

CHAPTER I

INTRODUCTION

1.1 Background of the study

Investment decision depends upon two factors, i.e. risk and returns. Risk is the fluctuation of actual return and expected returns. The basis objective of portfolio analysis is to minimize risk t given rate of return. The reduction of risk is possible by investing in two or more securities. Investment in two or more securities is called portable.

Portfolio investment refers to an investment that combines several assets. It is a collection of securities. The portfolio theory is concerned with the selection of optimal portfolio, i.e portfolio that provides the highest possible returns for any specified rate of return portfolio theory has been developed for financial assets. Thus making investment form selected optimal, i.e the portfolio that provides the highest rate if return with least possible amount of risk is the real investment portfolio.

Most securities available for investment have been uncertain outcomes and are thus risky. The basic problem facing each investor is to determine which particular risky securities to owe. Because a portfolio is collection of securities, this problem is equivalent to the investor selecting the optimal form a set of possible portfolio. Hence, this situation is often referred to as the portfolio selection problem. Harry M. Markowitz put one solution to this problem forth in 1952 in a landmark paper that is generally viewed as the origin of modern investment theory (Alexander, Sharp and Bailey: 2003:119)

Markowitz's approach begins by assuming that an investor has given sum of money to the present time. This money will be invested for a particular length of time known as the investor's holding period. At the enc of the holding period, the investor will sell the securities that were purchased at the beginning of the period and then will either spend the proceed on consumption or reinvest the proceeds in various securities (or do some of both). In making this decision at present the investor should recognize that securities return (and thus portfolio returns) in the forthcoming holdings period

are unknown. However, the investor could estimate the expected holding returns (or expected returns) on various securities under consideration and then invest in the one with the highest expected return (Alexander, Sharp and Bailey: 2003:199).

Portfolio management can be also be define as aggregation and management of an diverse portfolio of supply resources which will act as a hedge against various risk that may effect specific resource. Under a more market driven power sector with a power pool or pool Co wholesale market structure, a portfolio manager would aggregate and manage a divers and other market hedging type contract and mechanism. (Source :www.naruc.org/resource/glossary.shtml)

The systematic development and implementation of an investment strategy. The purpose of which to achieve the inventor's financial goal, often portfolio management is mistaken for the simple buying if new securities and the selling of current holdings. (Source: www.fiscalagent.com/newsletter/gloss/glossary/p.shtml)

In finance a portfolio is a collection of investment held by an institution or a private individual. In building up an investment portfolio a financial institution will conduct its own investment analysis whilst a private individual may make use of the service of a merchant bank, which offers portfolio management. Holding a portfolio is a part of an investment and risk limiting strategy called diversification. (Source: www.google.com/search).

Portfolio means “A collection of company shares and other investment that are owned by a particular person or organization”(Cambridge international dictionary of English, 1995)

According to Weston and Brigham,” portfolios simply represent the practice among the investor or having their fund in more then one asset. The combination of investment asset is called portfolio”. Weston and Brigham: 1992:245).

The term ‘portfolio’ simply means collection of investment .For an investor through the stock exchange the portfolio will be collection of shareholding in different companies .For a property investor portfolio will be collection of building. To a financial manager within an industrial company portfolio will be a collection of real capital projects. It will be apparent that the actual nature of the component of a

portfolio depends on the population of opportunities from which the selection has been made (Brockington: 1990:148)

Portfolio management is the process of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk. Portfolio management can be also taken as risk and return management. It aims to determine an appropriate asset mix, which attains optimal level of risk and return. Portfolio, technically known as efficient portfolio, is a superior portfolio. The efficient portfolio is a function of not only risk and return of individual asset included, but also the effect of relationship among the assets on the sum total of portfolio risk and return.

1.2 Focus of the Study

The investment decision is one of the major functions of financial management. The increasing number of banks and financial institutions has created a competitive environment in the financial sector. The investment opportunities of trade industry, agriculture and other sectors have not comparatively been extended. So, commercial banks have to face so many difficulties to mobilize their funds on the profitability sector. The risk is involved in every step of the return, every investor wants a maximum return from a minimum level of risk, so to minimize risk, an investor should diversify its investment by the means of portfolio.

In this study the trends of investment process of commercial banks in various sectors by the means of portfolio will be analyzed, the existing investment situation and its investment strategy in the future will be analyzed. Our main focuses of the study are measurement of financial performance of commercial banks, their risk and return, trend and portfolio pattern and analysis etc.

1.3 Statement of the Problem

After the restoration of democracy, Nepal has adopted more liberal and open economic policies. The process of economic liberalization and reform in the financial sector introduced in the early 1980s has led to significant changes in the banking industry. The open and liberal policy of government in the financial sector has helped in establishing many banks and financial institutions in the country. These banks have contributed towards introducing new technology, new banking systems and efficient

services delivery in the country. These banks have been contributed in line with the trust of economic liberalization and financial sector reform, i.e. making the financial system more competitive, efficient and profitable.

