Evaluation of Portfolio Performance of Commercial Banks of Nepal

Submitted by:

Sophiya Shrestha

Global College of Management

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RECOMMENDATION

This is to certify that the thesis

Submitted by

Sophiya Shrestha

Entitled

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Has been prepared and approved by this department in the prescribed format of faculty of Management. This thesis is forwarded for the examination.

_____ _____

(Pushkar Bajracharya)
Chairman Research Department

(Nar Bahadur Bista)
Principal

_____

(Prof. Dr. Madhav Raj Koirala)
Thesis Supervisor

Date: _____

VIVA-VOCE SHEET

We have conducted the viva-voce sheet examination of the thesis

Submitted By
Sophiya Shrestha

Entitled

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Viva-Voce Committee

Principal: _____

Member (Thesis Supervisor): _____

Member (External Expert): _____

Date: _____

DECLARATION

I hereby declare that the work reported in this thesis entitled, "**Evaluation of the Portfolio Performance of Commercial Banks in Nepal",** submitted to Office of the Dean, Faculty of Management, Tribhuwan University, is my original work done in the form of partial fulfillment of the requirement for the **Master's Degree in Business (MBS)** under the supervision of Prof. Dr. Madhav Raj Koirala, Global College of Management.

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Sophiya Shrestha
Researcher
Global College of Management
T.U. Reg. No. : 7-2-461-35-2004
Exam Roll No.: 3560021
Date: May 2011

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ABBREVIATIONS AND ACRONYMS

ATM	Automatic Teller Machine
BOK	Bank of Kathmandu
B.S	Bikram Sambat
CAPM	Capital Asset Pricing Model
CML	Capital Market Line
CV	Coefficient of Variation
EBL	Everest Bank Limited
FY	Fiscal Year
GDP	Gross Domestic Product
Govt.	Government
HBL	Himalayan Bank Limited
HPR	Holding Period Return
LAO	Loans, Advances and Overdraft
Ltd.	Limited
NEPSE	Nepal Stock Exchange
NIBL	Nepal Investment Bank Limited
NRB	Nepal Rastra Bank
NSBL	Nepal SBI Bank Limited
RAPM	Risk Adjusted Performance Measure
Regn	Registration
ROI	Return on Investment
SCBNL	Standard Chartered Bank Nepal Limited
S.D	Standard Deviation
SEBON	Security Board of Nepal
T-Bills	Treasury Bills

CHAPTER I

INTRODUCTION

1.1 Background of the study

With globalization and the advent of the knowledge-based economy, borders and boundaries have weekend, resulting in a freer flow of information, expertise and, ultimately, economic opportunities. The whole economic landscape has changed; business firms, and indeed nations have had to change the way they do their businesses and run their economies. Competition has grown manifold and this has led to a growing mobility of the world's businesses and capital markets. Thus, to sustain in the fierce and intense competitive world, one has to be able to maximize their strengths and eradicate the weaknesses with better knowledge of growing opportunities and threats.

The general economic conditions and trends are crucial to the success of a business firm. Good economic times provide organizations to have an opportunity to flourish and in contrast, worsening economic conditions pose a threat. For the economic conditions to be good, it is very necessary that the financial system of the country be sound and progressive.

Economic development also depends on the financial system to help mediate the transfer of money to areas of the economy that need it the most. The financial system has a number of key functions, which help facilitate the mobilization of financial resources that are important for sustainable economic growth.

- Savings: The financial system allows you to place your excess money into a savings account in a bank of your choice. Keeping your money in a bank safeguards your savings, and the bank pays you interest based on the amount you keep in your account.
- Loans: Money in deposit accounts, like savings accounts, is used to provide loans for a wide range of projects to people and business. Mortgages, car loans and student loans are financed largely by deposits in banks, savings institutions and credit unions.
- Investments: The financial system also facilitates the transfer of money from investors to businesses. When businesses raise capital, they sell stock to investors. Investors give their money to the company in exchange for ownership in the company.

- Business Growth: Businesses may expand their operations or finance growth by issuing debt instruments called bonds. Bonds are bought and sold through the financial system. Bond markets allow businesses to access investor capital to finance their growth, while bond investors have an opportunity to profit from helping finance business expansion.
- Government Expenditure: Governments may finance programs or deficit spending through the financial system by issuing bonds to raise money. Investors may buy government bonds to own a part of government debt, and collect interest payments from the government. In turn, the government has the money it needs to continue to function.

With the better and sound financial system, there will be more and more opportunity for the investment which will directly as well as indirectly contribute towards the growth and development of the economic conditions.

Today in Nepal, the performance of all the economic sectors is less than the average. However, the case of financial institutions is little bit different. The Nepalese financial sector has seen many ups and downs and it has been able to overcome them to a large extent.

The financial sector of Nepal is composed of banking and non-banking sector. Banking sector comprises Nepal Rastra Bank and commercial banks whereas the non banking sector includes development banks, finance companies, micro credit development banks, co-operative financial institutions, non-government organizations performing limited banking services. Even though there are various financial institutions functioning in Nepal, the role and importance of the commercial banks has been increasing day by day. The reason behind this may be the performance, credibility, and trustworthiness of the banks. Similarly, the commercial banks are also performing the major role of supporter for the government in the field of economic and infrastructural development of the country.

The commercial banks are increasing in numbers with a goal to get succeed creating intense competitive environment. To cope with the competitive situations, the banks should increase their financial strength by increasing the investments considering various factors associated with it. Investment, in the broadest sense, means sacrificing the current income for future reward. The amount to be sacrificed takes place in present and is certain. However, the reward comes later the magnitude is uncertain. Thus, every investment posses return as well

as risk. All the investors want to maximize the return and minimize the risk involved in it. Investment in a single asset/security may not satisfy the investor's need for optimum return because risk cannot be reduced in single investment. Since, the diversification helps to reduce the risk; the investment in two or more assets/securities is desirable. This forms the group of assets/securities invested which is termed as investment portfolio

"A portfolio simply represents the practice among the investor of having their funds in more than one asset. The combination of investment assets is called a portfolio." (Weston and Brigham; 1992:245)

A portfolio is defined as a combination of assets/securities. Portfolio provides the highest possible return for any specified degree of risk. Portfolio simply represents the practice among the investors of having their funds in more than one asset. In this context, it can be cleared through a proverb

"Do not put all the eggs in one basket."

Hence, for the purpose of getting optimum portfolio providing better return with less risk, the evaluation of portfolio performance is desirable and the banks must diversify their investment on different sectors as diversification of investment helps to sustain loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other companies.

1.2 Commercial Bank

According to Nepal Commercial Banks Act 2031 B.S.,"A Commercial bank refers to such type of bank other than specified banks related to cooperative, agricultural, industrial and other which deals in money exchange, accepting deposits and advancing loans etc."(Commercial Bank Act; 2031:25).

The commercial banks are those banks which pool together the savings of the community and arrange them for the productive use. Commercial banks transfer monetary sources from the savers to the users. They accept deposits from the public on the condition that they will be repayable. They provide loans and advances from the money, which they receive through deposits. Apart from financing, they also render services like collection of bills and cheques, safekeeping of the valuable, financing advising etc to their customer.

The development of the country is based on the how much money is invested. For the investment purpose the capital formation is essential. However, it is not possible to finance the whole investment by the investors on their own. Thus, in such situations the commercial banks pull the funds from surplus groups and provide them to the deficit group. Although, the commercial banks are truly inspired by profit making objectives, their functions and roles contributes a lot for the overall development off the country.

The evolution of the organized financial system in Nepal has a more recent history than in other developing and developed countries. Banking history of Nepal is nearly of seven decades. In Nepalese context, the history of development of banking system started with the establishment of "Nepal Bank Ltd." in 1937 AD(1994 B.S.) with authorized capital of Rs.10 million and paid capital of Rs.0.842 million. The government owned 51% equity and remaining 49% equity owned by general public.

Due to the political instability in the country, the economic and industrial development had been nearly stopped. Then the government felt the requirement of a central bank and established "Nepal Rastra Bank(NRB)" in 1956 AD (2013 B.S.) with the initial purpose of replacing the Indian currency with Nepalese currency and removing the dual monetary system existing in the country. Likewise, the rising of banking function got popular, it became more complicated which further suggested NRB for the establishment of another commercial bank and in 1966 AD (2022B.S.), "Rastriya Banijya Bank" was established as a fully government owned commercial bank. This further enhanced the economic activities of the nation. Agriculture Development Bank was also established by the government in 1968 AD (2024 B.S.) as a development bank with the objective of increasing the life standard of the people involved in agriculture. However, this bank now can perform all the commercial banking functions and the government has placed it in the category of commercial banks.

The process of banking system did not seem to be satisfactory. So, keeping in view that the banking system can't be developed by using only local capital without importing new banking procedure, methods and technology, the government introduced 'Financial Sector Reform' in1980 AD(2037 B.S.) This allowed the foreign banks to enter as joint venture investors with maximum of 50% equity participation. This contributed a lot in the speedy establishment of the commercial banks. Up to now, there are 32 commercial banks in operation.

In this competitive age, the intensity of competition among the old and new emerging financial institutions has tremendously increased. So, the concern for the growth of income has encouraged the commercial banks of Nepal for sensitive decision making an optimum portfolio investment.

In the present stage, the boundary of investment by the commercial banks has been expanding according to the need and the choices of customers. The establishment of the joint venture banks marks the beginning of modern banking era in Nepal.

1.3 Performance of Nepalese Commercial Banks

In this competitive age of financial institutions, the firms with higher return and comparatively lower risk have the greater chances of survival and growth. In the context of Nepal, the intensity of competition among the old and new emerging financial institutions has increased. So, the concern for the growth of income has encouraged the commercial banks of Nepal for sensitive decision making and optimum portfolio investment.

In the present stage, the boundary of investment by the commercial banks has been expanding to the need and choices of the customers. The establishment of joint venture banks marks the beginning of the modern banking era in Nepal. The joint venture banks have brought many new banking techniques such as computerization hypothecation, consortium finance and modern fee based activities into the economy.

In this context, Mr. Shrestha has written an article in 2054 B.S. on the topic “A Study of Deposits and Credit of Commercial Banks in Nepal”. For the better portfolio performance of the commercial banks, he recommended the following points:

- The survival of the banks depends upon their own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully, the investment management methodology of a portfolio manager should reflect high standards and give their clients the benefits of the global strength, local insights and prudent philosophy.

- With the disciplined and the systematic approval for the selection of appropriate countries, financial assets and the management of various risks; the portfolio manager could enhance the opportunity for each investor to earn superior returns overtime.
- The Nepalese banks having a greater network and access to national and international capital markets have to go for the portfolio management activities for the increment of their fee based income as well as to enrich the client base and to contribute in national economy.

In the case of the said act, the Nepalese commercial banks are eager to provide various services and increase their portfolio. However, those activities have been limited due to the various reasons existing.

- In case investment in the international sectors i.e. capital markets and other investment sectors, the law of Nepal prohibits for the export of money.
- Lack of proper techniques in the management of commercial banks of Nepal for execution of those various services and facilities.
- Proper evaluation of such portfolio from time to time by the management of commercial banks is lacking.
- There exists less developed capital market in the country. Only one capital market exists i.e. NEPSE.

Whatever may be the problems which are the obstacles in the path of successful portfolio performance; the commercial banks should try to remove them and should work in a planned way.

1.4 Introduction to the Banks Understudy

1.4.1 Nabil Bank Limited

Nabil Bank Limited, the first foreign joint venture bank of Nepal, started operations in July 1984. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objective, Nabil provides a full range of commercial banking services through its 47 points of representation across the kingdom and over 170 reputed correspondent banks across the globe. Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it started an era of modern

banking with customer satisfaction measured as a focal objective while doing business. Operations of the bank including day-to-day operations and risk management are managed by highly qualified and experienced management team. Bank is fully equipped with modern technology which includes ATMs, credit cards, state-of-art, world-renowned software from Infosys Technologies System, Bangalore, India, Internet banking system and Telebanking system.

1.4.2 Standard Chartered Bank Nepal Limited. (SCBNL)

SCBNL has been in operation in Nepal since 1987 when it was initially registered as a joint venture bank. The bank has been pioneer in introducing 'customer focused' products and services in country and aspires to continue as a leader in introducing new products in delivering superior services. It is the first bank in Nepal that has implemented the Anti-Money laundering policy ad applied the 'Know Your Customer' procedure on all the customer accounts. The bank enjoys the status of being the largest international bank operating in Nepal. (www.standardchartered.com.np)

1.4.3 Nepal Investment Bank Limited (NIBL)

NIBL was introduced in the Nepalese market with the name 'Nepal Indosuez Bank Limited' in 1986 as a joint venture between Nepalese and French partners. The French partner was Credit Agricole Indosuez, subsidiary of one of the largest banking group in the world, holding 50% of the capital. Later, with the approval of the bank's annual general meeting, NRB and Company Registrar's office, it got its current name.
(www.nibl.com.np)

1.4.4 Nepal SBI Bank Limited (NSBL)

NSBL is the first Indo-Nepal joint venture in the financial sector sponsored by three institutional promoters namely State Bank of India, Employees Provident Fund and Agriculture Development Bank of Nepal through a Memorandum of Understanding signed on July 17, 1992. NSBL was incorporated as a public limited company at the Company's Registrar office on April 28, 1993 under Regn. No. 17—049/50 with an authorized capital of Rs. 120 million and was licensed by NRB on July 6, 1993. NSBL commenced its operation with effect from July 7, 1993. Under the Banks and Financial Institutions Act 2063, NRB granted fresh license to NSBL classifying it as an 'A' class licensed institution on April 26,

2006. 55% of the total share capital of the bank is held by the State Bank of India, 15% by Employees Provident fund and 30% by the general public. (www.nepalsbi.com.np)

1.4.5 Bank of Kathmandu (BOK)

BOK commenced its operations in March 1995 with the objective to stimulate the Nepalese economy and take it to a newer height become more competitive globally. Today, it has become a landmark in the Nepalese banking sector by being among the few commercial banks which is entirely managed by Nepalese professionals and owned by the general public. With the aim of providing banking services at the customer's fingertips, it has started Internet Banking Services and Alert Services.
(www.bok.com.np)

1.4.6 Laxmi Bank Limited

Laxmi Bank was incorporated in April 2002 as the 16th commercial bank in Nepal. In 2004 Laxmi Bank merged with HISEF Finance Limited, a first generation financial company which was the first and ever merger in the Nepali corporate history. Laxmi Bank is a Category 'A' Financial Institution and re-registered in 2006 under the "Banks and Financial Institutions Act" of Nepal. The Bank's shares are listed and actively traded in the Nepal Stock Exchange (NEPSE). 55.42% of the total share capital of the bank is held by the promoters, 9.02% by Citizen Investment Trust and remaining 35.56% by the general public. The bank uses Flex cube as its main banking platform. Flex cube incidentally has been ranked the number one selling core banking solution globally, and has been embraced by over 500 financial institutions across 90 countries. The bank is the first in the South Asia to have implemented SWIFT Net, the advanced version of the SWIFT technology, which is used for speedy and secure payment and messaging services.
(www.laxmibank.com.np)

1.5 Statement of the Problem

Commercial banks contribute significantly in the formation and mobilization of internal capital and developmental efforts. They furnish necessary capital required for trade and commerce in mobilizing the dispersed saving of the individual and institutions. In the present

context, the role and importance of commercial banks is loomed larger. In this connection Nepalese economy has witnessed several changes in the financial sector in the last two-decade such as financial liberalization.

Economic development of a country largely depends upon the effective mobilization of its internal resources. Banks and other financial institutions play pivotal role in this regard. Commercial banks are established to provide financial and other services primarily to commercial sector and occasionally to industrial and agricultural sectors. Thus, the major function of the commercial banks is to acquire funds make the investment of those funds rationally in the productive sector.

For the better return, better investment is essential and better investment requires huge capital. In Nepal, one third of the total population is under the absolute poverty and very few are able to save their income. This has created a situation of low capital formation and weak investing power of the banks. This is because public deposits are one of the major sources of funds for the commercial banks.

For the economic activities to grow and prosper, the easy availability of banking facilities is essential. The proper utilization of funds investing in optimum portfolio provides better return with comparatively less risk. The investors must be made aware of their investment portfolio, the return from it and risk associated with it. However, the current investing activities of the Nepalese commercial banks have indicated that there is lack of it.

The majority of the commercial banks are being established in urban areas and their major investments are city concentrated. This condition has really deprived most of the Nepalese people from the modern banking facilities and they are unaware of the fact about the investment portfolio since majority of the population are living in rural areas.

Due to the growing market competition and limited investment opportunities, there is still the need of proper match between the funds they acquire with cost and the funds they invest for optimum return.

In such situations, therefore, the following issues have been raised to address in this study.

- ‘Proper utilization of funds investing in optimum portfolio provides better return with comparatively less risk’. Are the Nepalese commercial banks aware of this fact?

- Are the commercial banks evaluating their portfolios from time to time for their optimization?
- What is the relationship of investment with total deposits, loan and advances, net income etc?
- How far have commercial banks been able to transfer monetary resources from savers to users?
- How do commercial banks manage their risk and return using portfolio diversification?
- Whether commercial banks effectively utilize portfolio concept in their investment to minimize risk and maximize return or not?
- Which bank has the largest degree of financial risk measured in terms of portfolio risk?
- How do the banks behave for portfolio variables?
- Is investment portfolio directed towards objectives of profit maximization?
- Are the commercial banks showing less interest in the diversification of their portfolios and concentrating their investments in few areas only?

1.6 Objectives of the Study

The general objectives of the study will be to acquire, evaluate and report the portfolio performance of the selected commercial banks in Nepal. However, to achieve the main objectives, the following specific objectives are put forward.

- To evaluate and rank the portfolio performance of the selected commercial banks through Sharpe performance measure, Treynor performance measure, and Jensen performance measure.
- To calculate portfolio return, portfolio standard deviation, portfolio beta and covariance of the portfolio investment of the selected commercial banks.
- To analyze the risk and return associated with the portfolio investment (i.e. amount invested on loans, advances and overdraft, company shares and treasury bills) of the selected commercial banks.

- To rank the portfolio performance between all six commercial banks the two groups of banks made from sample bank.
- To compare and rank two groups of banks.

1.7 Significance of the study

In this competitive age, for better future performance of the commercial banks, the management should evaluate not only the present but also the past performance. As this study specifically focuses on the investment and portfolio performance of the commercial banks, it will help to identify the shortcomings of the present investment process as well as to determine better ways to make the portfolio performance more effective by identifying more productive sectors. Thus, it is hoped that this study will actually highlight the present scenario of the investment portfolio performance of the commercial banks and it will be significant to the future researcher, investors, as well as government.

1.8 Research Methodology

1.8.1 Introduction

A research is an in-depth study for the advancement of the knowledge about the subject matter. Similarly, research methodology is the process of arriving at a solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures.

Thus, the research is a systematic method of finding right solution for the problem while research methodology describes the method and process applied in the entire subject of the study. To find out such solutions of the problems, various statistical and financial tools and techniques are applied according to the nature of phenomena.

1.8.2 Research Design

A research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. Thus, the research design serves as a framework for the study, guiding the collection and analysis of the data. The research design,

then, focuses on the data collection methods, the research instruments utilized and the sampling plan to be followed.

The research study attempts to evaluate the portfolio performance of the selected commercial banks of Nepal. The research study will follow descriptive research design as well as survey research design.

1.8.3 Nature and Sources of Data

The whole study is based on primary and secondary data

i. Primary Data

The data collected for the first time for the statistical investigation is known as primary data. These data are collected through the field visit from the questionnaire in the selected commercial banks.

ii. Secondary Data

The data that are being compiled from any other sources are called secondary data. These data can be collected from NRB directives, journals, articles, annual reports and other published and unpublished related document.

The study basically depends upon the information and the data relating to the selected six commercial banks. Thus, the main sources of the data are those six commercial banks and they are,

- Nabil Bank Ltd.
- Standard Chartered Bank Ltd.
- Nepal Investment Bank Ltd.
- Nepal SBI Bank Ltd.
- Bank of Kathmandu Ltd.
- Laxmi Bank Ltd.

1.8.4 Methods of Data Analysis

In every study, the crucial part is the analysis of the data collected. The result of the study solely based on the tools used for it.

In this study, the primary data collected and reviewed thoroughly and going through all the responses, the major finding and conclusions are prepared and placed in the thesis. In the same way, the major portions of the data for the study are secondary data. Thus, the analyses of these data are done by using various popular models and their related formula.

The data concerning the risk and return of the portfolio investment of the concerned commercial banks are analyzed using various portfolio performance evaluation techniques like financial, statistical and mathematical tools such Sharpe Performance measure, Treynor Performance measure and Jensen Performance measure.

1.9 Limitations of the Study

The scope of the study is subjected to various limitations, which are as follows

- Among 32 commercial banks, only 6 banks are chosen for the study. Thus, the finding could not be extensively generalized to all the existing commercial banks of the country.
- The study will cover only a period of 6 fiscal years for the further calculations.
- Mostly, the secondary data are used for the analysis purpose. So, the accuracy and reliability of the data may be the part of argument.
- Time constraints could limit the details and depth of the study.
- The interest incomes from the flow of loans, advances and overdraft are considered as the loan return whereas the overall market interest rates of commercial banks is averaged to get the market return.
- The dividend incomes from the investment of shares in other companies are considered as the stock return and NEPSE index is considered for the calculation of the market return.

1.10 Organization of the Study

This study has been broadly divided into five chapters, which are as follows:

Chapter 1: Introduction of the Study

This chapter includes the background information of the subject matter of the research undertaken, to provide a general idea. Likewise, it also includes state of the problem, objectives of the study, significance of the study and organization of the study.

Chapter 2: Review of Literature

This chapter includes the reviews of the relevant previous writing and the studies to find the existing gaps. So, the past studies in relation to the concerned topic are going to be reviewed to examine what new can be contributed to make the study more relevant. Reviews of the journals, books, newspapers, annual reports are also going to be included.

