	∑R.O.A=20.51	
S.D.	0.121	

Where,

ROA = $\sum ROA/n$

S.D. = $\sqrt{\frac{\sum(ROA-\overline{ROA})2}{n}}$

Annex 6

Calculation of Correlation and Regression Coefficient

Where,

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

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

HBL

Fiscal year	PLL(X)	ROA (Y_1)	ROE (Y_2)	X^2	XY_1	XY_2	Y_1^2	Y_2^2
2004/05	2.48	1.11	19.99	6.1504	2.7528	49.5752	1.2321	399.6001
2005/06	3.12	1.55	25.9	9.7344	4.836	80.808	2.4025	670.81
2006/07	2.98	1.47	22.91	8.8804	4.3806	68.2718	2.1609	524.8681
2007/08	3.26	1.76	25.3	10.6276	5.7376	82.478	3.0976	640.09
2008/09	3.04	1.91	24.13	9.2416	5.8064	73.3552	3.6481	582.2569
2009/10	1.82	1.19	14.79	3.3124	2.1658	26.9178	1.4161	218.7441
2010/11	2.83	1.91	22.35	8.0089	5.4053	63.2505	3.6481	499.5225
2011/12	2.74	1.76	20.69	7.5076	4.8224	56.6906	3.0976	428.0761
n=8	$\sum X =$ 22.27	$\sum Y1 =$ 12.66	$\sum Y2 =$ 176.06	$\sum X2 =$ 63.46	$\sum XY1 =$ 35.91	$\sum XY2 =$ 501.35	$\sum Y12 =$ 20.703	$\sum Y22 =$ 3963.97

$$r\,(ROA) = \frac{\boldsymbol{n}\sum XY1 - \sum X \sum Y1}{\sqrt{[\{n\sum X^2 - (\sum X)^2\}\{n\sum Y1^2 - (\sum Y1)^2\}]}} = \mathbf{0.6706}$$

$$\text{P.E.(ROA)} = \frac{[0.6745(1-r2)]}{\sqrt{n}} = 0.1312$$

$$r\,(ROE) = \frac{\boldsymbol{n}\sum XY2 - \sum X \sum Y2}{\sqrt{[\{n\sum X^2 - (\sum X)^2\}\{n\sum Y2^2 - (\sum Y2)^2\}]}} = \mathbf{0.9811}$$

P.E.(ROE)= $\frac{[0.6745(1-r2)\ ]}{\sqrt{n}}$=0.0089

Regression analysis of ROA on PLL and ROE on PLL

Regression equation of Y_1 on X i.e. ROA on PLL (Y=a+bx)

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

$\sum Y_1=Na+b\sum X$ i.e. 12.66=8a+22.27b……1st

$\sum XY_1=a\sum X+b\sum X^2$ i.e. 35.9069=22.27a+63.46b……2nd

Multiplying equation 1st by 2.85 and subtracting equation 2nd from equation 1st, we have, a =0.3226

Putting the value of 'a' in equation 1st , we get b=0.4526

Regression equation of Y2 on X ie. ROE on PLL (Y=a+bx)

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

$\sum Y_2=Na+b\sum X$ i.e. 176.06=8a+22.27b……1st

$\sum XY_2=a\sum X+b\sum X^2$ i.e. 501.35=22.27a+63.46b……..2nd

Multiplying equation 1st by 2.85 and subtracting equation 2nd form equation 1st, we have, a=0.7943