Banking industry was booming until recent past. But the recent economic slowdown has started affecting the performance of commercial banks. The effects of slow down will be more in the forthcoming years. This will lead to an increase in the intensity of competition in the banking industry. The principle of 'survival of the fittest' will hold under such scenario. Therefore, a bank has to increase its efficiency to win the competition.

It has also warned the commercial banks to improve and manage their productivity. The credit policy, the interest rate ceiling, discount rate policy and certain percentage of deposit to be lent to productivity sector, all these policies affect investment decision of the commercial bank.

With the prevailing economic recession, political instability and Maoist's violence in the country, there has been lower investment in the productivity sector. Lower volume of investment is causing lower growth of gross domestic product and hence foreign trade deficit is increasing day by day. Not only commercial banks are also affected by this economic disorder and are facing difficulties in finishing their loans and advance towards the profitable sectors. Moreover as a result of economic recession, only few entrepreneurs are able to survive and others who are less competitive are backing out from the market. In this kind of situation, banks have to be on a safer side, invest their surplus funds in the government backed investment such as treasury or government securities, which yield lower rate of return.

Now all sectors have been suffering from cut-throat competition. So, not only commercial banks cannot escape from such condition. Because of liberal economic policy, many new banks are coming into existence day by day which creates a threat for existing banks to be competitive. Reductions of price and cost leadership are the best way to compete in the industry.

Banks have to invest their source in different productive sectors of the investment alternatives to earn profit. But there is uncertainty of profit, which creates risk to the

organization. So, every commercial bank has to diversify their investment to minimize risk. Without diversify it's investment policy is impossible.

So, this study mainly concern with the portfolio investment practices by Nepalese commercial banks. This study seeks to find out to the following question:

-) How does bank portfolio behave?
-) Is portfolio investment management efficient on Nepalese commercial bank?
-) What is the existing situation of financial position of Nepal commercial banks?
-) Which banks has the largest degree of financial risk measured in terms of portfolio risk?
-) Which bank has a largest portfolio return?
-) In investment portfolio directed towards objective of profit maximization?

1.4 Objective of the Study

The main objective of this study is to identify the situation of portfolio management of commercial banks of Nepal. The specific objectives of the study are as follows:

-) To examine the existing situation of portfolio management of Nepalese commercial banks under study.
-) To evaluate financial performance of commercial banks of Nepal under study.
-) To analyze the investment and advance portfolio of commercial banks.
-) To analyze risk and return of commercial banks.
-) To show the present position trends of loan and advance and investment of total deposit and forecast it.
-) To provide the recommendation based on the analysis of data.

Research Hypothesis

In order to fulfill the objective of research study the following hypothesis is formulated for testing.

Null hypothesis (Ho): $x_1 = x_2$, i.e there is no significant difference between the portfolio return of commercial stock of commercial banking industry and returns of

market portfolio. In other words, average return on the share of commercial bank is equal to market return.

Alternative hypothesis (H1): $x_1 \neq x_2$, i.e there is significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In other words, average return on the share of commercial banks is not equal to market return.

1.5 Significance of the study

The investment analysis of nay organization flashes outs investment policy, sound investment policy makes a good impact on the economic of country. The success and prosperity of any organization or institution relies heavily upon the successful investment of its available resource into the profitable sector. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of nay organization.

The research-work in the study of portfolio analysis of commercial banks of Nepal. This study is significant in following way.

-) It examines the existing situation of portfolio management of Nepalese commercial banks.
-) To evaluate financial performance of selected commercial banks of Nepal.
-) It analyzes risk and return ratio of commercial banks.
-) Last but not least, it provides the literature to the researcher who wants to carry on future research in this field.

1.6 Limitations of the Study

The study has following limitation

1. The study still basically concern with portfolio investment management of commercial banks. It does not consider other financial aspect of the banks.
2. The study is mainly based on secondary data. Consequently the result depends on the reliability of secondary data. In some cases primary data also used.
3. The study only covers a periods of five fiscal years.

4. Among the various commercial banks in Nepal the study is only concern on four commercial banks which are: Bank of Katmandu Ltd, Bangladesh Bank, Everest Bank Ltd, Nepal Investment Bank Ltd.
5. The truth of research result is based upon secondary data.

1.7 Organization of the study

On the research the study are carried out in different stage and procedure, as it needed. As well as study organized on following chapters in order to make the study easy to understand.

Chapter 1 Introduction: The first chapter is introduction. This chapter deals with the introduction that includes backgrounds, meaning, focus of study, statement of problems, objective of the study, significance of study, limitation of study and organization of their study.