Chapter 3: Research Methodology

This chapter deals with the methodology used in the study. It briefly explains about the statistical tools which will be used to evaluate the trend analysis for the concerned topic. It consists of the research design, population and sample, sources of the data collection, various tools and techniques for analysis, methods of analysis and limitations of the study.

Chapter 4: Data Presentation and Analysis

This chapter comprises the main part of the study. It deals with the presentation and analysis of the data and information collected from primary as well as secondary sources and scoring the empirical findings of the study through definite course of the research methodology.

Chapter 5: Summary, Conclusion and Recommendation

This chapter covers the summary of the whole study. It is followed by the basic conclusions of the study based on the fourth chapter and lastly, the recommendations have also been presented for considerations on the basis of the conclusions.

Chapter ff

Review of Literature

Review of literature is a stock taking of existing theories, concepts and other relevant literature. It helps in reviewing the research studies and other pertinent propositions in the related area of the study so that the past studies, their conclusion and deficiencies can be known and further research can be conducted. Therefore, the review of relevant literature has been conducted.

In the process of review, various concepts and various models relating to portfolio performance evaluation are studied and reviewed. Similarly, the research studies, articles, journals and the past unpublished research studies which are relevant are reviewed.

2.1 Conceptual/Theoretical Review

The commercial banks invest their funds in various assets as per their need of return and aversion of risks. The general concepts about the parts and various aspects of their investment should be known before evaluating the performance of those commercial banks. So, in the process of review of literature, first of all, various concepts related with the topic are studied.

2.1.1 Definition of Investment

Every individual earn and spend money. Rarely, their current money income exactly balances with their consumption. These imbalances will lead either to borrow or to save. When current income exceeds current consumption desires, individual tends to save the excess. The saving can be employed in such a way that its value is preserved and some additional income can be generated at a future date. Thus, investment is the current commitment of the savings that compensates for the time involved, the expected rate of inflation and uncertainty involved.

Investment, in its broadest sense, means the sacrifice of current dollars for future dollars. Two different attributes are generally involved: time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain. (Sharpe, Alexander & Bailey; 2005:1)

An investment is the current commitment of dollars for a period of time to derive future payments that will compensate the investors for (1) the time the funds are committed, (2) the expected rate of inflation, and (3) the uncertainty of the future benefits (Reilly, F.K.; 1994:1).

2.1.1(a) Forms of Investment

Accordingly, there are two forms of investment and they are:

(ì) Financial Investment

Investment in financial assets like common stocks, bond etc is called financial investments. Financial assets represent a financial claim. It is an asset that is usually documented by some forms of legal representation and is itself intangible. Financial assets can be viewed as claims to the income generated by real assets.

(ìì) Real Investment

A real asset represents an actual tangible asset that may be seen, felt, held or collected. Investment in such tangible assets is called real investment. Real assets have productive capacity and capital formation is the direct outcome of this productive investment.

However, it is noteworthy that, the real investment and financial investment are complimentary to each other. For instance, a company issues shares of common stock to finance the plant and machinery. Here, the purchase of plant and machinery is real investment by the financial investment and on the other hand, investment in common stock by the investor is the financial investment.

2.1.2 Portfolio Investment Process

The investment process describes how an investor makes decisions about what securities to invest in, how extensive these investments should be, and when they should be made. Portfolio investment is an ongoing process of action and analysis. Since, portfolio contains various investments, the withdrawal or expiry of one or few investments doesn't affect the process of the portfolio investment. Thus, the process of managing an investment portfolio never stops. Once the funds are initially invested according to the plan, the real work begins in monitoring and updating the status of the portfolio and the investor's need. However, the

basic problem of portfolio management is to establish an investment goal or objective and then decide how best to reach that goal with the investment alternatives available.

In order to have portfolio management, the investor must be aware of the investment process. The process of portfolio management involves a logical set of steps, yet applying this process to actual portfolios can be complex, and opinions are divided on how best to do so.

The steps followed in the process of portfolio investment can be explained as follows:

i. Setting Investment Policy:

The first step of the investment process is to set the investment policy. This policy acts as the roadmap specifying the investor's objectives and the amount of his or her investable wealth. This step involves the identification of the potential categories of financial assets for consideration in the ultimate portfolio.

ii. Performing Security Analysis:

The second step of the investment process is to perform security analysis. Security analysis involves examining a number of individual securities within the broad categories of financial assets.

Investors often think of their investment portfolio as consisting only of common stocks, bonds and other marketable securities. However, portfolio theory warns us that thinking of an investment portfolio only in terms of marketable securities is wrong. (Cheney and Moses, 1999:651)

iii. Construction of a Portfolio:

The third step of the investment process is the construction of portfolio. With the investment policy statement and information from the analysis of the investment alternatives, the investor implements the investment strategy and determines how to allocate the available funds among the alternatives found. This involves constructing a portfolio that will minimize the investor's risks while meeting the needs specified in the policy statement.

iv. Revising the Portfolio:

The fourth step of the investment process is portfolio revision. Portfolio revision involves both realizing that the currently held portfolio is not optimal and specifying another portfolio to hold with superior risk-return characteristics. The investor must balance the costs of moving to the new portfolio against the benefits of the revision. The revision of the portfolio constitutes the repetition of all the above three steps.

v. Evaluation of the Portfolio Performance:

The fifth step of the investment process is portfolio performance evaluation. It involves determination of the actual performance of a portfolio performance of a portfolio in terms of risk and return, and compares the performance with that of an appropriate "benchmark" portfolio.

In this way, with the changes in the situations and expectations, the investment process repeats itself on and on.

2.1.3 Investment Alternatives

There are various alternatives available to investors in the market and they are as follows:

a. Equity Securities
 ì. Common Stock
 ìì. Preferred Stock

b. Short-term Debt Securities
 ì. Treasury Bills
 ìì. Commercial Paper
ììì. Banker's Acceptance

c. Long-term Debt Securities
 ì. Government Securities
 ìì. Local Government Securities (Municipal Securities)
ììì. Corporate Bonds

d. Derivative Securities
 ì. Options
 ìì. Commodity Futures
ììì. Financial Futures
ìv. Options on futures
 v. Warrants
vi. Rights

e. Real Assets
 i. Precious Metals

ii. Real Estate
iii. Collectibles

f. Other Investment Alternatives
i. Pension Funds
ii. Mutual Funds
iii. Closed-end Companies

2.2 Portfolio Analysis

As explained above, the term investment has following three attributes:
i. Anticipation of Return
ii. Involvement of Risk
iii. Time Dimension
Thus, after identifying the possible investment alternatives, it is very important to conduct the analysis of the risk and return of the same collectively.

Each asset's expected return and risk, along with the expected return and risk for other assets and their interrelationships, are important inputs in portfolio selection. Using these inputs, efficient portfolios, defined as portfolios that maximize the expected return at any given level of risk, can be identified. These portfolios dominate all other portfolios with the same level of expected risk. (Cheney and Moses, 1999:651)

The objective of portfolio analysis is to develop a portfolio that has maximum return at whatever level of risk the investors seems appropriate. (Francis, 1998:228)

The risk and return of the security should be analyzed in terms of how that security affects the risk and return of the portfolio in which it is held. (Weston and Brigham, 1992:183)

Thus, risk and return analysis is an integral part of portfolio analysis.

2.2.1 Portfolio's Expected Return

The expected return on a portfolio is simply the weighted average of the expected returns on the individual assets in the portfolio with the weights being the fraction of the total portfolio invested in each asset. Since, the individual investments are the parts of the total portfolio, the

return from those individual investments crucial while determining the return from the portfolio.

2.2.2 Portfolio Risk

Risk is the possibility of deviation of returns which should better be calculated for the better decision making about the investment. Portfolio risk is measured by standard deviation and variance of the assets. However, the calculation of the portfolio risk is not as straightforward as the calculation of the portfolio's expected return. The risk inherent in any single asset held in a portfolio is different from the riskiness of that asset held in isolation. The variance of the portfolio is affected by risk of each asset included in the portfolio, proportion of each asset in the portfolio and the covariance of the return of assets.

2.3 Diversification and Portfolio Risk

An investor's objective is to make maximum return from the investment made at lowest risk. However, by investing only in one asset, this objective cannot be achieved. It can only be possible when invested in the combination of two or more assets and this combination is called Portfolio. Thus, the formation of the portfolio stabilizes the combined return reducing the risk. More precisely, it can be said that by creating a portfolio, the risk can be diversified. Thus, the diversification of portfolio helps to minimize the total risk.

The total risk of the portfolio can be classified as:

i) Systematic Risk

ii) Unsystematic Risk

Systematic risk is the variability of security's return with that of the overall stock market (J.C. Van Horne). Such type of risk affects all the firms in the economy and cannot be avoided or diversified such as war, inflation, recession, depression. It is measured by beta.

Unsystematic risk is the amount of a stock's variance unexplained by overall market movements (J.C. Van Horne). Such type of risk differs from one firm to another and can be avoided or diversified such as labor strikes, management errors, law suits.

Thus, the total risk involved in holding a portfolio is comprised of two parts:

Total Risk= Systematic Risk + Unsystematic Risk

2.4 Portfolio Performance Evaluation

Investors are always interested in evaluating the performance of their investment portfolio. Simply speaking, the portfolio performance evaluation is one of the important aspect of the investment decision making in which the analysis of historical or ex-post performance of the portfolio is done in a systematic manner.

For the purpose of portfolio ranking, returns must be adjusted for risk before they can be compared meaningfully. The simplest and most popular way to adjust returns for portfolio risk is to compare rates of return with those of other investment funds with similar risk characteristics. Thus, the comparison of performance with other similar investment is a useful step in evaluating performance. However, such rankings can be misleading as some managers may concentrate on high beta or aggressive growth stock where as other in reverse one. Thus, these all considerations suggest that a more precise means for risk adjustment is desirable.

Methods of risk adjusted performance evaluation using mean-variance criteria came on stage simultaneously with Capital Asset Pricing Model. Three great scholars/academicians namely William Sharpe, Jack Treynor and Michael Jensen recognized immediately the implication of the CAPM for rating the performance of the investment portfolio. Hence, some risk adjusted performance measures can be listed as:

i) Treynor's Measure
ii) Sharpe's Measure
iii) Jensen's Measure

2.4.1 Treynor's Portfolio Performance Measure

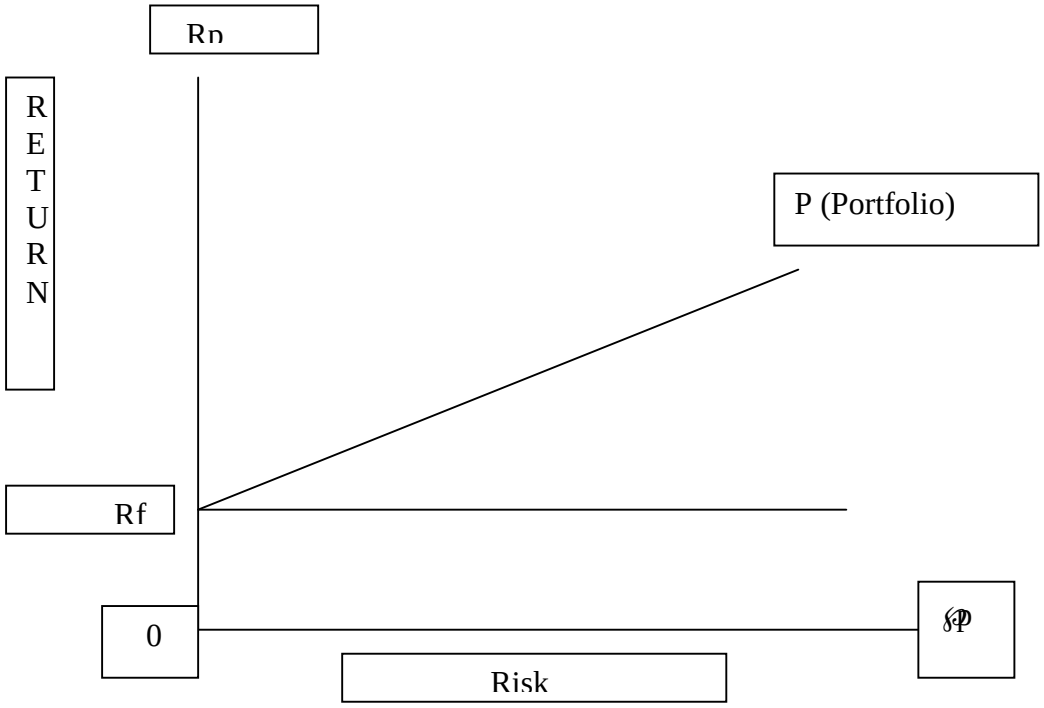
In an article in Harvard Business Review in 1965 A.D., Jack L. Treynor presented the first composite measure of portfolio performance that combined risk and returns in single performance measure.

Treynor was interested in a measure of performance that would apply to all investors regardless of their risk preferences. Building on developments in capital market theory, he introduced a risk-free asset that could be combined with different portfolios to form a straight portfolio possibility line. He showed that rational risk average investors would always prefer portfolio possibility lines with larger slopes because such high slope lines would place

investor on higher indifferences curves. The slope of this portfolio possibility line is the Treynor's portfolio performance measure. (Reilly and Brown, 2006:1045)

Figure: 1

Graphical Representation of the Treynor Index

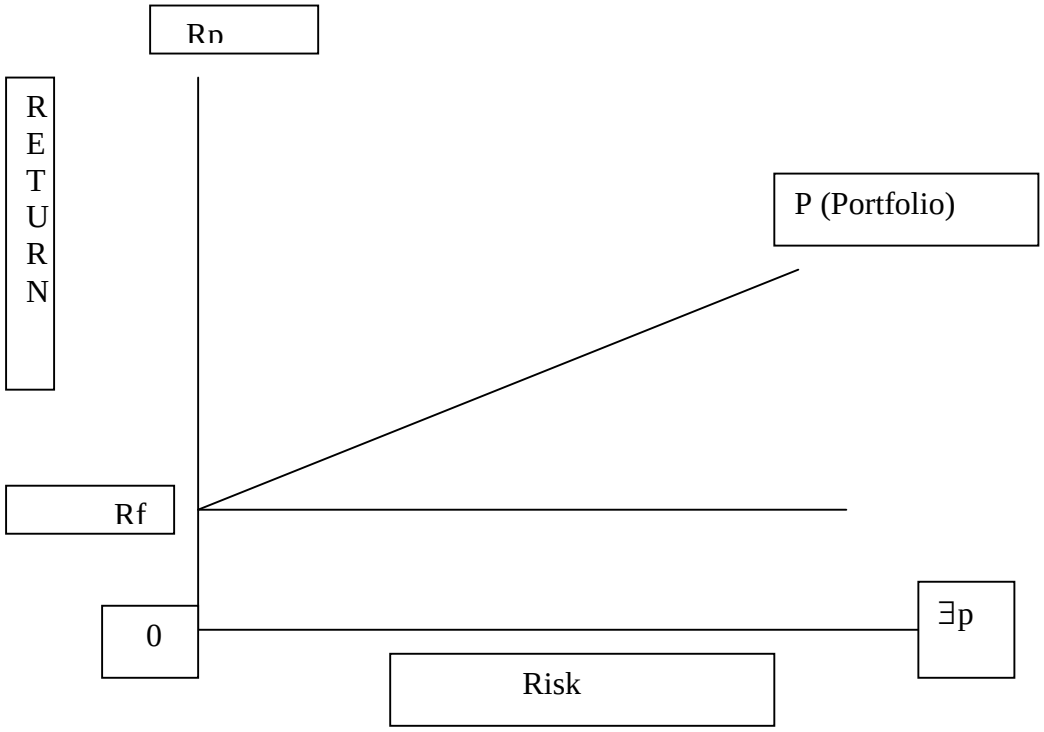


2.4.2 Sharpe's Portfolio Performance Measure

William F. Sharpe, one of the contributors to the development of the CAPM, introduced an alternative measure of portfolio performance evaluation in 1966 A.D. In the measure Sharpe used the total risk indicated by standard deviation as the appropriate measure of risk. The only difference in two measures developed by Treynor and Sharpe is the use of risk measure whereas both used the risk premium of the portfolio which is the return of portfolio over the risk-free return. However, the use of total risk as risk measure by the Sharpe was seen as surprise because he was one of the contributors to the development of CAPM, which describes the importance and usefulness of beta as a risk measure.

Figure: 2

Graphical Representation of the Sharpe Index



2.4.3 Jensen's Portfolio Performance Measure

Following Treynor and Sharpe, Michael C. Jensen introduced another portfolio performance measure in 1968 A.D. This measure is based on CAPM.

Jensen's measure (ℑp) represents how much of the rate of return on the portfolio is greater than the average returns adjusted for risk (or average return assigned by CAPM). A positive ℑp indicates the superior portfolio performance or selecting under valued portfolios.

The Jensen's measure of portfolio performance has advantages over the Treynor and Sharpe. First, it is easier to interpret in that in that an alpha value of 0.02 indicates that he portfolio generated a return of 2% per period more than what was expected given the portfolio's risk level. Second, it assists to know whether an asset is over or under valued.

If ℑp is positive, asset (portfolio) is undervalued.

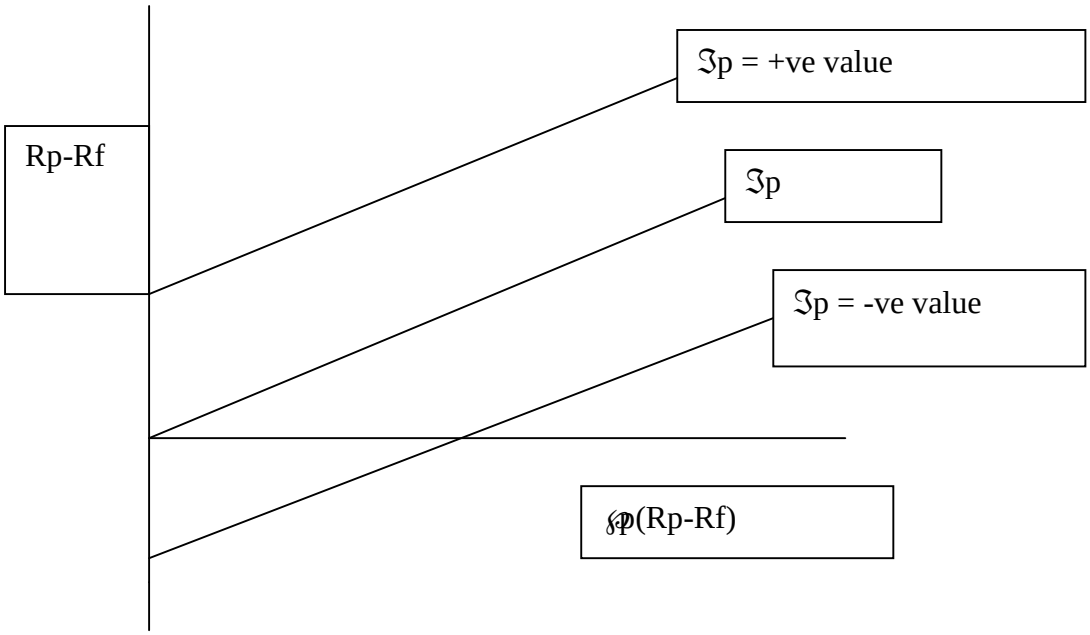
If ℑp is negative, asset (portfolio) is overvalued.

s

For ranking the portfolio according to their performance, it is advisable to divide the ℑp by ℘p so as to achieve a relative measure relative measure and provide a reliable rank.

Figure: 3

Graphical Representation of Jensen Model of Management Ability



2.5 Review of Related Models on Portfolio Management

2.5.1 Harry M. Markowitz and Portfolio Selection Model

Markowitz began a revolution by suggesting that the value of a security to an investor might best be evaluated by its mean, standard deviation and correlation to other securities in the portfolio. This audacious suggestion amounted to ignoring a lot of information about the firm, its earnings, dividend policy, capital structure, and competitor and calculating a few simple statistics. Detailing a mathematic of diversification, he proposed that the investors should focus on selecting portfolios based on their overall risk-reward characteristics instead of merely compiling portfolios from securities that each individually has attractive risk reward characteristics. In a nutshell, investors should select portfolios not individual securities.

The Markowitz model is a single period model, where an investor forms a portfolio at the beginning of the period. The assumption of a single period, coupled with the assumption about the investor's attitude toward risk, allows risk to be measured by the variance or standard deviation of the portfolio's return. The portfolio model developed by Markowitz is

based on the following reasonable assumptions. (Markowitz; 'Portfolio Selection' Journal of Finance, 1952:77-91)

The risk of individual asset or portfolio is based on the variability of returns (standard deviation or variance)
Investor's depend solely on their estimates of return and risk in making their investment decisions. This means that an investor's utility (indifference) curves are only a function of the expected return and risk.
Investors adhere to dominance principal. That is, for only given level of risk, investors prefer assets with highest expected return to assets with lower expected return and for the assets with the same return, the investors prefer lower to higher risk.
The expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are defined as the portion of the investor's wealth invested in a particular asset.

As securities are added to a portfolio, the expected return and standard deviation change in very specific ways, based on the way in which the added securities co-vary with other securities in the portfolio.