Putting the value of 'a' in equation 1st, we get b=7.62

EBL

Fiscal year	PLL(X)	ROA (Y_1)	ROE (Y_2)	X^2	XY_1	XY_2	Y_1^2	Y_2^2
2004/05	2.16	1.4	17.11	4.6656	3.024	36.9576	1.96	292.7521
2005/06	2.34	1.48	19.82	5.4756	3.4632	46.3788	2.1904	392.8324
2006/07	2.1	1.38	19.57	4.41	2.898	41.097	1.9044	382.9849
2007/08	2.4	1.65	21.37	5.76	3.96	51.288	2.7225	456.6769
2008/09	2.61	1.73	24.38	6.8121	4.5153	63.6318	2.9929	594.3844
2009/10	2.95	2.09	26.25	8.7025	6.1655	77.4375	4.3681	689.0625
2010/11	2.94	2.1	26.37	8.6436	6.174	77.5278	4.41	695.3769
2011/12	2.98	2.11	22.84	8.8804	6.2878	68.0632	4.4521	521.6656
n=8	$\sum X =$ 20.48	$\sum Y1 =$ 13.94	$\sum Y2 =$ 177.71	$\sum X2 =$ 53.35	$\sum XY1 =$ 36.49	$\sum XY2 =$ 462.38	$\sum Y12 =$ 25.00	$\sum Y22 =$ 4025.74

r (ROA)$= \frac{\boldsymbol{n}\sum XY1 - \sum X \sum Y1}{\sqrt{[\{n\sum X^2 - (\sum X)^2\}\{n\sum Y1^2 - (\sum Y1)^2\}]}}$ **=0.9911**

P.E.(ROA)= $\frac{[0.6745(1-r2)]}{\sqrt{n}}$=0.0042

r (ROE)$= \frac{\boldsymbol{n}\sum XY2 - \sum X \sum Y2}{\sqrt{[\{n\sum X^2 - (\sum X)^2\}\{n\sum Y2^2 - (\sum Y2)^2\}]}}$ **=0.8776**

P.E.(ROE)= $\frac{[0.6745(1-r2)]}{\sqrt{n}}$=0.0548

Regression analysis of ROA on PLL and ROE on PLL

Regression equation of Y_1 on X i.e. ROA on PLL (Y=a+bx)

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

$\sum Y_1 = Na + b\sum X$ i.e. 13.94=8a+20.48b……1st

$\sum XY_1 = a\sum X + b\sum X^2$ i.e. 36.49=20.48a+53.35b ……2nd

Multiplying equation 1st by 2.56 and subtracting equation 2nd from equation 1st, we have, b =0.8699

Putting the value of 'b' in equation 1st , we get a= -0.4844

Regression equation of Y2 on X ie. ROE on PLL (Y=a+bx)

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

$\sum Y_2 = Na + b\sum X$ i.e. 177.71=8a+20.48b……1st

$\sum XY_2 = a\sum X + b\sum X^2$ i.e. 462.38=20.48a + 53.35b……..2nd

Multiplying equation 1st by 2.56 and subtracting equation 2nd form equation 1st, we have, b= 8.08

Putting the value of 'a' in equation 1st, we get a= 1.53

SCBNL

Fiscal year	PLL(X)	ROA (Y_1)	ROE (Y_2)	X^2	XY_1	XY_2	Y_1^2	Y_2^2
2004/05	6.85	2.46	33.88	46.9225	16.851	232.078	6.0516	1147.854
2005/06	7.63	2.56	37.57	58.2169	19.5328	286.6591	6.5536	1411.505
2006/07	6.75	2.42	32.68	45.5625	16.335	220.59	5.8564	1067.982
2007/08	6.24	2.46	32.85	38.9376	15.3504	204.984	6.0516	1079.123
2008/09	7.93	2.56	33.58	62.8849	20.3008	266.2894	6.5536	1127.616
2009/10	6.91	2.7	32.22	47.7481	18.657	222.6402	7.29	1038.128
2010/11	6.41	2.55	30.43	41.0881	16.3455	195.0563	6.5025	925.9849
2011/12	6.44	2.8	28.36	41.4736	18.032	182.6384	7.84	804.2896
n=8	$\sum X =$ 55.16	$\sum Y1 =$ 20.51	$\sum Y2 =$ 261.57	$\sum X2 =$ 382.83	$\sum XY1 =$ 141.40	$\sum XY2 =$ 1810.94	$\sum Y12 =$ 52.70	$\sum Y22 =$ 8603.48

r (ROA)= $$\frac{\boldsymbol{n}\sum XY1-\sum X\sum Y1}{\sqrt{[\{n\sum X^2-(\sum X)^2\}\{n\sum Y1^2-(\sum Y1)^2\}]}}$$ =**-0.0221**