Chapter 2: Review of Literature: This chapter deals on descriptive conceptual framework of portfolio management. It consider to the review of major related literature about the portfolio management and related studies.

Chapter 3 Research Methodology: This chapter explains the research methodology used in the study, which includes research design, populating and sample source of data, data collection techniques, data analysis tools.

Chapter 4 Presentation and Analysis: This chapter is the major parts of the whole study in which all collected relevant data are analyzed and interpreted by the help of different financial and statistical tools. In this chapter we explain the major findings of the study.

Chapter 5: Summary, Conclusion and Recommendation: This chapter is suggestive to all concern in accordance of analysis and interpretation of data. It gives a summary of study, recommendations are made for concerns authorities and institutions as well as conclusion of the study are also carried out.

CHAPTER II

REVIEW OF LITERATURE

Research is continuous process, which never ends. The Continuity is research is ensured by linking the present study with the past research studies. It means, research must be based on past knowledge. The procedures and the finding may change but research continues. The Review of Literature is "stock taking" of available literature in one's field of research. The main purpose of reviewing the literature is to develop some ideas for developing a research design. Thus, the previous study cannot be ignored because they are foundation to present study. Generally, review of literature is that chapter where the researcher reviews the books, journals, magazines and other types of study, which are related to his filed of study. This chapter deals with the theoretical aspect of the topic on risk, return and portfolio analysis on common stock investment in comprehensive, detail and descriptive4 manner. For this purpose, journals, articles, annual report and various research reports related with topic have been reviews. Similarly, various books related with the topic published with in country and outside of country also have been considered as far as possible.

There is no any special book and research work related to this topic has been published in Nepal. On other hand, Nepalese stock market is stock in creeping stage. So, there are not sufficient materials that provided basic guidelines for this study. Some master degree theses that are available in TU which are related with this thesis have been reviewed. IN additional, some independent studies carried out by well known financial exports are taken in to consideration.

2.1 Conceptual Framework

Various books which are wither dependent or independent deals with theoretical aspects of risk, return and portfolio are taken into consideration in this chapter. Major focus is on the investment of common stock and its impact on individual risk, return and portfolio.

2.1.1 Common Stock

"Common stock is an ownership share in a corporation. Therefore the common stock holders are true owners of a corporation. Each share of common stock represents fractional ownership interest in the firm. For example, one share of common stock in a corporation that has 100 shares outstanding would represent 1/10,000 ownership interest. The return on common investment comes from either of two sources the periodic receipt of dividend and capital gains. Common stock holders enjoy a No. of rights such as is dividend right. Assets right, preemptive right voting right etc. Common stock is the recipient of the residual income of the corporation. Common stock holders are in an uncertain position about dividend. Capital gain and residual claim. Therefore, Common stock holder must bear greatest risk. Common stock is suitable for the investor who wants to take highly risk and return for a long period too. Common stocks are traded in stock exchanges and over the counter market (OTC)." (Thapa, Bhattarai and Basnet; 2006:9)

Common stocks are easier to describe than fixed income securities such as bonds but they are harder to analyze. Fixed income almost always has a limited life and an upper dollar limit on cash payments to investors. Common stock have neither. Although the basic principles of valuation apply to both, the role of uncertainty is larger for common stocks. So much so that often dominated all other elements in their valuation.

Common stock represents equity, or an ownership position in a corporation. It is a residual claim, in the sense that creditors and preferred stockholders must be paid as scheduled before common stockholders can receive any payments. In bankruptcy, common stockholders are in principle entitled to any value remaining after all of the claimants have been satisfied. (However, in practice, courts sometimes violate this principle)

The great advantages of the corporate form of organization are the limited liability of its owners. Common stocks are generally "Fully paid and no assessable", meaning that common stockholders may lose their initial investment but no more. That is, if the corporation fails to meet its obligations, the stockholders cannot be forced to give the corporation the funds that are needed to pay off the obligations. However, as a result

of such as a failure, it is possible that the value of a corporation's shares will be negligible. This outcome will result in the stockholders having lost an amount equal to the price to buy the shares." (Sharpe, Alexander and Bailey; 2003:457)

"Common stock represents ownership of a firm. Owners of the common stock of a firm share in the company's profits, the investor receives high rates of return and can become wealthy. In contrast, the investor can lose money if the firm does not do well or even goes bankrupt, as the once formidable K-Mart, Enron, W.T. Grant, and Interstate Department Stores all did. In these instances, the firm is forced to liquidate its assets and pay off all its creditors. Notably, the firm's preferred stockholders and common stocks all the advantages and disadvantages of ownership and is a relatively risky investment compared with fixed-income securities." (Reilly and Brown; 2004:83)