Markowitz's primary contribution consisted of developing a rigorously formulated, operational theory for portfolio selection under uncertainty. Due to the possibility of reducing the risk through diversification, the risk of the portfolio, measured as its variance, will depend not only on the individual variances of the return on different assets but also on the pair wise covariance of all assets. Hence, the essential aspect pertaining to the risk of an asset is not the risk of each asset in isolation but the contribution of each asset to the aggregate portfolio. However, the law of large numbers is not wholly applicable to the diversification of risks in the portfolio choice because their returns on different assets are correlated in practice. Thus, in general, risk cannot be eliminated, regardless of how many types of securities represented in a portfolio. (Poudel and Koirala, 2006:1)

2.5.2 Capital Asset Pricing Model

Based on the behavior of the risk-averse investor, there is implied an equilibrium relationship between risk and expected return for each security. In market equilibrium, a security will be expected to provide a return commensurate with its unavoidable risk. This is simply the risk

that cannot be avoided by diversification. The greater the unavoidable risk of security, the greater the return that investors will expect from the security. The relationship between expected return and unavoidable risk, and the valuation of securities that follows, is the essence of the Capital Asset Pricing Model (CAPM).

This model was developed by William F. Sharpe (1990 Nobel Prize winner in economics) and John Linter in the 1960s, and it ha shad important implications for finance ever since. Though other models also attempt to capture market behavior, the capital asset pricing model is simple in concept and has real-world applicability.

The CAPM is developed in a hypothetical world where the following assumptions are made about investors and the opportunity set.

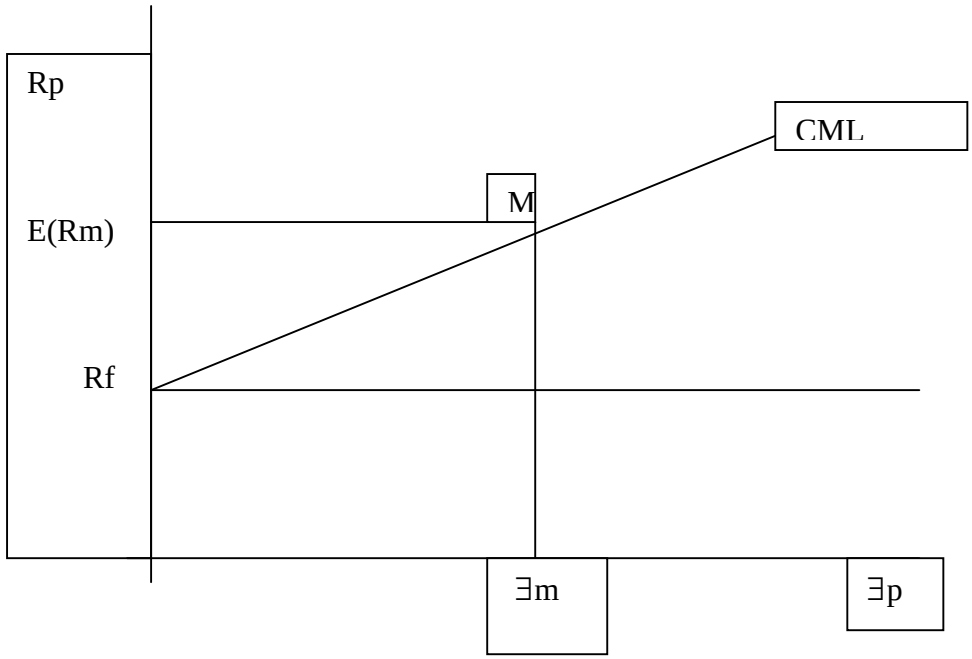
- All investors focus on a single holding period, and they seek to maximize the expected utility of their wealth by choosing among alternative portfolios on the basis of each portfolio's expected return and standard deviation.
- All investors can borrow and lend an unlimited amount at a given risk free rate of interest and there are no restrictions on short sales of any asset.
- All investors have identical estimates of the expected returns, variances and co-variances among all assets; that is, investors have homogeneous expectations.
- All assets are perfectly divisible and perfectly liquid.
- There are no transactions costs.
- There are no taxes.
- All investors are price takers; that is, all investors assume that their own buying and selling activity will not affect stock prices.
- The quantities of all assets are given and fixed.

2.5.2(i) Capital Market Line

When a risk free asset is introduced into Markowitz portfolio analysis, given the above assumptions, the efficient frontier is changed from a curve to a straight line. This new efficient frontier is called a Capital Market Line (CML). The efficient frontier represents the locus of all portfolios that has the highest return for a given level of risk. Once the investors develop efficient frontier, they do not have to evaluate assets that lie below the efficient frontier. They would choose only those sets that lie in the efficient frontier.

Figure 4:

Capital Market Line



The CML starts with the risk free asset, Rf, and is tangent to risky portfolio, M, on the Markowitz efficient frontier. Portfolio M is the only risky portfolio.

To the left of M, investors on the CML will hold both the risk free asset and risky portfolio. Since these investors are holding part of their investment in Rf, they are lending at the rate of Rf. All the portfolios on the line between Rf and M represent lending portfolios.

To the right of M, investors are borrowing at Rf and investing more in M they are utilizing leverage. Portfolio M is called the market portfolio and contains all assets. All portfolios on the line between M and L represent borrowing portfolio.

RfML represents the risk return trade off for efficient portfolios. It shows the capital market equilibrium relationship between risk and return for efficient portfolios consisting of various combinations of the risk free asset and market portfolios. If investors are to invest in risky securities, they must receive a risk premium [E (Rm)-Rf] to compensate for the added risk. Risk premium is excess return over the risk free rate, expected for incurring the risk associated with the market portfolio, ∃M.

Therefore,

$$\text{Slope of CML} = \frac{E(Rm) - Rf}{\exists M.}$$

The slope of the CML is called the Market Price Risk and is reward per unit of risk. Because the CML shows the trade off between return and risk for efficient portfolios, the unit of risk must be the portfolio standard deviation. Therefore, the equation for the CML is:

$$E(Rp) = Rf + \frac{[E(Rm) - Rf] * \exists P}{\exists M.}$$

Where,

E (Rp)= the required rate return on any efficient portfolio on CML

Rf =the risk free rate of return

E(Rm)=the expected rate of return on market portfolio

$\exists M$ =the standard deviation of returns on market portfolio

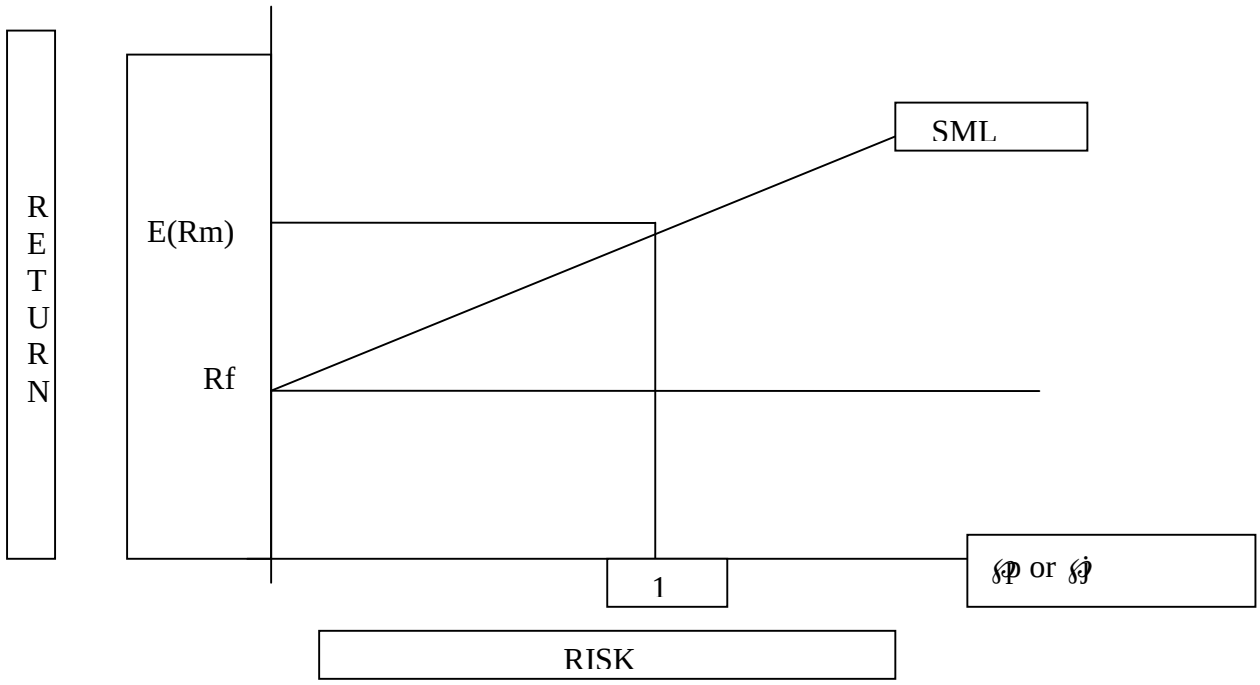
$\exists P$ =the standard deviation of returns on efficient portfolio

2.5.2(ii) Security Market Line

In the market equilibrium, the relationship between an individual security's expected rate of return and its systematic risk, as measured by beta, will be linear. This relationship is known as the Security Market Line. Under the assumptions of the CAPM, all securities lie along this line.

Figure: 5

Security Market Line



The above figure illustrates the Security Market Line. The figure shows that the expected return on a risky security of the risk free rate plus a premium for risk. This premium is necessary to induce risk-averse investors to buy a risky security. The expected return for the market portfolio is E(Rm) consisting of the risk free rate, Rf, plus the risk premium, E(Rm)-Rf.

Using the beta as an index of risk, the CAPM develops an equation, known as SML equation, to establish the relationship between return and risk. The equation is as under

$$E(Rj) = Rf + [E(Rm) - Rf]\beta j$$

Where,

E(Rj) =required return of the security 'j'

Rf =the risk free rate of borrowing and lending

E(Rm)=the expected return on market portfolio

β_j =beta coefficient for security 'j'

According to the SML equation, the required return on the security 'j' is an increasing function of beta coefficient (β_j). Beta coefficient is the measure of non-diversifiable. It is defined as the degree of movement in an asset or security's return in response to the overall return. Higher the level of non-diversifiable risk causes higher required return on the security and vice versa.

2.6 Review of Articles and Journals

i. Successful Portfolio Management and Risk Adjusted Performance Measurement (RAPM), by Julian Leake

Julian Leake provides a thorough overview of the benefits of risk adjusted performance measurement. He demonstrates how it can be a key risk management tool, especially when combined with an economic capital allocation framework, and how to avoid common pitfalls of RAPM implementation.

Julian Leake quotes-"The concept of risk adjusted performance measurement will not be new to professional portfolio managers and students of the portfolio theory. Measures of portfolio returns on risk adjusted basis, such as Sharpe ratios, have been applied or a number of years in the investment management community to measure investment returns. In the past few years other types of financial institutions (such as investment and wholesale banks) have been striving to implement such measurement systems on an enterprise-wide basis."
He has further described the applications for RAPM. Risk adjusted performance measures have a number of applications within an institution, some of which relate to the development of corporate strategy and others that relate to the effective management of risk at business unit level.

- Corporate Level Application: The optimization of risk adjusted returns should lead to an enhancement of shareholder value by assisting senior management in allocating economic capital.
- Business level Application: As with the corporate centre, strategic business units such as lending and trading have generally measured performance in terms of total return

or return over a capital factor such as equity, neither of which has been adjusted to reflect the risk taken to generate the returns.

The implementation of an enterprise wide RAPM and capital allocation framework presents significant issues both from an organizational and technical perspective. However, linking such a framework to risk management should result in an increase in shareholder value through the improved management of the risk-return trade-off within a bank. Such a framework should seek to minimize risks within the bank fro which it earns an adequate return, while encouraging controlled risk-taking for which the bank can earn a disproportionately high return compared to the level of risk. With the correct risk management methodology and infrastructure, an institution should see increased profits, more efficiently allocated capital and reserves, and the development of a stronger risk control culture.

ii. Market Timing and Portfolio Management, by Dwight Grant published in Journal of Finance, 1978 A.D.

"What constitute a superior return/risk level? There are two possibilities. A portfolio may be a small fraction of an overall portfolio which is efficiently diversified. If so, we are concerned with the marginal contribution of each portfolio to the overall portfolio's expected return and total risk or variance. These are measured by a portfolio's expected return and it's covariance of return with the market portfolio. At the other extreme, a portfolio may represent substantially all of the owner's financial wealth. If so, the owner is concerned with the expected return and the total risk or variance of return of the portfolio. In the former circumstances, the manager is concerned with his portfolio's performance, the ratio of expected risk premium to systematic risk. In the second case, the manager's objective is to achieve super efficiency, maximization of the ratio of expected risk premium to total risk."

iv. The Edward J. Kane and Stephen A. Buser's study (1979)

This study of Edward J. Kane and Stephen A. Buser in the title "Portfolio diversification at Commercial Banks" (Kane and Buser, 1979:19-31) deals with how a firm performs a useful function by holding a portfolio of efficiently priced securities.

It is the rational for a firm to engage round of asset diversification on behalf of its shareholder's even when all assets are priced efficiently and available for direct purchase by shareholders. As away of testing their perspective empirically, they estimates regression

model designed to explain the number of distinct of U.S. treasury and federal agency debt held in a time series of cross section of large U.S. commercial Banks. They interpret the systematic pattern of the diversification observed for large U.S. commercial banks as evidence that banks stockholder from relatively uniform diversification clientele. For firm, marginal benefits from diversification takes reduction in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weight against the explicit and implicit marginal cost of diversification.

Kane and Buser drawn following concluding remarks.

- Even wealthy investors should be sensitive to administrative costs associated with selecting, evaluating, managing and continually keeping track of a large number of securities.
- Either homemade of firm produced diversification reduces the variance of shareholder's portfolio return. If homemade of firm produced diversification bears inordinately high levels of information risk. Some benefits of the firm produce diversification might not be reproducible by individual investors acting on their own.
- Investors with even modest resources, the stock of financial institutions should be relatively less attractive than the stock of that avoid extensive diversification costs by engaging in specialized activities.
- Marginal diversification costs decline as bank size increases. But level off, when total deposits reach 500 million. Beyond this point marginal diversification costs are independent of bank size.

v. 'Efficient Banking', by L.D. Mahat, The Kathmandu Post, 28th April, 2003, Nepal.

In this article, the writer has accomplished that the efficiency of banks can be measured using different parameters. The concept of productivity and profitability can be applied while evaluating efficiency of banks. The term productivity refers to the relationship between the quantities of outputs produced. An increase in productivity means that more output can be produced from the same inputs or the same outputs can be produced from fewer inputs. Interest expense to interest income ratios shows the efficiency of banks in mobilizing resource at lower cost and investing in high yielding asset. In other words, it reflects the efficiency in use of funds.

vi. ‘Managing a Banking Risk’, by Chandra Thapa, The Kathmandu Post, 9th March, 2003, Nepal.

Banking and financial services are among the fastest growing industries in the developed world and are also emerging a cornerstone for other developing and underdeveloped nations as well. Bank primary function is to trade risk. Risk cannot be avoided by the bank but can only be managed. There exist two types of risk. The first is the diversifiable risk or the firm’s specific risk which can be mitigated by maintaining an optimum and diversified portfolio. This is due to the fact that when one sector does not do well, the growth in another might offset the risk. Thus, depositor must have the knowledge of the sectors in which the banks have made the lending. The second is non diversifiable risk and it is correlated across borrower, countries and industries. Such risk is not under the control of the firm.

According to Mr. Thapa, risk management of the banks is not only crucial for optimum trade-off between risk and profitability but is also one of the deciding factors for overall business investment lending to the growth of the economy. Managing risk not only needs sheer professionalism at the organizational level but appropriate environment is also needed to develop. Some of the major environmental problems of Nepalese banking sector are under government intervention, relatively weak regulatory fame, if we consider the international standard, meager corporate governance and the biggest of all is the lack of professionalism. The only solution to mitigate the banking risk is to develop the badly needed commitment eradication of corrupt environment especially in the disbursement for lending and formulate prudent and conductive regulatory framework.

2.7 Review of Research Studies/Thesis

The thesis related with the portfolio of stocks as well as the portfolio of various investment and assets, are reviewed as reference which have made this study easier. The thesis/studies reviewed are presented below in conclusive manner.

Natasha Shrestha (2005) prepared the thesis on the title ‘Portfolio Analysis of Common Stock of Commercial Banks in Nepal’. The main objective of the study is to find out level of portfolio risk and return on stock of commercial bank investment. The other specific objectives are;

- To analyze the risk and return of common stock of reviewed banks.

- To analyze the market price movement of the common stock.
- To try to find out the best portfolio from NEPSE.

Major Findings:

- Expected return of HBL stock is highest i.e. 53.68% and NABIL is lowest i.e. 32.72% among the banks. NBBL and SCBL have expected return of 47.05% and 39.02% respectively. The risks of NBBL is highest i.e. 93% and SCBL has a lowest risk i.e. 55.42% HBL and NABIL have a risk of 84.98% and 60.86% respectively.
- The correlation of stock, return and market shows that all of the banks stock are highly positive correlated with the market. The correlation values of common stock of all bank with the markets is nearly equal +1. Stock of NBBL is highest positive correlation which has values of +O.918 and HBL is lowest positive correlated which has a value of +0.82.
- All of banks beta of common stock is greater than 1. Beta greater than 1 implies that stocks are more volatile than market or said to be aggressive stock. NBBL has the highest beta i.e. 2.1785 and SCBL has the lowest beta i.e. 1.2142. All of the stocks are aggressive.
- NBBL has highest portfolio return i.e. 7.98% and highest portfolio risk i.e. 21.70%. NBBL has invested its more funds on risky assets and fewer funds on risk free assets. So there exist highest risks as well as return. The principle “higher the risk higher the return” is applied for it. Likewise, HBL has the lowest portfolio return i.e. 5.33% and portfolio risk 0.35%. It has invested more of its fund in on risk free assets and least fund in risky market. The principle “no risk no gain” is applied for it.
- The performance measure shows the ranking stock by different method. The Sharpe’s performance shows that performance of stock of SCBL is 1st and HBL is 4th. The Treynor’s performance measure shows that performance of stock of NBBL is 1st and HBL is 4th. Likewise Jenson’s performance measure shows the performance of stock of SCBL is 1st and NBBL is 4th among the banks.
- Among four banks optimal portfolio return and risk shows that return NBBL is highest i.e. 32.7% and return of HBL is lowest i.e. 24.9% and HBL has a highest portfolio risk of i.e. 61% and SCBL has a lowest portfolio risk of 34.8%.

Khem Nath Poudyal (2005) prepared the thesis on the title 'Formation of optimum investment portfolio in Grade A Companies, listed in the Nepal Stock Exchange'. The main objective of this study is to analyze the risk return characteristics of the securities with a view to form an optimum investment portfolio among the securities of the companies listed in NEPSE under Grade 'A', on the basis of monthly data from mid July 2003 to mid March 2005. The other specific objectives are;

- To measure monthly return and risk of the securities of the sample companies.
- To provide suggestions based on the analysis of data.
- To select securities to be included in the portfolio.
- To form optimum investment portfolio.

Major findings:

- The study shows that the stocks of Nepal Bangladesh Bank Ltd is being ignored for the investment because the stocks are with negative return within the period of the study and at the same time, on the basis of return characteristics, the stock of Nabil Bank Ltd. is the best one for investment.
- The stocks of one industry (i.e. banks) are positively correlated, which will not reduce the level of risk as expected. So, it is felt necessary to perform the study across industries such banks, financial institutions, insurance and on its basis it is found that the stocks selected for portfolio purpose are negatively correlated. Therefore, it would be beneficial to construct investment portfolio among the stocks of different industries rather than limiting within one industry.
- On the basis of the analysis of the portfolio return, portfolio standard deviation and coefficient of variation, the formation of the portfolio with the stocks of Nabil with 50%, NBL with 20% and EBL 25% investment proved to be the optimum in one industry whereas 50% Nabil, 25% NMBFL and 25% HGCIL proved to be the even better investment portfolio because of the spread across industries and the stocks being negatively correlated. Depending upon the Sharpe Single Index Model, it is observed that 16.25% investment in HGCIL, 25% in NMBFL, 30% in NIBL, 20% in EBL and 8.7%in Nabil would be the optimum investment portfolio investment portfolio.

Nagina Shrestha (2008), prepared the thesis on the title 'Portfolio Management Practice and Portfolio Risk and Return Analysis of the Joint Venture Commercial Banks of Nepal'. The main objective of the research is to analyze and compute portfolio risk and return. Beside of the main objective, there is other objective to analyze the holding period return of the joint venture sector. Risk analysis have significance effect on the portfolio analysis, therefore risk diversification is the objective of the study. The other specific objectives are;

- To analyze and compute holding period return of joint venture commercial banks.
- To analyze the portfolio risk and return between or among joint venture commercial banks
- To distinguish the diversifiable and non diversifiable risk of joint venture commercial banks.

Major findings:

- The expected rate of return of EBL is the highest among Nabil Bank, HBL and SCBNL. So, it can be concluded that EBL has good performance.
- CV is a measure of dispersion, which is useful in comparing the risk of assets with the expected return. CV of HBL is the lowest among the sample banks. Therefore, it is good to invest in HBL as compare to other sample banks.
- EBL has the highest diversifiable risk, which is totally removed or minimized by using portfolio methods. But Nabil Bank has the highest non diversifiable risk, which is minimized up to certain level but cannot be removed. The investors should bear this risk.
- Beta coefficient measure the systematic risk that exists in the individual assets. The value of beta less than +1 is defensive security and greater than +1 is aggressive security. Nabil Bank has the highest beta coefficient (i.e. 1.5) among other sample banks' assets. Therefore, Nabil Bank's asset is more aggressive and highly volatile in nature. Similarly, the beta coefficient of HBL is 0.75, less than +1, so the stock of HBL is defensive and exist low systematic risk.
- In the context of portfolio risk and return of Nepalese joint venture banks' stocks, they took higher portfolio risk to increase little bit portfolio return, which is the sign of unstable economy.

- The investors cannot take appropriate measures and tools to select portfolio securities for investment. The portfolio investment is heavily influenced by signaling effect in market.