P.E.(ROA)= $$\frac{[0.6745(1-r2)]}{\sqrt{n}}$$=0.2383

r (ROE)= $$\frac{\boldsymbol{n}\sum XY2-\sum X\sum Y2}{\sqrt{[\{n\sum X^2-(\sum X)^2\}\{n\sum Y2^2-(\sum Y2)^2\}]}}$$ =**0.6612**

P.E.(ROE)= $$\frac{[0.6745(1-r2)]}{\sqrt{n}}$$=0.1342

Regression analysis of ROA on PLL and ROE on PLL

Regression equation of Y_1 on X i.e. ROA on PLL (Y=a+bx)

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

$\sum Y_1=Na+b\sum X$ i.e. 20.51=8a+55.16b……1st

$\sum XY_1=a\sum X+b\sum X^2$ i.e. 141.40=55.16a+382.83b ……2nd

Multiplying equation 1st by 6.895 and subtracting equation 2nd from equation 1st, we have, b = -0.008

Putting the value of 'b' in equation 1st, we get a= 2.62

Regression equation of Y2 on X ie. ROE on PLL (Y=a+bx)

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

$\sum Y_2=Na+b\sum X$ i.e. 261.57=8a+55.16b……1st

$\sum XY_2=a\sum X+b\sum X^2$ i.e. 1810.94 = 55.16 a + 382.83b……..2nd

Multiplying equation 1st by 6.895 and subtracting equation 2nd form equation 1st, we have, b= 2.964

Putting the value of 'a' in equation 1st, we get a=12.26

Annex 7

T-test Calculation of Banks

A. Himalayan Bank Limited

1. T-test Calculation between ROA & PLL

Fiscal Year	PLL(X)	ROA (Y)	XY	Y^2	(X-∑X/N)	$(X-\sum X/N)^2$
2004/05	2.48	1.11	2.7528	1.2321	0.04	0.0016
2005/06	3.12	1.55	4.836	2.4025	0.68	0.4624
2006/07	2.98	1.47	4.3806	2.1609	0.54	0.2916
2007/08	3.26	1.76	5.7376	3.0976	0.82	0.6724
2008/09	3.04	1.91	5.8064	3.6481	0.6	0.36
2009/10	1.82	1.19	2.1658	1.4161	-0.62	0.3844
2010/11	2.83	1.91	5.4053	3.6481	0.39	0.1521
2011/12	2.74	1.76	4.8224	3.0976	0.3	0.09
n=8	∑X=22.27	∑Y=12.66	∑XY=35.91	$\sum Y^2$=20.70		∑(X-∑X/N)2=2.32

We have, a= 0.3226 and b= 0.4526 from Annex 6.

Here,

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

Alternative hypothesis (H1): b0, the slope of the line is not zero.

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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = \mathbf{1.19}$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{0.78}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{0.58}$$

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

We have,

Fiscal Year	PLL(X)	ROE (Y)	XY	Y^2
2004/05	2.48	19.99	49.5752	399.6001
2005/06	3.12	25.9	80.808	670.81
2006/07	2.98	22.91	68.2718	524.8681
2007/08	3.26	25.3	82.478	640.09
2008/09	3.04	24.13	73.3552	582.2569
2009/10	1.82	14.79	26.9178	218.7441
2010/11	2.83	22.35	63.2505	499.5225
2011/12	2.74	20.69	56.6906	428.0761
n=8	∑X=22.27	∑Y=176.06	∑XY=501.35	$\sum Y^2$=3963.97

a=0.7943 and b=7.62, from Annex 7.