"Common stock is an ownership security. Common stock holders will get the return from common stock. People typically buy common stock expecting to earn dividend plus a capital gain when they sell their shares at the end of some holding period. Common stock holders cannot claim on whole earnings of the company. It is a residual claim only. When all the creditors and preference shareholders are satisfied, then only residual value comes into common stock holder side. In case of liquidity or bankruptcy, common stock holders are in principle entitled only to assets remaining after all prior claimants have been satisfied. As expressed above, common stock is the most risky security so must be in its expected return as well. When investors buy common stock they receive certificate of ownership as a part of their being part ownership of the company. The certificate states the number of shares purchased and their par value." (Bhalla; 2000:196)

"Common stock has one important investment characteristic and one important speculative market policy. Prices tend to increase irregularly but persistently over the decades as their net worth builds through the reinvestment of undistributed earnings. However, most of the time common stocks are subject to irrational and excessive price fluctuations in both directions, as consequences of the ingrained tendency of most people to speculate, i.e. to give way to hope, fear and greed." (Western and Brigham; 1999:93).

"Of all the other forms of securities, common stock appears to most of romantic whole fixed income. Investment Avenue may be more important to most of the investors, equity shares seem to capture their interest the most. The potential reward and penalties associated with the equity make then an interesting even exciting proportion, no owner, equity investment is a favorite topic for conversation in parties and get together." (Prassna and Chandra; 1995:16)

"Common stock holders of corporation are its residual owners, their claim to income and assets comes after creditors and preferred stock holders have been paid in full. As a result, a stockholders return on investors is less certain than the return to lenders or to a preferred stock holder. ON the other hand, the shares of a common stock can be authorized either with or without par value. The par value of a stock is merely a stated figure in the corporate charter and is of little economic significance. A company shouldn't issue stock at priceless than par value because stock holders who bought stocks for less than par value would be liable to creditors for the difference between the4 below par price they paid and the par value."

2.1.2 The Expected Rate of Return Common Stock

"The Expected rate of return for any asset is the weighted average rate of return, using probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rate return and their respective profanities.

"The Expected rate of return for any asset is the weighted average rate of return, using probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rate return and their respective probabilities.

$$\text{Expected value, } E(r) = \sum_{j=1}^n r_j P_j \quad (4.2)$$

r_j = rate of return on j^{th} outcome or event

P_j = Probability of occurrence of j^{th} outcome or event

When historical returns are used, the following formula is used to calculate and average return:

$$\text{Expected value, } E(r) = \frac{\sum_{i=1}^n r_i \cdot X_i}{n} \dots\dots\dots(4.3')$$

Where E(e) is the average or mean return and n is the number of observed returns." (Thapa, Bhattarai and Basnet; 2006:118)

"Investors main objective to maximize concept of value by investing money in product and project. A company creates value if the expected return exceeds the return required by the financial market for the risk involved. If someone buy a bond, he expects to receive interest on the bond and those interest payments provides him with the rate of return on his investment. If we multiply each possible outcome and then sum these products, we have weight average of outcomes. The weights are the probability and the weighted average is the expected rate of return." (Sharma; 2058 B.S: 70)

"The expected rate of return is the increase in the expected after tax value of the initial investment over the holding period. The cash payoff to owners of common stock can be descriptive as two types i.e.

- Cash dividend (dividend component)
- Capital gain (loss)[capital appreciation]

Capital appreciation is the difference between ending and beginning value of investment. Returns are defined as the dividend yields plus capital gain\loss. Thus return comes from two sources, income and price appreciation. Return is the main attraction for investors to invest. In a risky security as stock (equity share) accepting a varying degree of risk tolerance. "The return from holding an investment over some period, say a year is simply any cash payment received due to ownership plus the change in market price, derived by beginning price. From common stock we can define single period return as:

$$\text{Single Period Return (R)} = \frac{\text{Ending price}(P_t) + \text{Dividend}(Dt) - \text{Beginning price}(P_{t-1})}{\text{Beginning Price}(P_{t-1})}$$

This formula can be used to determine both actual one period return (when based on historical figure), as well as expected one period return (when based on

expected dividend and prices). Also note that the term is parenthesis in the number of above equation represents the capital gain or loss during the year." (Van Horne, Wachowicz and John M; 1995:90)

"Annualized rate of return over several periods can be calculated in two ways. The first one is simply to take the arithmetic average of the annual holding period return (HPR) over a gain period and the second one, which also takes in t account the compounding effects of cash receipts over different time intervals, in the geometric mean rate of return.