Dipesh Bhatta (2009) prepared the thesis on the title 'Portfolio Management of Listed Finance Companies in Nepal'. The main objective of the study was to identify the present situation of portfolio management of finance company in Nepal with the help of risk–return and other relevant variables which conclude that the most of the finance companies have enough unsystematic risk that means there is not effective portfolio management of listed finance companies. In the context of portfolio risk and return of Nepalese finance companies, investor has to bear a higher portfolio risk to increase little bit of portfolio return.

The major problem to manage the portfolio is volatility of different securities in Nepalese capital market. For the selection of the portfolio in Nepal, technical analysis does not work effectively but fundamental analysis work effectively. In Nepalese stock market, passive strategy is more suitable than active strategy to achieve better result. Corporate investor think portfolio evaluation is necessary but due to lack of specific knowledge, they depend on conventional method.

Rabindra Rijal (2010) prepared the thesis on the title 'Portfolio Analysis of Investment Pattern of Commercial Banks in Nepal'. The main objective of the research is to analyze the existing situation of the investment pattern of the commercial banks as well as the present situation of the portfolio performance. Similarly, there are other specific objectives also which the researcher has undertaken for the study.

- To highlight the concept of investment and loans and advances portfolio.
- To highlight the relationship of investment with total deposit, loan and advances, net income etc.
- To evaluate the financial performance of commercial banks in term of investment strategies.
- To analyze the risk and return ratio of commercial banks.
- To analyze how commercial banks manage their risk and return on investment using portfolio concept.

Major findings:

- In investment portfolio, the industry average investment on government securities is 73.75%, among the commercial banks, EBL has invested the highest amount of funds on government securities i.e. 96.28% and NIBL has invested lowest 49.55%, other banks SCBL, NABIL and HBL have invested highest amount of funds on government securities among commercial banks i.e. 73.83%, 78.82% and 80.27% respectively and EBL has invested lowest amount of funds on share and debenture i.e.3.72%. NABIL and HBL have invested lower than industry average and the industry average in this case is 24.25%, on which SCBL and NIBL is invested higher than industry average i.e. 26.17% and 50.45% respectively. In case of NRB bonds no banks are investing. There is zero amount of investment.
- There is positive correlation coefficient between return on investment made by commercial banks in government securities and loan and advance i.e. 0.733 and there is negative correlation coefficient between return on investment made by commercial banks in government securities and share and debenture and loan and advance and share and debenture i.e. -0.143 and -0.476 respectively. This shows the low degree of negative relationship between assets. Such assets are very useful to make portfolio combination, So that the risk of the portfolio will be significantly reduced.
- The total investment to total deposits ratio of selected commercial banks shows that SCBL is the most successful in utilizing its resources on investment than others commercial banks. The mean ratio and Coefficient of Variation also reveals that NABIL and HBL are moderate in utilizing its resources on investment. While NIBL and EBL are not so successful in better utilizing their total deposits on investment of various assets.
- The loan and advance to total deposit ratio of selected commercial banks shows that EBL is the most successful in utilizing its resources on loan and advance than other commercial banks. The mean ratio and Coefficient of Variation also reveals that NIBL and NABIL are moderate in utilizing its resources on loan and advance while SCBL and HBL are not so successful in better utilizing their total deposits on loan and advance.
- The total investment, total deposit and investment on share and debenture, loan and advance and government securities of commercial banks are increasing per year. In trend analysis, the investment of commercial banks on share and debenture is

increasing more rapidly than government securities and government securities is increasing more rapidly than loan and advance during the period of the study.

2.8 Research Gap

Commercial Banks invest their deposit in different profitable sector according to the directives and circulars of the Nepal Rastra Bank and guidelines and policy of their own bank. Financial analysis statement has to be prepared according to direction of NRB. Nepal Rastra Bank's policy and guidance are changing according time. So, the up to dated study over the change of time frame is major concern for the researcher and concerned organization as well as industry as a whole. This study covers the more recent financial data and analysis is done with in the latest guidelines and curriculum of Nepal Rastra Bank.

The review of the above relevant literature has contributed to enhance the fundamental understanding and knowledge, which is required to make study meaningful and purposive. However, the thesis prepared by the researcher is different from them. According to the research undertaken, following issues are mentioned which are different from that of the previous studies:

- Latest data is taken from 2003/04 to 2009/10.
- The portfolio evaluation has been done using the three risk-adjusted portfolio performance measures and they are:

  → Sharpe Performance Measure (Sp)
  → Treynor Performance Measure (Tp)
  → Jensen Performance Measure (Jp)

- The banks undertaken for the study have been divided into two groups namely Group A for earlier established banks like Nabil, NIBL and SCBNL and Group B for later established banks like Nepal SBI, BOK and Laxmi Bank.
- For the study to be more useful, the researcher has not only done the intra-group comparison but also done inter-group comparison.
- No research has been undertaken regarding the portfolio performance between the six banks that the researcher has chosen for the study.

Hence, this study fulfills the prevailing research gap about the in depth analysis of the portfolio performance which is the major concern of the shareholders and stakeholders.

The study will be fruitful to those interested person, parties, scholars, professors, students, businessmen and government for academically as well as policy perspective.

Chapter III

Research Methodology

3.1 Introduction

A research is an in-depth study or an advancement of knowledge about the subject matter. The basic objective of the research is to revise the accepted conclusion, in the light of newly discovered facts through a critical, careful and exhaustive investigation. Similarly, research methodology is the process of arriving at the solution of the problem through planned systematic dealing with the collection, analysis and interpretation of facts and figures. The research methodology considers the logic behind the methods used in the context of research study and explains why particular method or technique is used. This study therefore, highlights about how the research problem has been defined, what data have been collected, what particular method has been adopted.

3.2 Research Design

The research design refers to the conceptual structure within which the research is conducted (Kothari, 1978:22).

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Selltiz, 1962:50).

A research design is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern of framework for the project that stipulates what information is to be collected, from which sources and by what procedures. Thus, a research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. It includes an outline of what the investigator will do from writing the hypothesis and their operational implications to the final analysis of data.

For research, there exits different types of research design like; Historical research, Descriptive research, Case study research, Field study research, Analytical research, True experimental research and so on.

The present study is mainly based on two types of research design and they are descriptive and analytical. Descriptive research design describes the general pattern of the Nepalese investors, business structure, problem of portfolio management etc. The analytical research design makes analysis of the gathered facts and information and makes a critical evaluation of it.

3.3 Population and Sample

From the title of the study, it is obviously clear that the research covers a vast area. The population of the study is comprised of all the commercial banks of Nepal which are 32 in number. But it is not possible to study the data of all those banks regarding the research topic. Therefore, among the total population of the commercial banks, six commercial banks namely Nabil Bank Ltd, SCBNL, NIBL, Nepal SBI Bank Ltd, BOK Ltd and Laxmi Bank Ltd, are taken as sample for the study and they are further divided into two groups according to their establishment.

- Group A: The Group A consists of SCBNL, Nabil Bank Ltd and NIBL.
- Group B: The Group B consists of BOK Ltd, Nepal SBI Ltd and Laxmi Bank Ltd.

3.4 Nature and types of Data

The study is based on primary and secondary data.

1. Primary Data

The data collected for the first time for the purpose of study being conducted is known as primary data. These data are therefore collected through the field survey with the help of a set of questionnaire for the officials of the commercial banks.

2. Secondary Data

If the data are compiled from any other sources, it is known as secondary data. These data are collected from NRB directives, journals, articles and other published and unpublished related documents, annual reports.

The thesis study basically depends upon the information and data relating to the six commercial banks taken as the sample for the study. Thus, the main sources of data are these six commercial banks.

3.5 Sources of Data

The research study is based on both primary and secondary data. The source of primary data is mainly questionnaire methods. A set of 13 questionnaires is developed for various respondents. These are allocated to them and collected after some times.
Generally, the study is based on secondary data and for this different websites, annual reports of the banks undertaken for the study have been a great source of information for the researcher.

3.6 Data Collection Procedures

In this study, data have been gathered from the secondary and primary sources. The data of different financial variables related with portfolio performance have been collected basically from the "Financial Statement of Commercial Banks" and "Trading Report" published by respective commercial banks and Nepal Stock Exchange Limited. The supplementary data and information have been also obtained from the annual reports published by concerned banks. Besides the data have been acquired from other various sources like annual reports, Nepal Stock Exchange Limited and Security Board of Nepal. For the primary data, the indirect and informal talks with persons of the concerned fields (finance and related area) have also been made. Besides this, primary data is collected by distributing research questionnaire to 100 respondents.

3.7 Data Analysis Tools

In every study, the crucial part is the analysis of the data collected. The result of the analysis is solely based on the tools used for it.

In the study, the primary data collected are reviewed thoroughly and going through all the responses, the major findings and conclusions are prepared and placed in the thesis.
In the same way, the major portions of the data for the study are secondary data. Thus, the analyses of those data are done with the use of the various popular models and their related formula. The mostly used formulas are:

i. Weight
The weight represents the portion or parts. In calculating the weight, the total weight is considered as 100%.

$$W_A = \frac{A}{A+B+C+\ldots\ldots\ldots\ldots\ldots +n}$$

In the above formula, we can see that A is the part of the total which contains A, B, C….n. Similarly, for the calculation of the weight B, the amount B is divided by the total amount.

ii. Expected Return
The expected return is the estimated return from any investment any investment which is calculated using the past returns. The cumulative past returns are divided by the number of times the returns are received.

$$R_i = \frac{\phi R}{N}$$

Where,
Ri = Expected Return
ϕR = Sum of the past returns
N = Number of years
iii. Expected Portfolio Return
The expected rate of return for a market portfolio of investments is simply the weighed average of the expected rates of the return for the individual risky investments in the

portfolio. The weights are the proportion of the total value for the individual investment. The expected return of the portfolio can be determined using the following equation:

$$r_p = r_f + \frac{(r_{mp} - r_f)}{\sigma_{mp}} \sigma_p$$

Where,

r_p = Expected Portfolio Return

r_f =Risk free return

r_{mp} =Expected return of the market portfolio

σ_p =Standard deviation of the portfolio

σ_{mp} = Standard deviation of the market portfolio

iv. Risk-Adjusted Performance Measure

The risk-adjusted portfolio performance measures constitute four methods or measures. However, only three out of them are described and used for analysis of the data in this study.

A. Sharpe's Measure

Sharpe's technique is the ratio of the risk premium of the portfolio divided by the standard deviation of the portfolio's return i.e. the risk premium return earned per unit of the total risk. Since, all the investors want to maximize their return; a larger value of Sp (larger slope) will be preferred by them. However, this measure provides relative, but not absolute rankings of portfolio performance.

$$S_p = \frac{r_p - r_f}{\sigma_p}$$

B. Treynor's Measure

The slope of Treynor's performance measure determines the portfolio's risk premium return per unit of risk. The numerator is the risk premium and the denominator is a measure of risk. Risk premium is the excess of the portfolio return over the risk free return whereas the

systematic risk or Beta is used as the appropriate measure of risk. Since, all the investors want to maximize their return; a large value of Tp (larger slope) will be preferred by them. However, this measure provides relative, but not absolute rankings of the portfolio performance.

$$Tp = \frac{\bar{r}p - rf}{\beta p}$$

C. Jensen's Measure

Jensen's measure of portfolio performance evaluation mainly involves two steps. First of all calculation of the return of a given portfolio on the basis of CAPM i.e. using βp, rf and rmp. Secondly, comparing the actual realized rate of return of the portfolio with the calculated or predicted return. This will provide the value for alpha which represents the management ability.

$$\alpha p = \bar{r}p - [\, rf + \beta p\, (\bar{r}mp - rf\,)\,]$$

v. Standard Deviation

The standard deviation (σ) is the measures of investment risk. Smaller the standard deviation, lower will be the degree of risk.

$$\sigma = \sqrt{\frac{(\,Rs - \bar{R}s)^2}{n}}$$

The standard deviation for a portfolio of assets is a function of the weighted averages of the individual variances (where the weights are squared) plus the weighted covariance between al the assets in the portfolio. The very important point is that the standard deviation for a portfolio of the assets encompasses not only the variances of the individual assets but also

includes the covariance between all the pairs of individual assets in the portfolio. Thus, the market portfolio risk will be measured as

$$\sigma_{mp} = \sqrt{w^2_A \sigma^2_A + w^2_B \sigma^2_B + 2Cov(A,B)\, w_A\, w_B}$$

3.8 Limitations

- Among the 32 commercial banks in Nepal, only 6 of them have selected for the study.
- Although the study attempts to make the empirical analysis, the period of the study of six years may serve as a constraint for study.
- The study is based on the annual data only. This limits the reliability of the analysis. Deeper and more introspective views of monthly or quarterly data might significantly change the outcome of the analysis.
- The empirical analysis is based on both primary and secondary sources of data, the authenticity of which may be questioned, as there are variations in same data at different sources.
- The unavailability an inconsistencies regarding some data made it necessary to adjust them for the necessary analysis.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

This chapter deals with the presentation, interpretation and analysis of the study through definite course of research methodology. The basic objective of the chapter is to analyze and interpret the data by using financial and statistical tools. As data presentation and analysis is the crucial part of any research, the purpose is to organize the collected data so that it can be used for interpretation whereas analysis of the data is to convert it from an unprocessed to understandable presentation.

4.1 Methods and Techniques of Analysis

In this chapter various techniques and methods are used in the evaluation of the portfolio performance of sample commercial banks of Nepal undertaken in order to fulfill the objectives of the study. The available data have been tabulated, presented and analyzed. In this process different financial and statistical techniques have been used to analyze and interpret the findings of the study.

The financial techniques such as Treyner, Sharpe and Jensen Performance Measure have been used to make the comparison of portfolio management of the sample banks whereas the statistical techniques such as Covariance, Standard Deviation, Correlation Coefficient, Beta have been used to make the measurement of the risk and involved in the portfolio management.

4.2 Analysis of Data

In this section, the data collected through a definite course of research methodology are analyzed to reach a certain conclusion. The analysis of data involves two aspect:

- Analysis of Secondary Data
- Analysis of Primary Data

4.2.1 Analysis of Secondary Data

This section analyses the required secondary data collected from different sources such as internet search, annual reports, journals, articles. The analysis of the secondary data involves

the calculation of the risk free rate, weight of the investment of the sample banks, market interest rate and risk and return analysis of the sample banks taken for understudy.

4.2.1.1 Calculation of Risk-free Rate

Risk-free assets can be defined as an asset which ensures that the investor will get the return from it i.e. there will be no deviation in the future return. The treasury bills are considered as risk-free rate. Due to the limitation of data availability 91 days T-bills and 364 days T-bills are taken.

Table: 4.1
Risk-free Rate

Fiscal Year	**91 days T-bills Rate (%)**	**364 days T-bills Rate (%)**	**6 Year's average T-bills Rate (%)**
2004/05	3.48	4.71	4.095
2005/06	2.93	4.15	3.54
2006/07	2.46	4.32	3.39
2007/08	2.84	3.95	3.395
2008/09	2.42	3.5	2.96
2009/10	4.22	5.49	4.855
			Total = 22.235%
			Average = 3.706%

(Source: www.nrb.org.np)

In the above table, 91 days T-bills and 364 days T-bills are taken for the calculation of risk free rates. From 91 days T-bills and 364 days T-bills, 6 years average T-bills rate is calculated. The 6 years average T-bills rate of the year 2004/05, 2005/06, 2006/07, 2007/08, 2008/09 and 2009/2010 are 4.095%, 3.54%, 3.39%, 3.395%, 2.96% and 4.855% respectively. The average of 6 year's average T-bills rate is 3.706%.

4.2.1.2 Portfolio Investment of Selected Commercial Banks

The portfolio investment in treasury bills, company shares and loans, advances and overdraft is taken. The portfolio investment of commercial banks is rather in many sectors than the sectors presented.

4.2.1.2. i Portfolio Investment of Nabil Bank Ltd.

Table: 4.2
Calculation of Weight of Investment of Nabil Bank Ltd.

Amount in 'Rupees'

Fiscal Year	Treasury Bills	Company Shares	Loans, Advances and Overdraft
2004/05	664,627,668	22,610,000	10,823,649,899
2005/06	1,224,468,660	22,810,000	13,033,252,903
2006/07	4,085,835,004	57,853,000	15,659,965,860
2007/08	3,788,386,842	80,551,900	21,549,684,444
2008/09	1,838,819,940	82,501,900	27,999,012,071
2009/10	5,865,884,661	159,857,000	33,030,968,688
Total Investment	17,468,022,775	426,183,800	122,099,533,865
Average Investment	2,911,337,129	71,030,633	20,349,922,310
Investment Weight	0.125	0.003	0.872
Risky Investment Weight		0.003	0.997

(Source: www.nabilbank.com)

The above table revals investment of Nabil Bank on treasury bills, company shares and loans, advances and overdraft. The investment in the loans, advances and overdraft is in increasing trend. Similarly, investment in treasury bills has also increased except in FY 2007/08and FY 2008/09. However, it has increased in FY 2009/10. In the same way, the investment in the shares of other companies is also increasing. However, the difference in the investment weights of these three sectors exists. Nabil Bank has invested its 12.5% of funds in government treasury bills, 0.3% in shares of other companies and 87.2% in the loans, advances and overdraft. Similarly, considering only the risky investment in shares of other companies and loans, advances and overdraft the investment weights 0.3% and 96.7% respectively.

4.2.1.2. ii Portfolio Investment of Standard Chartered Bank Nepal Ltd.

Table: 4.3
Calculation of Weight of Investment of SCBNL

Amount in 'Rupees'

Fiscal Year	Treasury Bills	Company Shares	Loans, Advances and Overdraft
2004/05	5,089,367,847	13,348,000	8,106,139,607
2005/06	7,210,500,501	15,343,000	8,905,128,113
2006/07	5,995,101,329	44,943,000	10,537,453,109
2007/08	7,157,731,943	106,043,000	13,354,578,015
2008/09	9,050,988,434	106,925,500	13,679,756,990
2009/10	7,878,573,686	106,925,500	15,956,955,268
Total Investment	42,382,263,740	393,528,000	70,540,011,102
Average Investment	7,063,710,623	65,588,000	11,756,666,517
Investment Weight	0.3740	0.0035	0.6225
Risky Investment Weight		0.0055	0.9945

(Source: www. standardchartered.com.np)

The above table reveals investment of SCBNL on treasury bills, company shares and loans, advances and overdraft. The investment in the loans, advances and overdraft is in increasing trend. Similarly, investment in treasury bills is in the changing trend. It is the highest in the FY 2008/09 but has decreased again in 2009/10. In the same way, the investment in the company shares is in the increasing trend and in FY 2008/09 and FY 2009/10 it is same. SCBNL has invested its 37.4% of funds in government treasury bills, 0.35% in shares of other companies and 62.25% in the loans, advances and overdraft. Similarly, considering only the risky investment in company shares and loans, advances and overdraft the investment weights 0.55% and 99.45% respectively.

4.2.1.2. iii Portfolio Investment of Nepal Investment Bank Ltd.

Table: 4.4
Calculation of Weight of Investment of NIBL

Amount in 'Rupees'

Fiscal Year	Treasury Bills	Company Shares	Loans, Advances and Overdraft

2004/05	1,948,500,000	17,738,000	10,258,243,592
2005/06	2,522,300,000	17,738,000	13,013,861,983
2006/07	3,256,400,000	35,253,000	17,482,051,743
2007/08	3,155,000,000	54,545,500	27,145,503,800
2008/09	2,531,300,000	60,970,500	36,241,206,558
2009/10	3,911,850,000	63,345,500	40,318,308,062
Total Investment	17,325,350,000	249,590,500	144,459,175,738
Average Investment	2,887,558,333	41,598,417	24,076,529,290
Investment Weight	0.107	0.0015	0.8915
Risky Investment Weight		0.0017	0.9983

(Source: www.nibl.com.np)

The above table reveals investment of Nepal Investment Bank on treasury bills, company shares and loans, advances and overdraft. The investment in the loans, advances and overdraft is in increasing trend. Similarly, investment in treasury bills has also increased except in FY 2008/09 but has increased in FY 2009/10. In the same way, the investment in the shares of other companies is also increasing. NIBL has invested its 14.09% of funds in government treasury bills, 0.16% in company shares and 85.74% in the loans, advances and overdraft. Similarly, considering only the risky investment in company shares and loans, advances and overdraft the investment weights 0.19% and 99.81% respectively.

4.2.1.2. iv Portfolio Investment of Nepal SBI Bank Ltd.

Table: 4.5
Calculation of Weight of Investment of NSBL

Amount in 'Rupees'

Fiscal Year	**Treasury Bills**	**Company Shares**	**Loans, Advances and Overdraft**
2004/05	2,469,966,003	19,539,000	6,588,563,487
2005/06	3,473,598,064	19,539,000	8,070,260,849
2006/07	2,227,404,516	31,939,000	10,065,052,194
2007/08	2,762,828,586	32,821,500	12,578,872,784
2008/09	2,933,848,660	32,946,500	15,131,747,944

2009/10	3,720,592,315	37,021,500	17,480,548,194
Total Investment	17,588,238,144	173,806,500	69,915,045,452
Average Investment	2,931,373,024	28,967,750	11,652,507,575
Investment Weight	0.201	0.002	0.797
Risky Investment Weight		0.0025	0.9975

(Source: www.nepalsbi.com.np)

The above table reveals investment of Nepal SBI Bank on treasury bills, company shares and loans, advances and overdraft. The investment in the loans, advances and overdraft is in increasing trend. Similarly, investment in treasury bills is also in the increasing trend. In the same way, the investment in the company shares seems little bit steady and increasing. Nepal SBI Bank has invested its 20.1% of funds in government treasury bills, 0.2% in shares of other companies and 79.7% in the loans, advances and overdraft. Similarly, considering only the risky investment in company shares and loans, advances and overdraft the investment weights 0.25% and 99.75% respectively.

4.2.1.2. v Portfolio Investment of Bank of Kathmandu Ltd.