Here,

Null hypothesis (H_0): 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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = \mathbf{6.87}$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{4.51}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{1.69}$$

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

B. Everest Bank Limited

3. T-test Calculation between ROA & PLL

Fiscal Year	PLL(X)	ROA (Y)	XY	Y^2	(X-∑X/N)	$(X-\sum X/N)^2$
2004/05	2.16	1.4	3.024	1.96	-0.03	0.0009
2005/06	2.34	1.48	3.4632	2.1904	0.15	0.0225
2006/07	2.1	1.38	2.898	1.9044	-0.09	0.0081
2007/08	2.4	1.65	3.96	2.7225	0.21	0.0441
2008/09	2.61	1.73	4.5153	2.9929	0.42	0.1764
2009/10	2.95	2.09	6.1655	4.3681	0.76	0.5776
2010/11	2.94	2.1	6.174	4.41	0.75	0.5625
2011/12	2.98	2.11	6.2878	4.4521	0.79	0.6241
n=8	∑X=20.48	∑Y=13.94	∑XY=36.49	$\sum Y^2$=25.00		∑(X-∑X/N)2=1.3921

We have, a= -0.4844 and b= 0.8699 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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = -1.499$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{-\ 1.27}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{-\ 0.6849}$$

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	PLL(X)	ROE (Y)	XY	Y^2
2004/05	2.16	17.11	36.9576	292.7521
2005/06	2.34	19.82	46.3788	392.8324
2006/07	2.1	19.57	41.097	382.9849
2007/08	2.4	21.37	51.288	456.6769
2008/09	2.61	24.38	63.6318	594.3844
2009/10	2.95	26.25	77.4375	689.0625
2010/11	2.94	26.37	77.5278	695.3769
2011/12	2.98	22.84	68.0632	521.6656
n=8	∑X= 20.48	∑Y=177.71	∑XY= 462.38	$\sum Y^2$= 4025.74

We have, a= 1.53 and b= 8.08, from Annex 7.

Here,

Null hypothesis (H_0): 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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = \mathbf{9.67}$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{8.20}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{0.9854}$$

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

C. Standard Chartered Bank Nepal Limited

T-test Calculation between ROA & PLL

Fiscal Year	PLL(X)	ROA (Y)	XY	Y^2	(X-∑X/N)	$(X-\sum X/N)^2$
2004/05	6.85	2.46	16.851	6.0516	0.76	0.5776
2005/06	7.63	2.56	19.5328	6.5536	1.54	2.3716
2006/07	6.75	2.42	16.335	5.8564	0.66	0.4356
2007/08	6.24	2.46	15.3504	6.0516	0.15	0.0225
2008/09	7.93	2.56	20.3008	6.5536	1.84	3.3856
2009/10	6.91	2.7	18.657	7.29	0.82	0.6724
2010/11	6.41	2.55	16.3455	6.5025	0.32	0.1024
2011/12	6.44	2.8	18.032	7.84	0.35	0.1225
N=8	∑X=55.16	∑Y= 20.51	∑XY= 141.40	$\sum Y^2$= 52.70		∑(X-∑X/N)2=0.1225

We have, a= 2.62 and b= -0.008 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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = 4.23$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{12.09}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{-\ 0.0007}$$

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	PLL(X)	ROE (Y)	XY	Y^2
2004/05	6.85	33.88	232.078	1147.8544
2005/06	7.63	37.57	286.6591	1411.5049
2006/07	6.75	32.68	220.59	1067.9824
2007/08	6.24	32.85	204.984	1079.1225
2008/09	7.93	33.58	266.2894	1127.6164
2009/10	6.91	32.22	222.6402	1038.1284
2010/11	6.41	30.43	195.0563	925.9849
2011/12	6.44	28.36	182.6384	804.2896
n=8	∑X= 55.16	∑Y=261.57	∑XY=1810.94	$\sum Y^2$= 8602.48

We have, a= 12.26 and b= 2.964, from Annex 6.

Here,

Null hypothesis (H_0): 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

$$Sy=\sqrt{\frac{\sum(Y)^2+a\sum(Y)-b\sum(XY)}{N-2}} = \mathbf{32.77}$$

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

$$Sb=\frac{Sy}{\sqrt{\sum(X-\sum X/n)^2}} = \mathbf{93.62}$$

Therefore, t-value of beta (b)

$$Tb=\frac{b-0}{Sb} = \mathbf{0.0316}$$

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