Simple Arithmetic Mean

$$HPR \times \frac{(1 + HPR)^n - 1}{n}$$

The geometric mean

$$HPR_G \times \frac{(1 + HPR)^n - 1}{n}$$

Where, HPR (holding period Return), n=No. of periods, HPR_G= Geometric mean holding period return." (Cheney, Moses; 1992:85)

2.1.3 The risk on Common Stock

"Risk is defined as the variability of the returns of a period. The one-period rate of return is the basic random variable used in measuring an investment's risk. The greater the variability of the returns, the riskier the project." (Thapa, Bhattarai and Basnet; 2006:119)

"Risk is defined in Webster's dictionary as a 'hazard: a peril: exposure to loss or journey', thus for mist, risk referees to the chance that some unfavorable event will occur. If u invest in speculative4stock (or, really, any stock), you are taking a risk in the hope of making an appreciable return. " (Weston and Brigham; 1995: 182)

"Although there is difference is the specific definitions of risk uncertainty, for our purposes and in most financial literature the tow terms are used interchangeably. In fact, one way to define risk in the uncertainty of future outcomes. And alternative

definitions might be the probability of an adverse outcome. Subsequently, in our discussion of portfolio theory, we will consider several measures of risk that are used when developing the theory." (Reilly and Brown; 2004:210)

"The risk is defined in Webster's Dictionary as a hazard: A peril: exposure to loss or injury; thus for most, risk refers to the chance that some unfavorable event will occur. If you invest in speculative stocks (or, really any stock,) you are taking a risk in the hope of making an appreciable return." (Weston and Brigham; 1995:182)

"Risk defined as the variability of the returns of a period. The basic random variable that measures an investment's risk is one period rate of return. The greater the variability of the returns, the riskier the project and vice versa. "Risk may be defined as the likelihood that the actual return from an investment will be less than the expected return. It refers to the chances that some unfavorable events will occur. Risk exists because of the inability of the decision maker to make perfect forecast. Risk arises on investment evaluation because we can't anticipate the occurrence of the possible future events with certainty and consequently cannot make any correct predictions about the cash flow sequences." (Basu; 2008 B.S: 70).

"Risk is defined in Webster's Dictionary as 'a hazard: a peril: exposure to loss or injury': thus, for most, risk refers to the chance that some unfavorable event will occur. If you invest in speculative stocks (or, really, any stock), you are taking a risk in the hope of making an applicable return." (Weston, Basely and Brigham; 2003: 182)

"It is said that risk refers to the chance that some unfavorable event will occur. If someone invests in speculative stock (really, any stock) he/she is taking a risk in the hope of making an applicable return. So, if one is going to invest in common stock for future return. High return on common stock involves high risk and vice versa. "Risk defined more generally, is a probability of the occurrence of unfavorable outcomes. But risk has different meanings in different contexts. In our context two measures developed from the probability distribution have been used as initial measures of return and risk. They are the mean and standard deviation of probability distribution." (Weston and Brigham; 2000:183)

2.1.3.1 The Range

"The range (Maximum return minimum return) is known as one of the traditional way of measuring risk. It simply shows the difference between the best possible return and the worst possible return but does not provide information about the distribution of the rates of return between the extremes." (Cheney and Moses; 1992:41)

"The range is one of the traditional methods of measuring risk, which simply communicates the difference between the best possible returns and the worst possible return; it does not provide information about distribution of the rates of return between the extremes.

The range= Best possible rates of return-worst possible rate of return.

The degree of risk of an underlying security is reflected in the magnitude of the difference. The smaller the difference the lower will be degree of risk." (Pokhrel; 2004:11).

"Another measure risk is the range of retransmit is assumed that a larger range of expected returns, from the lowest to the highest return, means greater uncertainty and risk regarding future expected returns/" (really and Brown; 2004:211)

2.13.2 Standard Deviation

"Standard deviation is a statistical of the variability of a set of observations. It is the measure of total risk. The smaller the variance, the lower the risky ness of the stock and vice versa. The risk or standard devotion is denoted by the symbol sigma. The square root of the variance of the rate of return is called the standard deviation of the rate of return. (Thapa, Bhattarai and Basnet: 2006:121)

"Standard deviation is another parameter of return distribution measurement. It measures the tightness or variability of set of outcome. In another words, standard deviation measures the magnitude of the difference between best possible return and worst possible return. Thus, it measures the degree of risk of common stock. Because we have defined as the variability of returns, we can measure risk by examining the tightness of the probability distribution associated with possible outcomes. In general,

the width of a probability distribution indicates the amount scatter, or variability, or possible outcomes. Therefore, the higher the probability distribution of expected returns, the less is its variability. Thus the smaller the risk associated with the investment." (Weston Basely and Brigham; 1996:182) .