Table: 4.6
Calculation of Weight of Investment of BOK

Amount in 'Rupees'

Fiscal Year	**Treasury Bills**	**Company Shares**	**Loans, Advances and Overdraft**
2004/05	1,559,514,411	23,162,000	6,099,711,861
2005/06	2,072,383,445	23,162,000	7,468,512,890
2006/07	1,387,388,880	25,562,000	9,663,050,360
2007/08	1,281,185,367	28,324,500	12,962,850,330
2008/09	907,253,830,	29,214,000	14,617,296,987
2009/10	2,148,538,408	23,155,100	16,664,930,855
Total Investment	9,356,264,341	152,579,600	50,811,422,428
Average Investment	1,559,377,390	25,429,933	8,468,570,405
Investment Weight	0.155	0.0025	0.8425

Risky Investment Weight	0.003	0.997

(Source: www.bok.com.np)

The above table reveals investment of Bank of Kathmandu on treasury bills, company shares and loans, advances and overdraft is in increasing trend. Similarly, investment in treasury bills has decreased except in FY 2005/06 and FY 2007/08. In the same way, the investment in the company shares seems little bit steady and increasing. BOK has invested its 17.2% of funds in government treasury bills, 0.28% in company shares and 82.51% in the loans, advances and overdraft. Similarly, considering only the risky investment in company shares and loans, advances and overdraft the investment weights 0.34% and 99.66% respectively.

4.2.1.2.vi Portfolio Investment of Laxmi Bank Ltd.

Table: 4.7
Calculation of Weight of Investment of Laxmi Bank Ltd.

Amount in 'Rupees'

Fiscal Year	**Treasury Bills**	**Company Shares**	**Loans, Advances and Overdraft**
2004/05	282,969,274	13,375,340	2,690,930,228
2005/06	407,140,500	13,375,340	4,279,818,984
2006/07	960,776,200	13,362,840	6,529,239,211
2007/08	667,655,823	65,245,340	9,783,978,961
2008/09	866,594,580	68,958,340	13,315,604,304
2009/10	1,452,304,585	76,033,340	14,560,109,588
Total Investment	4,637,440,962	250,350,540	51,159,681,276
Average Investment	772,906,827	41,725,090	8,526,613,546
Investment Weight	0.083	0.005	0.912
Risky Investment Weight		0.005	0.995

(Source: www.laxmibank.com.np)

The above table reveals investment of Laxmi Bank on treasury bills, company shares and loans, advances and overdraft. The table shown below reflects the fact that the investment in loans advances and overdraft is in increasing trend. Similarly, investment in treasury bills is the highest in FY 2009/10 but the investment is not steady, it is fluctuating. In the same way,

the investment in the company shares is also in the increasing trend. Laxmi Bank has invested its 8.3% of funds in government treasury bills, 0.50% in company shares and 91.2% in loans, advances and overdraft. Similarly, considering only the risky investment weights 0.5% and 99.5% respectively.

4.2.1.3 Calculation of Market Interest Rates

Table: 4.8
Market Interest Rates (Return)

Lending Rates (%)						
Fiscal Year	**Industry (Average)**	**Agriculture (Average)**	**Commercial Loans (Average)**	**Overdraft (Average)**	**Total Rates**	**Average Rates**
2004/05	11.25	12.5	11.75	13.5	49	12.25
2005/06	11	11.75	11.75	13	47.5	11.875
2006/07	10.875	11.5	11	9.75	43.125	10.78
2007/08	10.75	11.25	11	10.5	43.5	10.875
2008/09	10.75	11.25	11	10.25	43.25	10.813
2009/10	10.25	11	10.938	10.188	42.375	10.594

(Source: www.nrb.org.np)

The above table reveals the various lending interest rates being used by the overall commercial banks. The interest rates charged as an interest by the commercial banks for the industry, agriculture, commercial business and overdraft of money are gathered and averaged for getting the interest rates. The average rates of the average rate interest charged by commercial banks in industry, agriculture, commercial business and overdraft of money in the FY 2002/03, 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08 are 12.25%, 11.875%, 10.78%, 10.875%, 10.813% and 10.594% respectively. These interest rates are used as market interest rates (return). From the above data, we can see that the market interest rate is in decreasing trend.

4.2.1.4 Stock Market Index

Due to the non-existence of second stock exchange in the country the index of Nepal Stock Exchange (NEPSE) has been considered the market index. The NEPSE was established in 1994 A.D.

4.2.1.4.i Calculation of Market Return

In the context of Nepalese financial market, average return or market return can be found by using NEPSE index. Market return can be calculated as follows:

$$\text{Market Return } (R_{ms}) = \frac{NEPSE_{t+1} - NEPSE_t}{NEPSE_t} * 100$$

Where,

$NEPSE_t$ = NEPSE index ate the beginning of period t

$NEPSE_{t+1}$ = NEPSE index at the end of period

Table: 4.9
Market Returns

Fiscal Year	NEPSE Index	Market Return (%)
2004/05	286.67	29.11
2005/06	386.83	34.94
2006/07	683.95	76.81
2007/08	963.36	40.85
2008/09	749.1	-22.24
2009/10	477.73	-36.23

(Source: www.nepalstock.com)

The above table depicts NEPSE index from FY 2002/03 to 2007/08. The NEPSE index is in increasing trend. The market returns in FY 2004/05, 2005/06, 2006/07, 2007/08, 2008/09, and 2009/10 are 29.11%, 34.94%, 76.94%, 76.81%, 40.85%,-22.24% and - 36.23% respectively. The market return in FY 20007/08 is highest than market returns in other fiscal years.

4.2.1.5 Risk and Return Analysis of Selected Commercial Banks

The dividend incomes from the investment of shares in other companies are considered as the stock return and NEPSE index is considered for the calculation of market return of stock. The interest incomes from the flow of loans, advances and overdraft are considered as the interest return whereas overall market interest rates of commercial banks is averaged to get market return. The Treasury bills rate is considered as risk free rate.

4.2.1.5. i Risk and Return Analysis of Nabil bank Ltd.

Table: 4.10
Return from Company Shares and LAO of Nabil Bank

	Company Shares		**Loans, Advances and Overdraft**	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	2.11	29.11	7.69	12.25
2005/06	2.06	34.94	7.58	11.875
2006/07	1.25	76.81	7.45	10.78
2007/08	2.30	40.85	6.94	10.875
2008/09	2.90	-22.24	7.80	10.813
2009/10	0.5	-36.23	10.20	10.594

(Source: Annex I)

The above table reveals stock return and interest return of Nabil Bank with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. The stock return is highest in FY 2008/09 and interest return is highest in the FY 2009/10. The interest return is in decreasing trend but since the FY 2008/09 it been increasing.

Table: 4.11
Average Return, S.D. and Beta of Company Shares, LAO and T-bills of Nabil Bank

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	1.85	7.94	3.706
Standard Deviation	0.77	1.045	-
Beta	0.014	1.17	-

(Source: Annex I)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of Nabil Bank. The average return of LAO is highest than average return of company shares and treasury bills. The standard deviation and beta of LAO is higher than company shares. The beta of company shares is negative. Since treasury bills is considered as risk free investment. The standard deviation and beta of risk free asset is zero.

Table: 4.12
Return, S.D., Beta and Covariance of Risky and Total Portfolio of Nabil Bank

Risky portfolio return $\bar{r}_{mp}$	7.972%
Risky portfolio standard deviation σ_{mp}	1.0258
Portfolio beta β_p	1.114
Covariance of risky portfolio (Cov($R_S R_L$))	-0.582
Total portfolio return $\bar{r}_p$	7.439
Total standard deviation σ_p	0.8976

(Source: Annex I)

The above table reveals various variable relating to the risk and return of portfolio of Nabil Bank. The risky portfolio composed company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 7.972%, 1.0258, 1.114 and -0.58 respectively. The negative sign of the covariance indicates the indirect relationship between the company shares and LAO. The total portfolio composed of

treasury bills and risky portfolio. The total portfolio return and standard treasury bills and risky portfolio. The total portfolio return and standard deviation are 7.439% and 0.8976.

4.2.1.5. ii Risk and Return Analysis of Standard Chartered Bank Nepal Ltd.

Table: 4.13
Return from Company Shares and LAO of SCBNL

	Company Shares		**Loans, Advances and Overdraft**	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	0.37	29.11	7.18	12.25
2005/06	0.64	34.94	6.70	11.875
2006/07	0.57	76.81	6.91	10.78
2007/08	1.04	40.85	6.54	10.875
2008/09	2.32	-22.24	8.05	10.813
2009/10	5.17	-36.23	8.64	10.594

(Source: Annex II)

The above table reveals stock return and interest return of SCBNL with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. The stock return is highest in FY 2009/10 and interest return is highest in the FY 2009/10. The return from stock is in increasing trend whereas interest is in decreasing trend but it starts increasing from the FY 2008/09.

Table: 4.14
Average Return, S.D. and Beta of Company Shares, LAO and T-bills of SCBNL

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	1.685	7.34	3.706
Standard Deviation	1.685	0.759	-

Beta	-0.037	-1.32	-

(Source: Annex II)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of SCBNL. The average return of LAO is highest than average return of company shares and treasury bills. The standard deviation of LAO is lower than company shares. Since treasury bills is considered as risk free investment. The standard deviation and beta of risk free asset is zero.

Table: 4.15
Return, S.D., Beta and Covariance of Risky and Total Portfolio of SCBNL

Risky portfolio return $\bar{r}_{mp}$	7.31%
Risky portfolio standard deviation σ_{mp}	1.869
Portfolio beta β_p	-1.313
Covariance of risky portfolio (Cov($R_S R_L$))	1.143
Total portfolio return $\bar{r}_p$	5.962
Total standard deviation σ_p	1.17

(Source: Annex II)

The above table reveals various variable relating to the risk and return of portfolio of SCBNL. The risky portfolio composed of company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 7.31%, 1.869, -1.313 and 1.143 respectively. The total portfolio composed of treasury bills and risky portfolio. The total portfolio return and standard deviation are 5.962 and 1.17.

4.2.1.5. iii Risk and Return Analysis of Nepal Investment Bank Ltd.

Table: 4.16
Return from Company Shares and LAO of NIBL

	Company Shares		Loans, Advances and Overdraft	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	1.08	29.11	7.50	12.25
2005/06	1.36	34.94	7.41	11.875
2006/07	0.61	76.81	7.45	10.78
2007/08	1.53	40.85	7.03	10.875
2008/09	2.6	-22.24	8.02	10.813
2009/10	6.83	-36.23	10.67	10.594

(Source: Annex III)

The above table reveals stock return and interest return of Nepal Investment Bank with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. The stock return is highest in FY 2009/10 whereas interest return is highest in the FY 2005/06.

Table: 4.17
Average Return, S.D. and Beta of Company Shares, LAO and T-bills of NIBL

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	2.35	8.01	3.706
Standard Deviation	2.099	1.223	-
Beta	-0.052	3.648	-

(Source: Annex III)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of Nepal Investment Bank. The average return of

LAO is highest than average return of company shares and treasury bills. The standard deviation of LAO is lower than company shares while beta of LAO is higher than company shares. Since treasury bills is considered as risk free investment. The standard deviation and beta of risk free asset is zero.

Table: 4.18
Return, S.D., Beta and Covariance of Risky and Total Portfolio of NIBL

Risky portfolio return (r_{mp})	8%
Risky portfolio standard deviation (σ_{mp})	1.224
Portfolio beta (β_p)	3.642
Covariance of risky portfolio (Cov($R_S R_L$))	2.486
Total portfolio return (r_p)	7.54%
Total standard deviation (σ_p)	1.093

(Source: Annex III)

The above table reveals various variable relating to the risk and return of portfolio of Nepal Investment Bank Ltd. The risky portfolio composed of company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 8%, 1.224, 3.642 and 2.486 respectively. The total portfolio composed of treasury bills and risky portfolio. The total portfolio return and standard deviation are 7.54% and 1.093SSS.

4.2.1.5. iv Risk and Return Analysis of Nepal SBI Bank Ltd.

Table: 4.19
Return from Company Shares and LAO of NSBL

	Company Shares		**Loans, Advances and Overdraft**	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	0.25	29.11	7.90	12.25
2005/06	0.50	34.94	7.54	11.875

2006/07	0.58	76.81	7.01	10.78
2007/08	1.64	40.85	6.84	10.875
2008/09	2.72	-22.24	7.8	10.813
2009/10	4.8	-36.23	10.1	10.594

(Source: Annex IV)

The above table reveals stock return and interest return of Nepal SBI Bank with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. The stock return as well as interest return is highest in the FY 2004/05. The interest return is in decreasing trend but from the FY 2008/09 it has started to increase

Table: 4.20
Average Return, S.D. and Beta of Company Shares, LAO and T-bills of NSBL

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	1.748	7.865	3.706
Standard Deviation	1.647	1.071	-
Beta	-0.035	-0.355	-

(Source: Annex IV)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of Nepal SBI Bank. The average return of LAO is higher than average return of company shares and treasury bills. The standard deviation of LAO is lower than the company shares while beta of LAO is higher than company shares. Since treasury bills is considered as risk free investment. The standard deviation and beta of risk free asset is zero.

Table: 4.21
Return, S.D., Beta and Covariance of Risky and Total Portfolio of NSBL

Risky portfolio return (r_{mp})	7.85%
Risky portfolio standard deviation (σ_{mp})	1.072
Portfolio beta (β_p)	-0.3542
Covariance of risky portfolio (Cov($R_S R_L$))	1.369
Total portfolio return (r_p)	7.019%
Total standard deviation (σ_p)	0.857

(Source: Annex IV)

The above table reveals various variables relating to the risk and return of portfolio of Nepal SBI Bank Ltd. The risky portfolio composed of the company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 7.85%, 1.072, (-0.3542) and 1.369 respectively. The totals portfolio is composed of treasury bills and risky portfolio. The total portfolio return and standard deviation are 7.019% and 0.857 respectively.

4.2.1.5. v Risk and Return Analysis of Bank of Kathmandu Ltd.

Table: 4.22
Return from Company Shares and LAO of BOK

	Company Shares		**Loans, Advances and Overdraft**	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	0.21	29.11	8.25	12.25
2005/06	0.97	34.94	7.37	11.875
2006/07	1.92	76.81	6.68	10.78
2007/08	0.52	40.85	6.99	10.875
2008/09	1.15	-22.24	8.2	10.813
2009/10	5.1	-36.23	10.24	10.594

(Source: Annex V)

The above table reveals stock return and interest return of Bank of Kathmandu with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. The stock return and interest return is highest in the FY 2009/10. The stock returns as well as interest return is fluctuating.

Table: 4.23
Average Return, S.D. and Beta of Company Shares, LAO and T-bills of BOK

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	1.645	7.96	3.706
Standard Deviation	1.635	1.174	-
Beta	-0.023	-0.667	-

(Source: Annex V)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of Bank of Kathmandu. The average return of LAO is higher than average return of company shares and treasury bills. The standard deviation of company shares is higher than LAO. Beta of LAO as well as beta of company shares is negative. Since treasury bills is considered as risk free investment, the standard deviation and beta of risk free asset is zero.

Table: 4.24
Return, S.D., Beta and Covariance of Risky and Total Portfolio of BOK

Risky portfolio return $\bar{r}_{mp}$	7.941%
Risky portfolio standard deviation σ_{mp}	1.174
Portfolio beta β_p	-0.665
Covariance of risky portfolio (Cov($R_S R_L$))	1.413
Total portfolio return $\bar{r}_p$	7.284%
Total standard deviation σ_p	0.992

(Source: Annex V)

The above table reveals various variable relating to the risk and return of portfolio of Bank of Kathmandu Ltd. The risky portfolio composed of company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 7.941%, 1.174, -0.665 and 1.413 respectively. The total portfolio composed of treasury bills and risky portfolio. The total portfolio return and standard deviation are 7.284% and 0992 respectively.

4.2.1.5.vi Risk and Return Analysis of Laxmi Bank Ltd.

Table: 4.25
Return from Company Shares and LAO of Laxmi Bank

	Company Shares		**Loans, Advances and Overdraft**	
Years	**Stock Return (%)**	**Market Return (%)**	**Interest Return (%)**	**Market Interest Return (%)**
2004/05	0.70	29.11	7.37	12.25
2005/06	0.00	34.94	6.79	11.875
2006/07	0.00	76.81	6.49	10.78
2007/08	0.00	40.85	6.55	10.875
2008/09	0.012	-22.24	7.65	10.813
2009/10	0.305	-36.23	11.22	10.594

(Source: Annex VI)

The above table reveals stock return and interest return of Laxmi Bank with market return and market interest return. The dividend incomes from the investment of shares in other companies are considered as stock return and interest incomes from the flow of loans, advances and overdraft are considered as interest return. There is no return from stock after the FY 2004/05 but from the FY 2008/09, there is the return from the stock. Interest return is highest in the FY 2009/10. The interest return from LAO is fluctuating.

Table: 4.26

Average Return, S.D and Beta of Company Shares, LAO and T-bills of Laxmi Bank

	Company Shares	**Loans, Advances and Overdraft**	**Treasury Bills**
Average Return (%)	0.17	7.68	3.706
Standard Deviation	0.2617	1.6388	-
Beta	-0.0013	-0.930	-

(Source: Annex VI)

The above table reveals average return, standard deviation and beta of company shares, loans, advances and overdraft and treasury bills of Laxmi Bank. The average return of LAO is higher than average return of company shares and treasury bills. The standard deviation of LAO is higher than company shares. Beta of both company shares and LAO are negative. Since treasury bills is considered as risk free investment. The standard deviation and beta of risk free asset is zero.

Table: 4.27

Return, S.D., Beta and Covariance of Risky and Total Portfolio of Laxmi Bank

Risky portfolio return $\bar{r}_{mp}$	7.64%
Risky portfolio standard deviation σ_{mp}	1.631
Portfolio beta β_p	-0.925
Covariance of risky portfolio (Cov($R_S R_L$))	0.144
Total portfolio return $\bar{r}_p$	7.314%
Total standard deviation σ_p	1.496

(Source: Annex V)

The above table shows various variable relating to the risk and return of portfolio of Laxmi Bank Ltd. The risky portfolio composed of company shares and loans, advances and overdraft. The portfolio return, standard deviation, beta and covariance of risky investment are 7.64%, 1.631, -0.925 and 0.144 respectively. The total portfolio composed of treasury bills and risky portfolio. The total portfolio return and standard deviation are 7.314% and 1.496.

4.2.1.6 Evaluation by Using Sharpe Portfolio Performance Measure

For the purpose of evaluating the portfolio performance of the commercial bank various variables relating to the risk and return of the portfolio are used and processed through the Sharpe performance measure.

$$Sp = \frac{\bar{r}_p - r_f}{\pm p}$$

As for example, NABIL Bank Ltd. has portfolio return $(\bar{r}_p)$ of 7.439%, risk-free return (r_f) of 3.706% and portfolio standard deviation $(\pm_p)$ of 0.8976. Then, calculating through the use of the above Sharpe measure formulae, the result will be 4.159. In this way the values of all six commercial banks are calculated and compared in different ways.

A. Individual Comparison

Table: 4.28
Ranking Commercial Banks through Sharpe Performance Measure

S.N.	Name of the Bank	Sharpe P.M.	Rank
1.	NABIL Bank Ltd.	4.159	1st
2.	Standard Chartered Bank Nepal Ltd.	1.928	6th
3.	Nepal Investment Bank Ltd.	3.508	4th
4.	Nepal SBI Bank Ltd.	3.866	2nd
5.	Bank of Kathmandu Ltd.	3.607	3rd
6.	Laxmi Bank Ltd.	2.412	5th

(Source: Annex I-VI)

In the above table, the individual comparison of the commercial banks through the Sharpe measure of portfolio performance evaluation can be seen. Nabil Bank Ltd. has been ranked 1st with the highest value of Sharpe performance measure i.e. 4.159 followed by Nepal SBI Bank Ltd. with the value of 3.866 and BOK with the value of 3.607. Standard Chartered Bank Nepal Ltd. has been ranked last due to low value of Sharpe performance measure i.e. 1.928. The reason for the highest value of Nabil Bank can be

- Among the fund invested in risky portfolio, almost cent percentage of fund is invested in Loans, Advances and Overdraft and only the negligible part in the company shares.

And the return from the LAO is mush higher than return from company shares and even than the risk-free rate.

- Comparatively less market risk i.e. Total portfolio standard deviation is only 0.8976.

B. Intra-Group Comparison

The comparison between the two groups for better evaluation through the use of Sharpe portfolio performance measure is done in this section. In this part, the two groups Viz. Group A and Group B are done. Group A represents the three commercial banks that are established earlier whereas Group B represents three commercial banks that are established later in Nepal.

- **Group A**

Table: 4.29
Ranking Group A through Sharpe Performance Measure

S.N.	Name of the Bank	Sharpe P.M.	Rank
1.	NABIL Bank Ltd.	4.159	1st
2.	Standard Chartered Bank Nepal Ltd.	1.928	3rd
3.	Nepal Investment Bank Ltd.	3.508	2nd

(Source: Annex I-III)

In the Group A, the portfolio performance of Nabil Bank Ltd. is the best among the three commercial banks with the value of 4.159. The reason for this better performance is the comparative less total risk of the portfolio i.e. Nabil Bank Ltd. has the total portfolio standard deviation of 0.8976 which is lower than other two bank viz. NIBL with 1.093 and SCBNL with 1.170. Then it is followed by NIBL with average performance value of 3.508 and SCBNL with comparatively low portfolio performance value of 1.928

- **Group B**

Table: 4.30
Ranking Group B through Sharpe Performance Measure

S.N.	Name of the Bank	Sharpe P.M.	Rank
1.	Nepal SBI Bank Ltd.	3.866	1st
2.	Bank of Kathmandu Ltd.	3.607	2nd
3.	Laxmi Bank Ltd.	2.412	3rd

(Source: Annex IV-VI)

Similarly, in the Group B the portfolio performance of Nepal SBI Bank Ltd. is the best among the three commercial banks with the value of 3.866. The reason for this better performance is the comparative less total risk of the portfolio i.e. the total portfolio deviation of 0.857 which is lower than other two banks viz. BOK with 0.9921 and Laxmi Bank with 1.496. Then it is followed by BOK with average performance value of 3.607 and Laxmi Bank Ltd. with comparatively low portfolio performance i.e. the value of 2.412.

C. Inter-Group Comparison

In this comparison the two groups are compared with each other. Here, it is assumed that there is an equal investment in each commercial bank of the group and thus given the equal weights i.e. 33% to each commercial bank for the calculation of portfolio variables.

Table: 4.31
Ranking Group A and B through Sharpe Performance Measure

S.N.	Group	r_p	rf	$\pm_p$	r_{mp}	p	Sharpe P.M.	Rank
1.	Group A	6.911	3.706	1.043	7.683	1.136	3.166	2nd
2.	Group B	7.134	3.706	1.104	7.732	-0.642	3.262	1st

(Source: Annex I-VI)

In the above table, the Group B has shown as the best portfolio performance in the aggregate which is composed of Nepal SBI Bank Ltd, Bank of Kathmandu Ltd. and Laxmi Bank Ltd. The value is 3.262 which is greater than the value of other group. Then, it is followed by Group A with average performance value of 3.166.

4.2.1.7 Evaluation by Using Treynor Portfolio Performance Measure

For the purpose of evaluating the portfolio performance of the commercial banks various variables relating to the risk and return of the portfolio are used and processed through the Treynor's performance measure.

$$Tp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{p}$$

As for example, Standard Chartered Bank Nepal Ltd. has Portfolio return (r_p) of 5.962%, Risk-free return (r_f) = 3.706% and Portfolio Beta (βp) = -1.313. Then, calculating through the use of the above Treynor's performance measure formulae, the result will be -1.718. In this way the values of all six commercial banks are calculated and compared in different ways.

A. Individual Comparison

Table: 4.32
Ranking Commercial Banks through Treynor Performance Measure

S.N.	Name of the Bank	Treynor P.M.	Rank
1.	NABIL Bank Ltd.	3.789	1st
2.	Standard Chartered Bank Nepal Ltd.	-1.718	3rd
3.	Nepal Investment Bank Ltd.	1.053	2nd
4.	Nepal SBI Bank Ltd.	-9.353	6th
5.	Bank of Kathmandu Ltd.	-5.38	5th
6.	Laxmi Bank Ltd.	-3.901	4th

(Source: Annex I-VI)

In the above table, the individual comparison of the commercial banks through the use of Treynor's measure of portfolio performance evaluation can be seen. Nabil Bank Ltd. has been ranked 1st with the highest value of Treynor performance measure i.e. 3.789. The main reason behind this result is the less market risk i.e. less positive beta value i.e. 1.114. The Treynor value of Nabil Bank is followed by NIBL with the value of 1.053. Nepal SBI Bank Ltd. has been ranked last due to low value of Treynor performance measure i.e. -9.353.

B. Intra-Group Comparison

The comparison between the two groups for better evaluation through the use of Treynor portfolio performance measure is done in this section. in this part, the two groups Viz. Group A and Group B are done. Group A represents the three commercial banks that are established earlier and Group B represents three commercial banks that are established later in Nepal.

- **Group A**

Table: 4.33
Ranking Group A through Treynor Performance Measure

S.N.	Name of the Bank	Treynor P.M.	Rank
1.	NABIL Bank Ltd.	3.789	1st
2.	Standard Chartered Bank Nepal Ltd.	-1.718	3rd
3.	Nepal Investment Bank Ltd.	1.053	2nd

(Source: Annex I-III)

In the Group A, the portfolio performance of Nabil Bank Ltd. is the best among the three commercial banks with the value of 3.789. The reason for this better performance is the comparative less portfolio market risk or portfolio beta i.e. 1.114 which lower than other two banks viz. NIBL with 3.642 and SCBNL with -1.313.

- **Group B**

Table: 4.34
Ranking Group B through Treynor Performance Measure

S.N.	Name of the Bank	Treynor P.M.	Rank
1.	Nepal SBI Bank Ltd.	-9.353	3rd
2.	Bank of Kathmandu Ltd.	-5.38	2nd
3.	Laxmi Bank Ltd.	-3.901	1st

(Source: Annex IV-VI)

Similarly, in the Group B the value of Tp of all the three banks is negative among three of them Laxmi Bank Ltd. has better value than other two banks i.e. -3.901 as compared to NSBL with -9.353 and BOK with -5.38.

C. Inter-Group Comparison

In this comparison the two groups are compared with each other. Here, it is assumed that there is an equal investment in each commercial bank of the group and thus given the equal weights i.e. 33% to each commercial bank for the calculation of portfolio variables.

Table: 4.35

Ranking Group A and B through Treynor Performance Measure

S.N.	Group	r_p	rf	±p	r_{mp}	p	Treynor P.M.	Rank
1.	Group A	6.911	3.706	1.043	7.683	1.136	1.209	1^{st}
2.	Group B	7.134	3.706	1.104	7.732	-0.642	-6.149	2^{nd}

(Source: Annex I-VI)

In the above table, the Group A has shown the best portfolio performance in the aggregate which is composed of Nabil Bank Ltd., SCBNL and NIBL. Then, it is followed by Group B which is composed of NSBL, BOK and Laxmi Bank Ltd. The Group A has positive beta i.e. 1.136 and portfolio return of 6.911 whereas the Group A has beta value -0.642 and portfolio return of 7.134. The value of Tp of Group A is higher than Group B. So, Group A has been ranked 1st.

4.2.1.8 Evaluation by Using Jensen Portfolio Performance Measure

For the purpose of evaluating the portfolio performance of the commercial banks various variables relating to the risk and return of the portfolio are used and processed through the Jensen's portfolio performance measure.

$$\alpha_p = \bar{r}_p - [\, r_f + \beta_p (\bar{r}_{mp} - r_f)]$$

As for example, Nepal Investment Bank Ltd. has Portfolio return (r_p) of 7.54%, Risk-free return (r_f) = 3.706% and Portfolio Beta (β_p) = 3.642. Then, calculating through the use of the above Jensen's performance measure formulae, the result will be α_p = -11.8.

The α_p value indicates whether the portfolio manager is superior or inferior in the market timing and asset selection. A superior manager has a significant positive α_p because of the consistent positive residuals. In the contrast, an inferior manager's return consistently falls

short of expectations based on the CAPM model giving consistently negative residuals. There, alpha is a significant negative value.

Jensen's alpha is used to rank the portfolios. But sometime it may lead to wrong ranking decision. Sometimes, the value of alpha may be same on two different portfolios whereas the other variables may differ. In this case, if we rank them equal, the result will be wrong. Thus, Jensen's alpha should not be used for ranking, rather it should be divided by the beta of the same portfolios and the ranking should be done according to the value gained. In the table below the values of all six commercial banks are calculated and compared in different ways.

A. Individual Comparison

Table: 4.36
Ranking Commercial Banks through Jensen Performance Measure

S.N.	Name of the Bank	Jensen's Alpha (α_p)	$\alpha_p/ß_p$	Rank
1.	NABIL Bank Ltd.	-1.019	-0.915	1st
2.	Standard Chartered Bank Nepal Ltd.	4.936	-3.759	3rd
3.	Nepal Investment Bank Ltd.	-11.8	-3.24	2nd
4.	Nepal SBI Bank Ltd.	4.781	-13.498	6th
5.	Bank of Kathmandu Ltd.	6.394	-9.615	5th
6.	Laxmi Bank Ltd.	7.247	-7.835	4th

(Source: Annex I-VI)

In the above table, the individual comparison of the commercial banks through the use of Jensen's measure of portfolio performance evaluation can be seen. Nabil Bank Ltd. has been ranked 1st with the highest value of Jensen performance measure i.e. -0.915 followed by NIBL with the value of -3.24 and SCBNL with the value of -3.759. The Jensen's portfolio performance measure is used to calculate the difference between the required rate of return for the organization and the realized rate of return by the organization. Since, the positive value of Jensen portfolio performance indicates the better performance of portfolio for manager as well as the organization as a whole. None of the Bank has been considered as the best performer because all has negative value of Jensen portfolio due to low value of Jensen performance measure i.e. -0915.

B. Intra-Group Comparison

The comparison between the two groups for better evaluation through the use of Jensen portfolio performance measure is done in this section. In this part, the three groups Viz. Group A and Group B are done. Group A represents the three commercial banks that are established earlier and Group B represents three commercial banks that are established later in Nepal.

- **Group A**

Table: 4.37
Ranking Group A through Jensen Performance Measure

S.N.	Name of the Bank	Jensen's Alpha (α_p)	$\alpha_p/ß_p$	Rank
1.	NABIL Bank Ltd.	-1.019	-0.915	1st
2.	Standard Chartered Bank Nepal Ltd.	4.936	-3.759	3rd
3.	Nepal Investment Bank Ltd.	-11.8	-3.24	2nd

(Source: Annex I-III)

In the Group A, the portfolio performance of Nabil Bank Ltd. is the best among the three commercial banks with the value of -0.915. Similarly, NIBL is ranked 2nd with the value of -3.24 while SCBNL is in the 3rd position with the value of -3.759.

- **Group B**

Table: 4.38
Ranking Group B through Jensen Performance Measure

S.N.	Name of the Bank	Jensen's Alpha (α_p)	$\alpha_p/ß_p$	Rank
1.	Nepal SBI Bank Ltd.	4.781	-13.498	3rd
2.	Bank of Kathmandu Ltd.	6.394	-9.615	2nd
3.	Laxmi Bank Ltd.	7.247	-7.835	1st

(Source: Annex IV-VI)

Similar to group A, the value of the Jensen Performance of Group is also negative. However, Laxmi Bank Ltd. is ranked 1st with the value of -7.835, followed by BOK with -9.615 and then by NSBL with -13.948.

C. Inter-Group Comparison

In this comparison the two groups are compared with each other. Here, it is assumed that there is an equal investment in each commercial bank of the group and thus given the equal weights i.e. 33% to each commercial bank for the calculation of portfolio variables. The alpha value has been calculated as a difference of realized rate of return over the required rate of return. Then, the alpha is divided by the portfolio market risk and the product is used as a basis for the ranking of the group portfolios.

Table: 4.39
Ranking Group A and B through Jensen Performance Measure

S.N.	Group	r_p	rf	$\pm_p$	r_{mp}	Jensen's Alpha (α_p)	$\alpha_p/ß_p$	Rank
1.	Group A	6.911	3.706	1.043	7.683	-2.602	-2.612	1st
2.	Group B	7.134	3.706	1.104	7.732	6.079	-10.213	2nd

(Source: Annex I-VI)

In this comparison, the both groups have negative value. However, the Group A has lower negative value of -2.612 as compared to Group B which has the value of -10.213. Therefore, Group A has been ranked 1st.

4.2.2 Analysis of Primary Data

This section analyses the primary data collected through the questionnaire. This involves the presentation of the result of the questionnaire distributed. The set of the questions are presented with the result obtained from the responses of the respondents.

4.2.2.1 What is the objective of portfolio investment of the bank?

The result is shown in Table 4.40.

Table: 4.40

Responses of Objective of Portfolio Investment of Banks

	Frequency	Percent
Valid To maximize return	24	48
To minimize risk	9	18
Stable income	11	22

All	6	12
Total	50	100

(Source: Survey 2011)

Out of the total respondents, 48% of the respondents select to maximize return are the objective of portfolio investment of the bank. 18% and 22% of the respondents select to minimize risk and stable income as the objective of portfolio investment and 12% of the respondents select all as the objectives of the portfolio investment of the bank.

4.2.2.2 Which of the factor does the bank consider for making portfolio investment decision?

The result is shown in Table 4.41.

Table: 4.41
Factors Considered for Making Portfolio Investment Decision

	Frequency	**Percent**
Valid Risk	9	12
Return	14	28
Risk and Return	27	54
Total	50	100.0

(Source: Survey 2011)

Out of the total respondents, 54% of the respondents consider risk and return as the factor for making portfolio investment decision. 28% respondents consider return and only 12% consider risk as the factor for making portfolio investment decision.

4.2.2.3 Whether the bank uses any performance measure to evaluate portfolio performance?

The result is shown in Table 4.42.

Table: 4.42
Responses of Question no. 3

	Frequency	**Percent**
Valid Yes	28	56
No	5	10
No idea	17	34

Total	50	100

(Source: Survey 2011)

Out of the total respondents, 56% of the responses received that bank use performance measure to evaluate portfolio performance. 34% of the respondents have no idea and only 10% of the responses received that the bank does not use any performance measure to evaluate portfolio performance.

4.2.2.4 Which of the portfolio performance measure does the bank consider for evaluating portfolio performance?

The result is shown in Table 4.43.

Table: 4.43
Evaluation of Portfolio Performance of Banks

	Frequency	**Percent**
Valid Sharpe performance measure	10	20
None	18	36
Any other	22	44
Total	50	100

(Source: Survey 2011)

The above table shows 44% of the responses consider that the bank use other performance measure for evaluating portfolio performance. 36% of the responses consider that the bank does not consider any performance measure and only 20% of the responses consider that the bank use Sharpe performance measure to evaluate portfolio performance measure. No any responses are received for Treynor and Jensen performance measure.

4.2.2.5 In which sector, majority of fund invest?

The result is shown in Table 4.44.

Table: 4.44
Average Score of Investing Fund in Different Sectors

	Average
Loans, advances and overdraft	1.12
Treasury bills	2.84

Company shares	3.24
Government bonds	2.82

(Source: Survey 2011)

The above table shows that the respondents mostly considers that majority of fund is invested in loans, advances and overdraft since average score of loans, advances and overdraft is lower than other sector whereas average score of company shares is highest. So, it is considered as the least sector for investing funds.

4.2.2.6 Whether the bank invests more amounts in Treasury bills than Company shares?

The result is shown in Table 4.45.

Table: 4.45
Responses of Question no. 6

	Frequency	**Percent**
Valid Yes	39	78
No	4	8
No idea	7	14
Total	50	100

(Source: Survey 2011)

Out of the total respondents, 78% of the respondents received that bank invests more amounts in Treasury bills than Company shares. 14% of them have no idea and only 8% of the responses received that the bank does not invest more amounts in Treasury bills than company shares.

4.2.2.7 What is the reason of investing more funds on Treasury bills than Company shares?

The result is shown in Table 4.46.

Table: 4.46
Reason for Investing More Funds on T-bills than Company Shares

	Frequency	**Percent**
Valid Risk free asset	25	50
Low return from Company Shares than Treasury Bills	3	6
Stable return from Treasury Bills	9	18

Short maturity and no default risk	8	16
Any other	5	10
Total	50	100.0

(Source: Survey 2011)

The above table shows 10% of response have received that there is another reason of investing more funds on Treasury bills than Company shares. 50% of responses have received for risk free asset, 16% for short maturity and no default risk, 18% for stable return from Treasury bills and only 6% responses have received for low return from company shares than Treasury bills is the reason of investing more funds on Treasury bills than company shares.

4.2.2.8 In which sector, the majority of loan provided?

The result is shown in Table 4.47.

Table: 4.47
Majority of Loan Provided Sectors

	Frequency	**Percent**
Valid Industry	16	32
Commercial Loans	28	56
Overdraft	4	8
Any other	2	4
Total	50	100

(Source: Survey 2011)

Out of the total responses about 56% of the respondents select commercial loans is the sector in which majority of loan is provided. 32% of them select industry, 8% select overdraft and only 4% of them select other sector in which majority of loan is provided.

4.2.2.9 Whether the bank considers covariance between two assets before investing?

The result is shown in below table 4.48.

Table: 4.48
Responses of Question no. 9

	Frequency	Percent
Valid Yes	31	62
No	7	14
No idea	12	24
Total	50	100.0

(Source: Survey 2011)

The above table shows 62% of the responses have received that the bank considers covariance between two assets before investing. 24% of the responses have received for no idea and 14% of the responses have received that the bank does not consider covariance between two assets before investing.

4.2.2.10 Which covariance does the bank considers?

The result is shown in Table 4.49.

Table: 4.49
Consideration of Covariance between Two Assets

	Frequency	Percent
Valid Positive Covariance	11	22.0
Negative Covariance	10	20.0
Zero Covariance	7	14.0
No idea	22	44.0
Total	50	100.0

(Source: Survey 2011)

Out of the total respondents, 44% of the respondents have no idea of covariance. About 22% of responses have received for positive covariance, 10% for negative covariance and only 7% of the responses have received that the bank consider zero covariance between two assets before investing.

4.2.2.11 "Bank invests its fund with detailed planning and analysis."

The result is shown in Table 4.50.

Table: 4.50
Responses of Question no. 11

	Frequency	Percent
Valid Strongly Agree	42	84.0
Agree	8	16.0
Total	50	100.0

(Source: Survey 2011)

The above table shows that 84% of the respondents strongly agree and only 16% of the respondents agree with above statement. No responses for undecided, disagree and strongly disagree were received.

4.2.2.12 "The bank has specific set of rule / procedure for providing loan."

The result is shown in Table 4.51

Table: 4.51
Responses of Question no. 12

	Frequency	Percent
Valid Strongly Agree	37	74.0
Agree	13	26.0
Total	50	100.0

(Source: Survey 2011)

The above table shows that 74% of the respondents strongly agree and only 26% of the respondents agree with the above statement. No responses for undecided, disagree and strongly disagree were received.

4.3 Major Findings

Based on the analysis of the various data remarkable findings are drawn up. The major findings are as follows;

- Investment Portfolio
  - In investment portfolio, the industry average investment on government securities is 17.42%. Among the all the sample banks, SCBNL has invested the highest amount of funds on govt. securities i.e. 37.40% and Laxmi Bank has invested lowest 8.3%. Other banks NABIL, NIBL, NSBL and BOK are investing 12.5%, 10.7%, 20.1% and 15.5% of amount.

- Loan and Advances Portfolio
  - In loan and advances portfolio, Laxmi Bank has invested a huge percentage of amounts i.e. 91.2% while SCBNL has invested the lowest amount of 62.25%. Similarly, Nabil, NIBL, NSBL and BOK are investing 87.2%, 89.15%, 79.97% and 84.25%.

- Portfolio Risk and Return on Investment
  - The covariance between the returns on investment made by banks in Govt. securities and loan and advance in average is of 1.092. The covariance between the returns of all banks is positive except of Nabil Bank i.e. -0.582 which shows that the returns from investments are negatively correlated.
  - The portfolio return of the sample banks in average is 7.094%. Among the sample banks, NIBL has the highest portfolio return of 8% while SCBNL has the lowest i.e. 5.962%
  - The portfolio risk of the sample banks in average is 1.086. Among the sample banks, Laxmi bank ha the highest portfolio risk of 1.496 while NSBL has the lowest of 0.857. Here, the theory of higher the risk, higher the return is not applicable.

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- Test of Portfolio Performance
  - By using Sharpe's portfolio performance test, it indicates that Nabil Bank is the best performer with the Sp of 4.159 and SCBNL is the worst with Sp of 1.928 among the sample banks. In the intra group comparison, Nabil Bank and NSBL is the best performer in their respective groups. Similarly in the inter group comparison, Group B is better than Group B.
  - By using Treynor's portfolio performance test, it indicates that Nabil Bank is the best performer with the Tp of 3.789 and NSBL is the worst with Tp of -9.353

among the sample banks. In the intra group comparison, Nabil Bank and Laxmi Bank is the best performer in their respective groups. Similarly in the inter group comparison, Group A is better than Group B.

- By using Jensen's portfolio performance test, it indicates that Nabil Bank is the best performer with the $\mathfrak{I}_p$ of -0.915 and NSBL is the worst with $\mathfrak{I}_p$ of -13.498 among the sample banks. In the intra group comparison, Nabil Bank and Laxmi Bank is the best performer in their respective groups. Similarly in the inter group comparison, Group A is better than Group B.
- From the calculations, it is observed that Sp shows different result from Tp and $\mathfrak{I}_p$ while both Tp and $\mathfrak{I}_p$ shows the same direction in the result.

Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the previous chapters and conclusions drawn from the analysis the data. Based on the summary and conclusions, recommendations are suggested with a hope of improving the existing situations of the portfolio management of the sample commercial banks of Nepal undertaken for the study so that the banks can improve their investment and return on portfolio.

5.1 Summary

Both to, 32 commercial banks in operation and some more are in the offing. Although, the majority of the populations of Nepal are living in the rural areas, the majority of commercial banks are established in urban areas. This condition has really deprived most of the Nepalese people from the modern banking facilities. Similarly, due to the different situation, the banks are not able to invest their funds in remote areas and the major investments are city based. In the same way, due to the growing competition and limited investment opportunities, the return from the commercial banks is less than the satisfactory. Thus, the problem seems to be with both the risk and return.

In the present context, the performance of all the economic sectors is not that encouraging. However, the case of the financial institutions is little bit different. The reason may be the performance of the bank and it's credibility in the mind of the people. But, are they really efficient in their performance? Which of the banks understudy are better off in terms of their performance? These are the questions whose answers are considered in the study.

Since, every investment possesses return as well as risk; better return with less risk is the indication of better performance. For the purpose of getting high return with less risk the portfolio investment i.e. investing in more assets is the only way out. The better portfolio performance leads to the overall better performance of the financial institution. Thus, it seems that the time to time evaluation of what the organization is performing regarding its portfolio is the crucial aspect for the management as well as the other stakeholders.