"The measure we probability use most often is the standard deviation. The simple for which is sigma. To calculate the standard deviation, we proceed as shown in table, taking the following steps:

We calculate the expected rate of return:

$$E(k) = \sum_{i=1}^n Pr_i k_i \Gamma Pr_2 k_2 \Gamma \dots \Gamma Pr_n K_n \sum_{i=1}^n Pr_i k_i$$

Where

Pr= Probability

k= Expected rate of return

First, we subtract the expected rate of return [E(k)]from each possible (k₁)to obtain a set of deviations from (k):

$$\text{Deviation}_i = k_i - E(k)$$

Where,

E(k)=expected rate of return

Next, we square each deviation, multiply the result by the probability of occurrence for its related outcome and then sum these products to obtain the variance of the probability distribution.

$$\sigma^2 = \sum_{i=1}^n [k_i - E(k)]^2 Pr_i$$

Where,

E(k)=expected rate of return

P(r)=probability

Finally, we take the square root of the variance to obtain the standard deviation.

$$\sigma = \sqrt{\sum_{i=1}^n [k_i Z E(k)^2] Pr_i}$$

Where,

E(k) expected rate of return

p(r) = probability

σ = standard deviation

Thus, the standard deviation is a weighted average deviation from the expected value, and it gives an idea of how far above or below expected value and the actual value is likely to be." (Weston and Brigham; 2003:182).

2.1.3.3 Systematic Risk and Unsystematic Risk

"Systematic risk is market related risk. It is also called market, risk or indivertible risk. For example, inflation, interest rates war etc., Unsystematic risk is non market related risk. It is also called non market risk or company unique risk or company specific risk or diversifiable risk. for example, winning a new contract, an industrial dispute, and the discovery of a new technology, labor strikes etc. The systematic risk is rewarded in the form of risk premium. The unsystematic risk is not rewarded because it can be reduced to zero." (Thapa, Bhattarai and Basnet; 2006:183)

"Systematic risk has its source factors that affect all the marketable assets and thus can't be diversified away. The sources of systematic risk are market-pervasive. The measure of systematic risk permits an investor to evaluate an asset required rate of return relative to systematic risk of the stock. Unsystematic (company specific/unique) risk can be reduced through diversification. The relationship among total risk, systematic risk and unsystematic risk are shown below:

Total risk = Systematic Risk + Unsystematic Risk

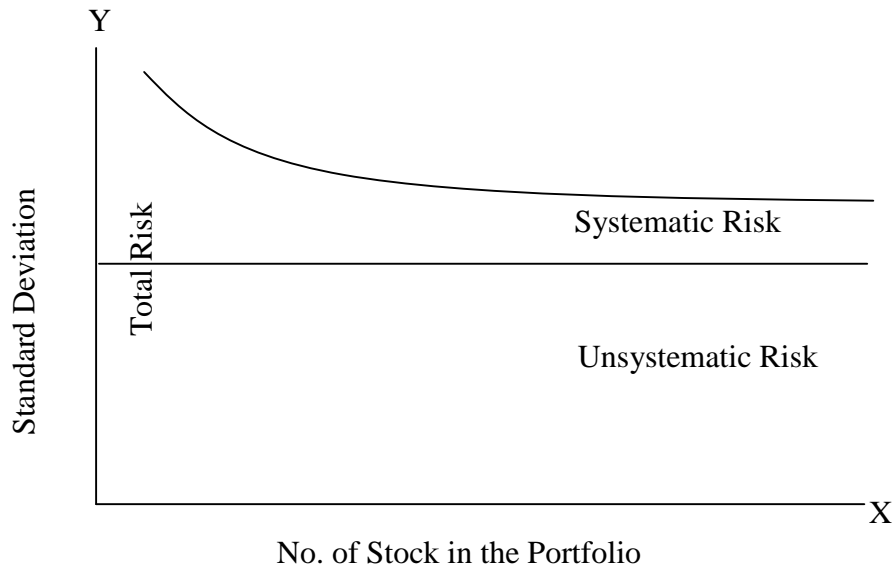
While Systematic Risk = $(\sigma_j) (\rho_{jm})$ and unsystematic Risk = $(\sigma_j) (1 - \rho_{jm})$

In this equation ρ_{jm} is the correlation between the return of given stock (i) and the return on market portfolio." (Upadhyaya; 2001:11)

The relationship between systematic risk and unsystematic risk are shown in given figure

Diagram 2.1

Relation between S.D of portfolio and Number of securities in portfolio



2.2.4 Capital Assets Pricing Model (CAPM)

"Capital assets pricing model (CAPM) is a model that indicated what should be the expected or required rate of return on risky assets. This transition is important because it helps you to evaluate an asset by providing an appropriate discount rate to use in any valuation model. alternatively, if you have already estimated the rate of return that you think you will earn on an investment, you can compare this estimated rate of return to the required implied by the CAPM and determine whether the assets is undervalued, overvalued, or properly valued.