At some level, people are always interested in evaluating the performance of their investments. Having spent the time and incurred the expense to design an asset allocation strategy, investors whether they are individuals, corporations or financial institutions must periodically determine whether this effort is worthwhile (Reilly and Brown, 2006:1040-1041). Deciding to add or delete an asset solely on the basis of the individual asset's expected return and risk characteristics will result in a less than optimum portfolio. Each asset's expected return and risk characteristics will result in a less than optimum portfolio. Each asset's expected return and risk, along with the expected return and risk for other assets and their interrelationships, are important inputs in portfolio selection. Using these inputs, efficient portfolios, defined as portfolios that maximize the expected return at any given level of risk, can be defined. These portfolios dominate all other portfolios with the same level of expected risk (Cheney And Mosses, 1995:651)

In the course of the study, the review of various books of investments; relevant articles and journals; annual reports, magazines and directives published by various non-governmental and governmental organizations along with the selected six commercial banks; and the unpublished Master's Degree thesis submitted to Tribhuvan University are done. The analysis and findings on those reviews have really contributed for the better understanding of the thesis. Annual reports of the selected commercial banks are the major source of the secondary data for the thesis. Various models and techniques along with the formula are used for the processing and analysis of the data collected.

The whole study has been summarized below.

- Due to the unavailability of data, the rates of 91 days T-bill and 364days T-bill are taken for the calculation of risk free rates. The average T-bill rate of 6 years is 3.706%.
- The interest rates charged as an interest by the commercial banks for the industry, agriculture, commercial businesses and overdraft of money are gathered and averaged for getting the interest rates and used as market interest rates (return). However, we can see that market interest rate is in the decreasing trend.
- The index of Nepal Stock Exchange (NEPSE) has considered the market index. NEPSE Index is in increasing trend but since the FY 2007/08 it has been decreasing and in the FY 2008/09 and 2009/10 it has become negative.

- The risky portfolio is composed of company shares and LOA whereas the total portfolio has government Treasury bill along with the risky portfolio. The portfolio evaluation has been done using the three risk-adjusted portfolio performance measures, they are
    1. Sharpe performance measure (Sp)
    2. Treynor performance measure (Tp)
    3. Jensen performance measure (Jp)
- Nabil Bank Ltd has total portfolio return of 7.972% and portfolio standard deviation of 0.8976; the risky portfolio return of 7.439% and portfolio beta of 1.114. In the same way, the Sp is 4.159, Tp is 3.789 and Jp is -1.019.
- Standard Chartered Bank Ltd has a portfolio return of 7.31% and portfolio deviation of 1.17; the risky portfolio return of 5.962% and portfolio beta of -1.313 In the same way, the value of Sp is 1.928, Tp is -1.718 and Jp is 4.936
- Nepal Investment Bank Ltd has a portfolio return of 8% and portfolio deviation of 1.093; the risky portfolio return of 7.54% and portfolio beta of 3.642. In the same way, the value of Sp is 3.508, Tp is 1.053 and Jp is -11.8.
- Nepal SBI Bank Ltd has a portfolio return of 7.85% and portfolio deviation of 0.857; the risky portfolio return of 7.019% and portfolio beta of -0.3542. In the same way, the value of Sp is 3.866, Tp is -9.353 and Jp is 4.781.
- Bank of Kathmandu Ltd has a portfolio return of 7.941% and portfolio deviation of 0.992 the risky portfolio return of 7.284% and portfolio beta of -0.665. In the same way, the value of Sp is 3.607, Tp is -5.38 and Jp is 6.394.
- Laxmi Bank Ltd has a portfolio return of 7.64% and portfolio deviation of 1.496; the risky portfolio return of 7.314% and portfolio beta of -0.925. In the same way, the value of Sp is 2.412, Tp is -3.901 and Jp is 7.247.

5.2 Conclusions

In the entire process of this study, various secondary as well as primary data concerning the portfolio performance of the six commercial banks are gathered and analyzed. Based on the findings of the study, the following major conclusions are drawn for the study.

- The commercial banks are investing considerable amount of funds in the government Treasury bills i.e. risk free security. The amount invested in the government T-bills

have shown increasing trend. Among the six commercial banks, Standard Chartered Bank Nepal Ltd has the largest investment in the government T-bills i.e. 37.4%. However, the T-bill's rate has shown the decreasing trend.

- The general lending interest rate has shown the decreasing trend. The reason could be the intense competition among the commercial banks and also the control and supervision of NRB.
- The annual return from the loans, advances and overdraft seems quite better. The majority of funds are invested by the commercial banks in this sector. The risk of investing in loans advances and overdraft is much higher than risk of investing in shares of other companies i.e. the standard deviation of return from LAO is greater than the standard deviation of return from company shares. This provides the concept that higher return seeks higher risk.
- While evaluating the portfolio performance of the six commercial banks individually through the use of Sp, Nabil Bank Ltd seems the best performer. The reason is that the bank has gained good portfolio return with the least portfolio risk i.e. only 0.8976. In the same way, Standard Chartered Bank Nepal Ltd is the worst performer. Even though the return from the portfolio is good one, the total risk of the portfolio of the SCBNL is the 2nd highest one i.e. 1.17
- In the intra-group comparisons of the portfolio performance through the use of Sharpe measure, Nabil Bank among the earlier established commercial banks and Nepal SBI Bank Ltd among the later established commercial banks are ranked first. Thus, they are the best performer in their respective group.
- The inter-group comparison of the portfolio performance using Sharpe measure, the later established group i.e. Group B is the best performer than the earlier established groups of commercial banks.
- While comparing those banks individually using the Treynor measure, again Nabil Bank Ltd is the best performer. In the same way, Nepal SBI Ltd seems the worst performer. The result from two evaluation measures is contradictory. However, the difference may be due to the consideration of risk factor i.e. one measure use total risk whereas other use only market risk.
- In the intra-group comparisons of the portfolio performance through the use of Treynor measure, Nabil Bank among earlier established commercial and Laxmi Bank

Ltd among the later established commercial banks are ranked first. Thus, they are the best performer in their respective group.

- In the inter-group comparison of the portfolio performance using the Treynor measure, the earlier established group i.e. Group A is better performer than the later established groups of commercial banks.
- While comparing those commercial banks individually using the Jensen measure, Nabil Bank Ltd. is the best performer. In the same way, Nepal SBI bank Ltd seems to be the worst performer. Here, the result of Treynor measure and Jensen measure is same.
- In the intra-group comparisons of the portfolio performance through the use of Jensen measure, Nabil Bank among earlier established commercial and Laxmi Bank Ltd among the later established commercial banks are ranked first. Thus, they are the best performer in their respective group.
- In the inter-group comparison of the portfolio performance using the Jensen measure, the earlier established group i.e. Group A is better performer than the later established groups of commercial banks.
- It is observed though the result of Sharpe measure does not match with the result of Treynor as well as Jensen measure, the Treynor and Jensen measure show the same result.

5.3 Recommendations

From conclusions drawn above the concerned commercial banks are offered the following suggestions for improving the performance of their portfolio management.

1. Efficient and effective investment strategies:

The commercial banks invest their funds according to the instructions and guidelines of NRB. They do not have their own clear vision towards investment portfolio. Thus, commercial banks should develop efficient and effective investment strategies with the help of portfolio experts.

2. Evaluation of risk free securities:

The ratio of the investment in risk free securities should be evaluated in a better way according to the need of the commercial banks, so that the optimum return from the portfolio

can be obtained. Because, the portfolio return commercial banks are obtaining may not be the optimum one. They can get even better return.

3. Remove clause of compulsory investment in financial institutions and government organization:

Since, the return from the company shares is quite low even though the stock market return is much higher. Thus, the commercial banks should invest those funds in the shares of blue-chip firms which give more return. In this regard NRB should remove the clause about the compulsory investment in the certain financial institutions and government organizations by the commercial banks.

4. Efficiently performing lending operation with proper analysis of the borrower:

Since, the return from the LAO is higher than the return from other sectors; the commercial banks should try to reduce the risk involved in it. For this purpose, they should take this function with purely business attitude and should perform lending operation with proper analysis of the borrowers so that chance of loan default is minimized.

5. Time to time evaluation of portfolio with the use of portfolio experts:

However, the trend of evaluating and revising the portfolio has been lacking in Nepalese commercial banks. This trend of investing without proper evaluation should be stopped. The performance of commercial banks can be more satisfying and optimized in the future if the time to time evaluation of the portfolio is done with the use of portfolio experts along with the long term plans on the portfolio investment.

6. Select investment alternative which minimize risk and maximize return:

Better return with minimized risk is the good sign for future prosperity of the commercial banks. The minimization of risk is possible only with the diversification of investment. Thus, not only the investment alternatives available now, the commercial banks should search and select other investment alternatives which could minimize the risk and maximizes the return form the portfolio.

7. Regular revision or the portfolio condition of bank:

The portfolio condition of a bank should be regularly revised from time to time. Basically portfolio management refers to the allocation of funds into the different small components of

its assets having different degrees of risk, different rates of return in such a way that the goal of maximum yield minimum risk can be properly achieved. The bank should always try to make continuous efforts to explore competitive and highly yielding investment opportunities to optimize its investment portfolio.

8. Providing knowledge of portfolio:

Portfolio analysis only reduces diversifiable or unsystematic risk. The investors must change their desire level of return for bearing certain level of risk. The investors change their attitude in investing in only one asset. For the change, the investors must have knowledge of portfolio which is the most crucial thing. All the investors have not sufficient knowledge regarding portfolio, therefore the financial institutions and the banks should provide the knowledge of the portfolios to the investors.

5.4 Recommendations for Future Research

Some recommendations are also offered for the future research;

- For the evaluation of the portfolio performance, six commercial banks are taken as sample for the study due to certain time limits. So it is recommended for the future study to have more samples for more reliable and accurate conclusions.
- During the study, the performance measures such as Sp, Tp and Jp have been used. However, there are different ratios that can be used to understand the ratios of investment over different factor such ass deposits assets, loans, etc.
- Portfolio analysis is the most reliable method to understand the most reliable and risk free investment opportunity.

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Annex I (Nabil Bank Limited)

Return on investment of company shares of Nabil Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	22610000	477071	2.11
2005/06	22810000	469886	2.06
2006/07	57853000	720303	1.25
2007/08	80551900	1850862	2.30
2008/09	82501900	2409200	2.90
2009/10	1559857000	7822733	0.5

(Source: Annual Report of Nabil Bank Ltd.)

Return on investment of LAO of Nabil Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	10823649899	832338680	7.69
2005/06	13033252903	987920570	7.58
2006/07	15659965860	1166666786	7.45
2007/08	21549684444	1496243925	6.94
2008/09	27999012071	2182646650	7.80
2009/10	33030968688	3368727546	10.20

(Source: Annual Report of Nabil Bank Ltd.)

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Calculation of Expected Return, Standard Deviation, Beta and Covariance

Years	**$R_S(Y_1)$**	**$R_{ms}(X_1)$**	**$R_L(Y_2)$**	**$R_{mL}(X_2)$**	**R_S-R_S**	**R_L-R_L**	**$(R_S-R_S)^2$**	**$(R_L-R_L)^2$**	**(R_S-R_S) (R_L-R_L)**	**X_1Y_1**	**X_1^2**	**X_2Y_2**	**X_2^2**
2004/05	2.11	29.11	7.69	12.25	0.26	-0.25	0.0676	0.0625	-0.065	61.4221	847.3921	94.2025	150.0625
2005/06	2.06	34.94	7.58	11.875	0.21	-0.36	0.0441	0.1296	-0.0756	71.9764	1220.8036	90.0125	141.0156
2006/07	1.25	76.81	7.45	10.78	-0.6	-0.49	0.36	0.2401	0.294	96.0125	5899.7761	80.311	116.2084
2007/08	2.30	40.85	6.94	10.875	0.45	-1	0.2025	1	-0.45	93.955	1668.7225	75.4725	118.2656
2008/09	2.90	-22.24	7.80	10.813	1.05	-0.14	1.1025	0.0196	-0.147	-64.496	494.6176	84.3414	116.9209
2009/10	0.5	-36.23	10.20	10.594	-1.35	2.26	1.8225	5.1076	-3.051	-18.115	1312.6129	108.0588	112.2328
Total	**11.12**	**123.24**	**47.66**	**67.187**	**0**	**0**	**3.5992**	**6.5594**	**-3.4946**	**240.755**	**11443.9248**	**532.3987**	**754.7058**

$\bar{R}s = \frac{Rs}{n} = \frac{11.12}{6} = 1.85\%$

$\bar{R_L} = \frac{R_L}{n} = \frac{47.66}{6} = 7.94\%$

$\bar{r}_{mp} = \sum_{i=1}^{n} Wi\bar{R}i = (0.003 * 1.85) + (0.997 * 7.94) = 7.972\%$

$\pm S^2 = \frac{(R_s - \bar{R}_s)^2}{n} = \frac{3.5992}{6} = 0.599$

$\pm L^2 = \frac{(R_L - \bar{R}_L)^2}{n} = \frac{6.5594}{6} = 1.093$

$\pm_S = 0.77$ $\pm_L = 1.045$

$Cov(Rs, RL) = \frac{(Rs - \bar{R}s)(R_L - \bar{R}_L)}{n} = \frac{-3.4946}{6} = -0.582$

$\pm_p = \sum_{i=1}^{n} W_i \pm_i = W_{rf} \pm_{rf} + W_{mp} \pm_{mp}$

$= (0.125 * 0) + (0.875 * 1.0258) = 0.8976$

$\pm_{mp} = \sqrt{W^2 s \pm^2 s + W^2{}_L \pm^2{}_L + 2Cov(R_S, R_L) W_S W_L} = \sqrt{(0.003)^2 * 0.599 + (0.997)^2 * 1.093 + 2 * (-0.582) * 0.003 * 0.997}$

$= 1.0258$

$W_T = 0.125, W_{mp} = 1 - 0.125 = 0.875$

$\bar{r}_p = r_f + \frac{(\bar{r}_{mp} - r_f)}{\pm_{mp}} \pm_p = 3.706 + \frac{7.972 - 3.706}{1.0258} 0.8976 = 7.439\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*240.755 \text{ Z} 123.24*11.12}{6*11443.9248 \text{ Z}(123.24)^2} \text{ X} 0.0014$$

$$L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*532.3987 \text{ Z} 67.87*47.66}{6*754.7058 \text{ Z}(67.187)^2} \text{ X} 1.117$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s \,\Gamma W_{L \quad L} \text{ X} 0.003*0.0014 \,\Gamma\, 0.997*1.117 \text{ X} 1.114$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$Sp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.439 \text{ Z} 3.706}{0.8976}$	$Tp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{p} \text{ X} \frac{7.439 \text{ Z} 3.706}{1.114}$	$Jp \text{ X} \bar{r}_p \text{ Z}[r_f \,\Gamma\, (\bar{r}_{mp} \text{ Z} r_f) \quad p] \text{ X} 7.439 \text{ Z}[3.706 \,\Gamma\, (7.972 \text{ Z} 3.706) 1.114] \text{ X} \text{Z} 1.019$
4.159	3.789	$J_p / \quad _p \text{ X} \text{Z} 1.019 / 1.114 \text{ X} \text{Z} 0.915$

Annex II (Standard Chartered Bank Nepal Limited)

Return on investment of company shares of Standard Chartered Bank Nepal Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	13348000	49353	0.37
2005/06	15343000	98705	0.64
2006/07	44943000	256215	0.57
2007/08	106043000	1099815	1.04
2008/09	106925500	2479025	2.32
2009/10	106925500	5528050	5.17

(Source: Annual Report of SCBNL)

Return on investment of LAO of Standard Chartered Bank Nepal Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	8106139607	581664037	7.18
2005/06	8905128113	596622321	6.70
2006/07	10537453109	728588546	6.91
2007/08	13354578015	872690380	6.54
2008/09	13679756990	1104047249	8.05
2009/10	15956955268	1379283993	8.64

(Source: Annual Report of SCBNL)

Calculation of Expected Return, Standard Deviation, Beta and Covariance

Years	**$R_S(Y_1)$**	**$R_{ms}(X_1)$**	**$R_L(Y_2)$**	**$R_{mL}(X_2)$**	**R_S-R_S**	**R_L-R_L**	**$(R_S-R_S)^2$**	**$(R_L-R_L)^2$**	**(R_S-R_S) (R_L-R_L)**	**X_1Y_1**	**X_1^2**	**X_2Y_2**	**X_2^2**
2004/05	0.37	29.11	7.18	12.25	-1.315	-0.16	1.7292	0.0256	0.2104	10.7707	847.3921	87.955	150.0625
2005/06	0.64	34.94	6.70	11.875	-1.045	-0.64	1.0921	0.4096	0.6688	22.3616	1220.8036	79.5625	141.0156
2006/07	0.57	76.81	6.91	10.78	-1.115	-0.43	1.2432	0.1849	0.4795	43.7817	5899.7761	74.4898	116.2084
2007/08	1.04	40.85	6.54	10.875	-0.645	-0.8	0.4161	0.64	0.516	42.484	1668.7225	71.1225	118.2656
2008/09	2.32	-22.24	8.05	10.813	0.635	0.71	0.4032	0.5041	0.4509	-51.5968	494.6176	87.0447	116.9209
2009/10	5.17	-36.23	8.64	10.594	3.485	1.3	12.1452	1.69	4.5305	-187.309	1312.6129	91.5322	112.2328
Total	**10.11**	**123.24**	**44.02**	**67.187**	**0**	**0**	**17.029**	**3.4542**	**6.8561**	**-119.508**	**11443.9248**	**417.2169**	**754.7058**

$\bar{R}s\ \mathrm{X}\frac{Rs}{n}\ \mathrm{X}\frac{10.11}{6}\ \mathrm{X}1.685\%$

$\overline{R_L}\ \mathrm{X}\frac{R_L}{n}\ \mathrm{X}\frac{44.02}{6}\ \mathrm{X}7.34\%$

$\bar{r}_{mp}\ \mathrm{X}\sum_{i\mathrm{X}1}^{n} Wi\bar{R}i\ \mathrm{X}(0.0055*1.685)\ \Gamma\ (0.9945*7.34)\ \mathrm{X}7.31\%$

$\pm S^2\ \mathrm{X}\frac{(R_s\ \mathrm{Z}\bar{R}_s)^2}{n}\ \mathrm{X}\frac{17.029}{6}\ \mathrm{X}2.838$

$\pm L^2\ \mathrm{X}\frac{(R_L\ \mathrm{Z}\bar{R}_L)^2}{n}\ \mathrm{X}\frac{3.4542}{6}\ \mathrm{X}0.5757$

$\pm_S\ \mathrm{X}1.685$ $\pm_L\ \mathrm{X}0.759$

$Cov(Rs, RL)\ \mathrm{X}\frac{(Rs\ \mathrm{Z}\bar{R}s)(R_{L\mathrm{Z}}\bar{R}_L)}{n}\ \mathrm{X}\frac{6.8561}{6}\ \mathrm{X}1.143$

$\pm_p\ \mathrm{X}\sum_{i\mathrm{X}1}^{n} W_i\pm_i\ \mathrm{X}W_{rf}\pm_{rf}\ \Gamma W_{mp}\pm_{mp}$
$\mathrm{X}(0.374*0)\ \Gamma\ (0.626*1.869)\ \mathrm{X}1.170$

$\pm_{mp}\ \mathrm{X}\sqrt{W^2s\pm^2s\ \Gamma W^2{}_L\pm^2{}_L\ \Gamma\ 2Cov(R_S, R_L)W_SW_L}\ \mathrm{X}\sqrt{(0.0055)^2*2.838\ \Gamma\ (0.9945)^2*0.5757\ \Gamma\ 2*1.143*0.0055*0.9945}$

$\mathrm{X}1.869$

$W_T\ \mathrm{X}0.374 W_{mp}\ \mathrm{X}1\ \mathrm{Z}0.374\ \mathrm{X}0.626$

$\bar{r}_p\ \mathrm{X}r_f\ \Gamma\frac{(\bar{r}_{mp}\ \mathrm{Z}r_f)}{\pm_{mp}}\pm_p\ \mathrm{X}3.706\ \Gamma\ \frac{7.31\mathrm{Z}3.706}{1.869}\ 1.170\ \mathrm{X}5.962\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*(\text{Z}119.508) \text{ Z}123.24*10.11}{6*11443.9248 \text{ Z}(123.24)^2} \text{ XZ}0.037 \quad \Big| \quad L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*417.2169 \text{ Z}67.187*44.02}{6*754.706 \text{ Z}(67.187)^2} \text{ XZ}1.32$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s \,\Gamma W_{L \quad L} \text{ X}0.0055*(\text{Z}0.037) \,\Gamma\, 0.9945*(\text{Z}1.32) \text{ XZ}1.313$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$Sp \text{ X} \frac{\bar{r}_p \text{ Z}r_f}{\pm p} \text{ X} \frac{5.962 \text{ Z}3.706}{1.170}$ X1.928	$Tp \text{ X} \frac{\bar{r}_p \text{ Z}r_f}{\pm p} \text{ X} \frac{5.962 \text{ Z}3.706}{\text{Z}1.313}$ XZ1.718	$Jp \text{ X}\bar{r}_p \text{ Z}[r_f \,\Gamma\, (\bar{r}_{mp} \text{ Z}r_f) \quad p] \text{ X}5.962 \text{ Z}[3.706 \,\Gamma\, (7.31 \text{ Z}3.706)(\text{Z}1.313)]$ X4.936 $J_p / \quad _p$ XZ4.936/1.313 XZ3.759

Annex III (Nepal Investment Bank Limited)

Return on investment of company shares of Nepal Investment Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_s) =**
2004/05	17738000	191853	1.08
2005/06	17738000	241205	1.36
2006/07	35253000	213323	0.61
2007/08	54545500	832500	1.53
2008/09	60970500	1605975	2.6
2009/10	63345500	4329450	6.83

(Source: Annual Report of NIBL)

Return on investment of LAO of Nepal Investment Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_L) =**
2004/05	10258243592	769195061	7.50
2005/06	13013861983	964689365	7.41
2006/07	17482051743	1302121998	7.45
2007/08	27145503800	1907261454	7.03
2008/09	36241206558	2906064774	8.02
2009/10	40318308062	4303311186	10.67

(Source: Annual Report of NIBL)

Calculation of Sharpe, Treynor and Jensen Performance Measure

Years	**$R_S(Y_1)$**	**$R_{ms}(X_1)$**	**$R_L(Y_2)$**	**$R_{mL}(X_2)$**	**$R_S - R_S$**	**$R_L - R_L$**	**$(R_S - R_S)^2$**	**$(R_L - R_L)^2$**	**$(R_S - R_S)(R_L - R_L)$**	**X_1Y_1**	**X_1^2**	**X_2Y_2**	**X_2^2**
2004/05	1.08	29.11	7.50	12.25	-1.27	-0.51	1.6129	0.2601	0.6477	31.4388	847.3921	91.875	150.0625
2005/06	1.36	34.94	7.41	11.875	-0.99	-0.6	0.9801	0.36	0.594	47.5184	1220.8036	87.9934	141.0156
2006/07	0.61	76.81	7.45	10.78	-1.74	-0.56	3.0276	0.3136	0.952	46.8541	5899.7761	80.311	116.2084
2007/08	1.53	40.85	7.03	10.875	-0.82	-0.98	0.6724	0.9604	0.8036	7.4205	1668.7225	76.4513	118.2656
2008/09	2.6	-22.24	8.02	10.813	0.25	0.01	0.0625	0.0001	0.0025	-57.824	494.6176	86.7203	116.9209
2009/10	6.83	-36.23	10.67	10.594	4.48	2.66	20.0704	7.0756	11.9168	-247.45	1312.6129	113.038	112.2328
Total	**14.08**	**123.24**	**48.08**	**67.187**	**0**	**0**	**26.4259**	**8.9698**	**14.9166**	**-172.0422**	**11443.9248**	**624.3824**	**754.7058**

$\bar{R}s\ \mathrm{X}\frac{Rs}{n}\ \mathrm{X}\frac{14.08}{6}\ \mathrm{X}2.35\%$

$\overline{R_L}\ \mathrm{X}\frac{R_L}{n}\ \mathrm{X}\frac{48.08}{6}\ \mathrm{X}8.01\%$

$\bar{r}_{mp}\ \mathrm{X}\sum_{i\mathrm{X}1}^{n} Wi\bar{R}i\ \mathrm{X}(00.0017*2.31)\ \Gamma\ (0.9983*8.01)\ \mathrm{X}8\%$

$\pm S^2\ \mathrm{X}\frac{(R_s\ \mathrm{Z}\bar{R}_s)^2}{n}\ \mathrm{X}\frac{26.4259}{6}\ \mathrm{X}4.404$

$\pm L^2\ \mathrm{X}\frac{(R_L\ \mathrm{Z}\bar{R}_L)^2}{n}\ \mathrm{X}\frac{8.9698}{6}\ \mathrm{X}1.495$

$\pm_S\ \mathrm{X}2.099$ $\pm_L\ \mathrm{X}1.223$

$Cov(Rs, RL)\ \mathrm{X}\frac{(Rs\ \mathrm{Z}\bar{R}s)(R_{L\mathrm{Z}}\bar{R}_L)}{n}\ \mathrm{X}\frac{14.9166}{6}\ \mathrm{X}2.486$

$\pm_p\ \mathrm{X}\sum_{i\mathrm{X}1}^{n} W_i\pm_i\ \mathrm{X}W_{rf}\pm_{rf}\ \Gamma W_{mp}\pm_{mp}$

$\mathrm{X}(0.107*0)\ \Gamma\ (0.893*1.224)\ \mathrm{X}1.093$

$\pm_{mp}\ \mathrm{X}\sqrt{W^2s\pm^2s\ \Gamma W^2{}_L\pm^2{}_L\ \Gamma\ 2Cov(R_S, R_L)W_SW_L}\ \mathrm{X}\sqrt{(0.0017)^2*4.404\ \Gamma\ (0.9983)^2*1.495\ \Gamma\ 2*2.486*0.0017*0.9983}$

$\mathrm{X}1.224$

$W_T\ \mathrm{X}0.107, W_{mp}\ \mathrm{X}1\,\mathrm{Z}0.107\ \mathrm{X}0.893$

$\bar{r}_p\ \mathrm{X}r_f\ \Gamma\frac{(\bar{r}_{mp}\ \mathrm{Z}r_f)}{\pm_{mp}}\pm_p\ \mathrm{X}3.706\ \Gamma\ \frac{8\,\mathrm{Z}3.706}{1.224}\ 1.093\ \mathrm{X}7.54\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*(\text{Z}172.0422) \text{ Z}123.24*14.08}{6*11443.9248 \text{ Z}(123.24)^2} \text{ XZ}0.052$$

$$L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*624.3824 \text{ Z}67.187*48.08}{6*754.706 \text{ Z}(67.187)^2} \text{ X}3.648$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s \,\Gamma W_{L \quad L} \text{ X}0.0017*(\text{Z}0.052) \,\Gamma\, 0.9983*3.648 \text{ X}3.642$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$$Sp \text{ X} \frac{\bar{r}_p \text{ Z}r_f}{\pm p} \text{ X} \frac{7.54 \text{ Z}3.706}{1.093}$$

X3.508

$$Tp \text{ X} \frac{\bar{r}_p \text{ Z}r_f}{\pm p} \text{ X} \frac{7.54 \text{ Z}3.706}{3.642}$$

X1.053

$$Jp \text{ X}\bar{r}_p \text{ Z}[r_f \,\Gamma\, (\bar{r}_{mp} \text{ Z}r_f) \quad p] \text{ X}7.54 \text{ Z}[3.706 \,\Gamma\, (8 \text{ Z}3.706)3.642]$$

XZ11.8

$$J_p / \quad _p \text{ XZ}11.8/3.642 \text{ XZ}3.24$$

Annex IV (Nepal SBI Bank Limited)

Return on investment of company shares of Nepal SBI Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_s) =**
2004/05	19539000	49352	0.25
2005/06	19539000	98705	0.50
2006/07	31939000	785108	0.58
2007/08	32821500	538508	1.64
2008/09	32946500	897512	2.72
2009/10	37021500	1795025	4.8

(Source: Annual Report of NSBL)

Return on investment of LAO of Nepal SBI Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_l) =**
2004/05	6588563487	520430171	7.90
2005/06	8070260849	608321202	7.54
2006/07	10065052194	705629876	7.01
2007/08	12578872784	860190628	6.84
2008/09	15131747944	1179593130	7.8
2009/10	17480548194	1760201809	10.1

(Source: Annual Report of NSBL)

Calculation of Sharpe, Treynor and Jensen Performance Measure

Years	**$R_S(Y_1)$**	**$R_{ms}(X_1)$**	**$R_L(Y_2)$**	**$R_{mL}(X_2)$**	**R_S-R_S**	**R_L-R_L**	**$(R_S$-$R_S)^2$**	**$(R_L$-$R_L)^2$**	**$(R_S$-$R_S)$ $(R_L$-$R_L)$**	**X_1Y_1**	**X_1^2**	**X_2Y_2**	**X_2^2**
2004/05	0.25	29.11	7.90	12.25	-1.748	0.035	3.0555	0.0012	-0.061	7.2775	847.3921	96.775	150.0625
2005/06	0.50	34.94	7.54	11.875	-1.248	-0.325	1.5575	0.1056	0.4056	17.47	1220.8036	89.538	141.0156
2006/07	0.58	76.81	7.01	10.78	-1.168	-0.855	1.3642	0.7310	0.9986	44.5498	5899.7761	75.568	116.2084
2007/08	1.64	40.85	6.84	10.875	-0.108	-1.025	0.0324	1.0506	0.1107	66.994	1668.7225	74.385	118.2656
2008/09	2.72	-22.24	7.8	10.813	0.972	-0.065	0.9448	0.0042	-0.063	-60.4928	494.6176	84.341	116.9209
2009/10	4.8	-36.23	10.1	10.594	3.052	2.235	9.3147	4.9952	6.8212	-173.904	1312.6129	106.99	112.2328
Total	**10.49**	**123.24**	**47.19**	**67.187**	**0**	**0**	**16.2691**	**6.8878**	**8.2121**	**-98.1085**	**11443.9248**	**527.59**	**754.7058**

$\bar{R}s = \frac{Rs}{n} = \frac{10.49}{6} = 1.748\%$

$\bar{R_L} = \frac{R_L}{n} = \frac{47.19}{6} = 7.865\%$

$\bar{r}_{mp} = \sum_{i=1}^{n} Wi\bar{R}i = (0.0025 * 1.748) + (0.9975 * 7.865) = 7.85\%$

$\pm S^2 = \frac{(R_s - \bar{R}_s)^2}{n} = \frac{16.2691}{6} = 2.712$

$\pm L^2 = \frac{(R_L - \bar{R}_L)^2}{n} = \frac{6.8878}{6} = 1.148$

$\pm_S = 1.647$ $\pm_L = 1.071$

$Cov(Rs, RL) = \frac{(Rs - \bar{R}s)(R_L - \bar{R}_L)}{n} = \frac{8.2121}{6} = 1.369$

$\pm_p = \sum_{i=1}^{n} W_i \pm_i W_{rf} \pm_{rf} + W_{mp} \pm_{mp}$

$= (0.201 * 0) + (0.799 * 1.072) = 0.857$

$\pm_{mp} = \sqrt{W^2 s \pm^2 s + W^2{}_L \pm^2{}_L + 2Cov(R_S, R_L) W_S W_L} = \sqrt{(0.0025)^2 * 2.712 + (0.9975)^2 * 1.148 + 2 * 1.369 * 0.0025 * 0.9975}$

$= 1.072$

$W_T = 0.201, W_{mp} = 1 - 0.201 = 0.799$

$\bar{r}_p = r_f + \frac{(\bar{r}_{mp} - r_f)}{\pm_{mp}} \pm_p = 3.706 + \frac{7.85 - 3.706}{1.072} 0.857 = 7.019\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*(\text{Z}38.1085) \text{ Z}123.24*10.49}{6*14443.9248 \text{ Z}(123.24)^2} \text{ X Z}0.035$$

$$L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*527.59 \text{ Z}67.187*47.19}{6*754.7058 \text{ Z}(67.187)^2} \text{ X Z}0.355$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s \,\Gamma W_{L \quad L} \text{ X}0.0025*(\text{Z}0.035) \,\Gamma\, 0.9975*(\text{Z}0.355) \text{ X Z}0.3542$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$Sp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.019 \text{ Z}3.706}{0.857}$ 3.866	$Tp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.019 \text{ Z}3.706}{\text{Z}0.3542}$ XZ9.353	$Jp \text{ X} \bar{r}_p \text{ Z}[r_f \,\Gamma\, (\bar{r}_{mp} \text{ Z} r_f) \quad p] \text{ X}7.019 \text{ Z}[3.706 \,\Gamma\, (7.85 \text{ Z}3.706)(\text{Z}0.3542)$ X4.781 $J_p / \quad _p$ X4.781/Z0.3542 XZ13.498

Annex V (Bank of Kathmandu Limited)

Return on investment of company shares of Bank of Kathmandu Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	23162000	49496	0.21
2005/06	23162000	223900	0.97
2006/07	25562000	490058	1.92
2007/08	28324500	148058	0.52
2008/09	29214000	336062	1.15
2009/10	23155100	1181459	5.1

(Source: Annual Report of BOK)

Return on investment of LAO of Bank of Kathmandu Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	6099711861	502945058	8.25
2005/06	7468512890	550144112	7.37
2006/07	9663050360	645651315	6.68
2007/08	12962850330	887298870	6.99
2008/09	14617296987	1199081343	8.2
2009/10	16664930855	1707543901	10.24

(Source: Annual Report of BOK)

Calculation of Sharpe, Treynor and Jensen Performance Measure

Years	**$R_S(Y_1)$**	**$R_{ms}(X_1)$**	**$R_L(Y_2)$**	**$R_{mL}(X_2)$**	**R_S-R_S**	**R_L-R_L**	**$(R_S-R_S)^2$**	**$(R_L-R_L)^2$**	**(R_S-R_S) (R_L-R_L)**	**X_1Y_1**	**X_1^2**	**X_2Y_2**	**X_2^2**
2004/05	0.21	29.11	8.25	12.25	-1.435	0.29	2.059	0.084	-0.416	6.113	847.3921	101.062	150.0625
2005/06	0.97	34.94	7.37	11.875	-0.675	-0.59	0.456	0.348	0.398	33.892	1220.8036	87.519	141.0156
2006/07	1.92	76.81	6.68	10.78	0.275	-1.28	0.076	1.638	-0.352	147.475	5899.7761	72.011	116.2084
2007/08	0.52	40.85	6.99	10.875	-1.125	-0.97	1.266	0.941	1.091	21.242	1668.7225	76.016	118.2656
2008/09	1.15	-22.24	8.2	10.813	-0.495	0.24	0.245	0.058	-0.119	-25.576	494.6176	88.667	116.9209
2009/10	5.1	-36.23	10.24	10.594	3.455	2.28	11.937	5.198	7.877	-184.773	1312.6129	108.483	112.2328
Total	**9.87**	**123.24**	**47.73**	**67.187**	**0**	**0**	**16.039**	**8.267**	**8.479**	**-1.597**	**11443.9248**	**534.316**	**754.7058**

$\bar{R}s = \frac{Rs}{n} = \frac{9.87}{6} = 1.645\%$

$\overline{R_L} = \frac{R_L}{n} = \frac{47.76}{6} = 7.961\%$

$\bar{r}_{mp} = \sum_{i=1}^{n} Wi\bar{R}i = (0.003 * 1.645) + (0.997 * 7.96) = 7.9411\%$

$\pm S^2 = \frac{(R_s - \bar{R}_s)^2}{n} = \frac{16.039}{6} = 2.673$

$\pm L^2 = \frac{(R_L - \bar{R}_L)^2}{n} = \frac{8.267}{6} = 1.378$

$\pm_S = 1.635$ $\pm_L = 1.174$

$Cov(Rs, RL) = \frac{(Rs - \bar{R}s)(R_L - \bar{R}_L)}{n} = \frac{8.479}{6} = 1.413$

$\pm_p = \sum_{i=1}^{n} W_i \pm_i W_{rf} \pm_{rf} W_{mp} \pm_{mp}$

$= (0.155 * 0) + (0.845 * 1.174) = 0.992$

$\pm_{mp} = \sqrt{W^2 s \pm^2 s + W^2{}_L \pm^2{}_L + 2Cov(R_S, R_L) W_S W_L} = \sqrt{(0.003)^2 * 2.673 + (0.997)^2 * 1.378 + 2 * 1.413 * 0.003 * 0.997}$

$= 1.174$

$W_T = 0.155, W_{mp} = 1 - 0.155 = 0.845$

$\bar{r}_p = r_f + \frac{(\bar{r}_{mp} - r_f)}{\pm_{mp}} \pm_p = 3.706 + \frac{7.941 - 3.706}{1.174} 0.992 = 7.284\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*(\text{Z}1.597)\text{ Z}123.24*9.87}{6*11443.9248\text{ Z}(123.24)^2} \text{ X Z}0.023 \quad \Big| \quad L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*534.316\text{ Z}67.187*47.73}{6*754.7058\text{ Z}(67.187)^2} \text{ X Z}0.667$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s\,\Gamma W_{L \quad L} \text{ X}0.003*(\text{Z}0.023)\,\Gamma\, 0.997*(\text{Z}0.667) \text{ X Z}0.665$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$Sp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.284\text{ Z}3.706}{0.992}$ X3.607	$Tp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.284\text{ Z}3.706}{\text{Z}0.665}$ XZ5.38	$Jp \text{ X} \bar{r}_p \text{ Z}[r_f \ \Gamma\ (\bar{r}_{mp} \text{ Z} r_f) \quad p] \text{ X}7.284\text{ Z}[3.706\,\Gamma\,(7.941\text{ Z}3.706)1(\text{Z}0.665)]$ X6.394 $J_p / \quad _p \text{ X} \frac{6.394}{\text{Z}0.665} \text{ X Z}9.615$

Annex VI (Laxmi Bank Limited)

Return on investment of company shares of Laxmi Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	13375340	93627	0.70
2005/06	13375340	-	0.00
2006/07	13362840	-	0.00
2007/08	68245340	-	0.00
2008/09	68958340	8442	0.012
2009/10	76033340	231799	0.305

(Source: Annual Report of Laxmi Bank Ltd.)

Return on investment of company shares of Laxmi Bank Ltd.

Fiscal Year	**Investment amount**	**Return amount**	**% Return(R_2) =**
2004/05	2690930228	198321558	7.37
2005/06	42798189084	290599709	6.79
2006/07	6529239211	423676783	6.49
2007/08	9783978961	640674121	6.55
2008/09	13315604304	1019089813	7.65
2009/10	14560109588	1633076679	11.22

(Source: Annual Report of Laxmi Bank Ltd.)

Calculation of Sharpe, Treynor and Jensen Performance Measure

Years	$R_S(Y_1)$	$R_{ms}(X_1)$	$R_L(Y_2)$	$R_{mL}(X_2)$	R_S-R_S	R_L-R_L	$(R_S$-$R_S)^2$	$(R_L$-$R_L)^2$	$(R_S$-$R_S)$ $(R_L$-$R_L)$	X_1Y_1	X_1^2	X_2Y_2	X_2^2
04/05	0.70	29.11	7.37	12.25	0.53	-0.31	0.2809	0.0961	-0.1643	20.377	847.3921	90.2825	150.0625
05/06	0.00	34.94	6.79	11.875	-0.17	-0.89	0.0289	0.7921	0.1513	0	1220.8036	80.6312	141.0156
06/07	0.00	76.81	6.49	10.78	-0.17	-1.19	0.0289	1.4161	0.2023	0	5899.7761	69.9622	116.2084
07/08	0.00	40.85	6.55	10.875	-0.17	-1.13	0.0289	1.2769	0.1921	0	1668.7225	71.2312	118.2656
08/09	0.012	-22.24	7.65	10.813	-0.158	-0.03	0.025	0.0009	0.0047	-0.267	494.6176	82.7195	116.9209
09/10	0.305	-36.23	11.22	10.594	0.135	3.54	0.0182	12.5316	0.4779	-11.050	1312.6129	118.865	112.2328
Total	**1.017**	**123.24**	**46.07**	**67.187**	**0**	**0**	**0.4108**	**16.1137**	**0.864**	**9.06**	**11443.9248**	**513.6916**	**754.7058**

$\bar{R}s = \frac{Rs}{n} = \frac{1.017}{6} = 0.17\%$

$\overline{R_L} = \frac{R_L}{n} = \frac{46.07}{6} = 7.68\%$

$\bar{r}_{mp} = \sum_{i=1}^{n} WiRi = (0.005 * 0.17) + (0.995 * 7.68) = 7.641\%$

$\pm S^2 = \frac{(R_s - \bar{R}_s)^2}{n} = \frac{0.4108}{6} = 0.0685$

$\pm L^2 = \frac{(R_L - \bar{R}_L)^2}{n} = \frac{16.1137}{6} = 2.6856$

$\pm_S = 0.2617$ $\pm_L = 1.6388$

$Cov(Rs, RL) = \frac{(Rs - \bar{R}s)(R_L - \bar{R}_L)}{n} = \frac{0.864}{6} = 0.144$

$\pm_p = \sum_{i=1}^{n} W_i \pm_i W_{rf} \pm_{rf} W_{mp} \pm_{mp}$

$= (0.083 * 0) + (0.917 * 1.631) = 1.496$

$\pm_{mp} = \sqrt{W^2 s \pm^2 s + W^2{}_L \pm^2{}_L + 2Cov(R_S, R_L) W_S W_L} = \sqrt{(0.005)^2 * 0.0685 + (0.995)^2 * 2.6856 + 2 * 0.144 * 0.005 * 0.995}$

$= 1.631$

$W_T = 0.083, W_{mp} = 1 - 0.083 = 0.917$

$\bar{r}_p = r_f + \frac{(\bar{r}_{mp} - r_f)}{\pm_{mp}} \pm_p = 3.706 + \frac{7.64 - 3.706}{1.631} 1.496 = 67.314\%$

$$s \text{ X} \frac{n \quad X1Y1 \text{ Z} \quad X1 \quad Y1}{n \quad X1^2 \text{ Z}(\quad X1)^2} \text{ X} \frac{6*9.06 \text{ Z}123.24*1.017}{6*11443.9248 \text{ Z}(123.24)^2} \text{ X}0.0013 \quad \Big| \quad L \text{ X} \frac{n \quad X2Y2 \text{ Z} \quad X2 \quad Y2}{n \quad X2^2 \text{ Z}(\quad X2)^2} \text{ X} \frac{6*513...6916 \text{ Z}67.187*46.07}{6*754.7058 \text{ Z}(67.187)^2} \text{ X Z}0.930$$

$$p \text{ X} \sum_{i\text{X}1}^{n} Wi \quad s \,\Gamma\, W_{L \quad L} \text{ X}0.005*(\text{Z}0.0013) \,\Gamma\, 0.995*(\text{Z}0.930) \text{ X Z}0.925$$

Calculation of Sharpe, Treynor and Jensen Performance Measure

$Sp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.314 \text{ Z}3.706}{1.496}$	$Tp \text{ X} \frac{\bar{r}_p \text{ Z} r_f}{\pm p} \text{ X} \frac{7.314 \text{ Z}3.706}{\text{Z}0.925}$	$Jp \text{ X} \bar{r}_p \text{ Z}[r_f \,\Gamma\, (\bar{r}_{mp} \text{ Z} r_f) \quad p] \text{ X}7.314 \text{ Z}[3.706 \,\Gamma\, (7.64 \text{ Z}3.706)(\text{Z}0.925)]$
		$\text{X}7.247$
$\text{X}2.412$	$\text{X Z}3.901$	
		$J_p / \quad_p \text{ X}7.247 / \text{Z}0.925 \text{ X Z}7.835$