To accomplish the foregoing, we demonstrate the creation of security market line (SML) that usually represents the relationship between risk and expected or the required rate of return on an assets. The equation of this SML, together with estimated for the return on risk-free asset and so on the market portfolio, can generate expected or required rate of return t any asset based on its systematic risk. You compare this required rate of return to the rate of return that you estimate that you will earn on investment of determine if the investment id undervalued or overvalued. After demonstrating this procedure, we finish the section with demonstration of how to calculate the systematic risk variable for a risky asset." (Reilly and Brow; 2004: 247)

"The capital assets pricing model states that the expected risk premium on each investment is proportional to its beta. This means that each investment should lie on the sloping security market line connecting treasury bill and market Portfolio." (Myers and Brealey; 2003:200)

"The capital assets pricing model (CAPM) specifies the relationship between risk and required rates of return on asset when they are held in well diversified basic assumptions of the CAPM.

All investors focus on a single holding, 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 mount are a given risk free rate of interest K_{RF} , and there are no restrictions on short sales of any assets.

All investors have identical estimated of the expected returns, variances, and covariance among all assets; that is, investors have homogeneous expectations.

All assets are perfectly divisible and perfectly liquid

There are no transaction 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 prices)

The quantities of all assets are given and fixed." (Thapa, Bhattarai and Basnet; 2006:177)

"CAPM is a model that describes the relationship between risk and expected return. In this model, a security's expected return is the risk free rate plus a premium based on the systematic risk of the security. The SML equation as suggested for the computation of expected rate of return on common stock. This model is as under:

$$R_j = R_f + \beta_j [E(R_m) - R_f]$$

Where,

R_j = required rate of return or equilibrium rate of return for stock j

$E(R_m)$ = expected return for the market portfolio

β_j = an index of systematic risk of stock j.

It means the sensitivity of a stock's return. It changes in returns on the market portfolio. The beta of portfolio is simply a weighted average of the individual stock beta in the portfolio." (Van Horne; 1997:100)

"The major implication of the CAPM is that expected return of assets will be related at a measure of risk for that asset known as beta (β). The exact manner in which expected return and beta are related is specified by the CAPM. The model provides the intellectual basis for a number of the current practices in the investment industry." (Sharpe, William, and Alexander; 2002:2618u)

"CAPM is a model that describes the relationship between risk and return. In this model, a security expected return is the risk free rate plus a premium based on the systematic risk of the security. The model is given below.

$$R_j = R_f + \beta_j (\bar{R}_m - R_f)$$

Where,

R_j = required rate of return on stock j.

R_f = The nominal risk free rate of return (the real risk free rate of return plus risk premium for inflation).

(\bar{R}_m) = The expected rate of return on the market portfolio.

β_j = Beta coefficient of stock j.

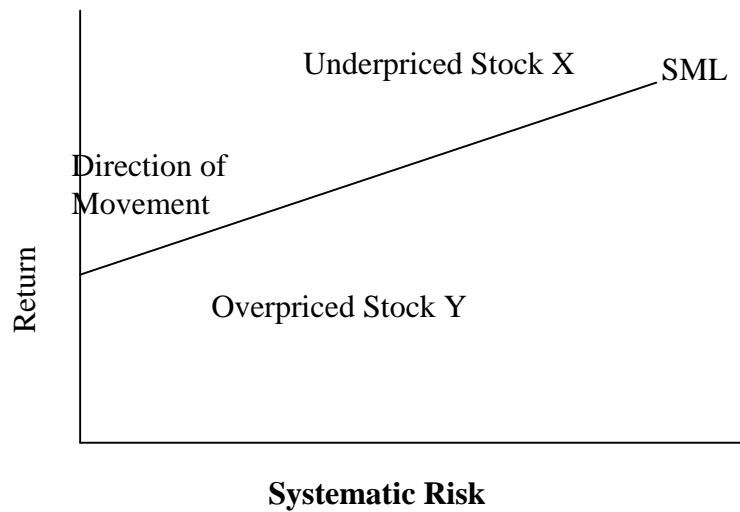
Hence, beta is the index of systematic risk. It means the sensitivity of a stock return to change in returns on the market portfolio. The beta of a portfolio is simply weighted average of the individual stock betas in the portfolio." (Van Horne and Wachowicz, 1995:100).

"Beta measures undiversifiable risk. Beta shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. Beta is calculated by relating the returns on a security with the returns for the market.

Most betas lies between 4 and 1.9. "The CAPM provides a means by which one can estimate the required rate of return of a security. ON the basis of price and dividend data, expected return can be calculated. By comparing two or more than two returns, investors can analyze whether the stocks are overpriced or under priced." The capital asset pricing model allows us to draw certain implications about the expected return of a specific security. The key assumptions in the model are that5 the perfect capital markets exist and that investors have homogeneous expectations." (Van Horn; 1997:85)

'In market equilibrium, the required rate of return on stock equals its expected return. That is all stocks will lie on the security market line, what happens when this is not so? Suppose that ink the given diagram the security market line is drawn on tee basis of what investors as a whole know to be the approximate relationship between the required cal then X and Y is improperly priced. Stock X is under priced relative to the security market line, while stock Y is over priced.

Diagram 2.2
Movement of stock



As a result, stock X is expected to provide a rate of return greater than that required used on its systematic risk. In contrast stock Y is expected to provide a lower return than that required compensating for its systematic risk. Investors seeing the opportunity for superior returns y investing in stock X should rush to buy it. This action would drive the price up and the expected return down. How long would this continue? It would continue until the market price was seen. The expected return would bow lie on the security market line. In the case of stock Y, investors holding this stock would sell it, recognizing that they could obtain a higher return for the same amount of systematic risk with other stocks. This selling pressure would drive Y's market price down and its expected return up until the expected return was on the SML. When the expected returns for those two stocks return to SML market equilibrium will again prevail." (Van Horne and Wachowicz)

2.1.5 Arbitrage Pricing Theory (APT)

"Arbitrage is the process of earning risk less profits by taking advance of differential pricing for the same physical asset or security. As a widely applied investment tactic, arbitrage typically entails the sale of security at a relatively high price and the simultaneous purchase of the same security (or its functional equivalent) at a relatively low price.

Arbitrage activity is a critical element of modern, efficient security markets, Because arbitrage profits are by definitions risk, less all investors have an incentive to

greater resources and inclination to engage in arbitrage than others. However, it takes few of these active investors to exploit arbitrage situations and, by their buying and selling actions eliminate these profits opportunities." (Reilly and Brown; 2004:284)

"The basis foundation of Arbitrage pricing theory is 'law of one price' Law of one price states that two identical goods cannot be sold at different prices there will be the presence of arbitrage opportunity. Arbitrage opportunity means zero additional investment zero additional risk but presence of additional return.

"If two identical goods sold at differing prices anyone could engage in arbitrage by simultaneously buying at low price and selling high price and make risk less profit. Arbitrage also applies to financial assets. If two financial assets have the same risk they should have the same expected return. If they don't have the same expected return, a risk less profit could be on by simultaneously issuing at low return and buying the high return assets. Arbitrage causes prices to be revised as suggested by the law on one price.' Arbitrage pricing process can be shown as below:(Thapa, Bhattarai and Basnet: 2006:220)

$$E(r_j) = r_f + \beta_j (E(r_M) - r_f) \quad (5.35)$$

Where,

$E(r_i)$ = required rate of return on asset i or equilibrium rate of return.

r_f = risk free rate of return.

β_j = constant variable

b = systematic risk factor or independent variable"

"Arbitrage is the process of earning risk less profits by taking advantages of different pricing for the same physical asset or security. As a widely applied investment tactic, arbitrage typically entails the sale of security at a relatively high price and the simultaneous purchase of the same security (or its functional equivalent) at a relatively low price.

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inclination to engage in arbitrage than others. However, it takes relatively few of these active investors to exploit arbitrage situation and, by their buying and selling actions, eliminate these profit opportunities." (Sharpe, Alexander and Bailey, 2003:284)

2.2 Portfolio

"An investor's objective is to make maximum return from his/her fund at the lowest risk. By investing in a single asset, investor can not achieve his/her objective. But it is only possible through portfolio through portfolio. A portfolio is a combination of securities. By the help of portfolio, risk can be diversified. In this context, it can be cleared through a proverb "do not pull all the eggs in one basket". It means that one can lose all the eggs if some unlikely event occurs. So, we can say that risk can not be diversified by forming portfolio. Thus, the objective of the portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investors deems appropriate." (Thapa, Bhattarai and Basnet; 2006:148)

"Most financial assets neither are nor held in isolation; rather, they are held as parts of portfolios. Banks, pension funds, insurance companies, mutual funds, and other financial institutions are required by law to hold diversified portfolios. Even individual investors at least those who security holding constitute a significant part of their total wealth generally hold stock portfolio's, not the stock of only one firm, This begin the, case, from an investors standpoint the fact that a particular stock goes up or down is not very important; what is important is the return on his or her portfolio, and the portfolios risk. Logically, then, the risk and return of an individual security should be analyzed in terms of how that security affects the risk and return of the portfolio is which is held." (Weston and Brigham; 1992: 183)

Portfolio is the combination on collection of assets. Portfolio investment is the investment in two or more than two assets. The primary objective of portfolio are:

To maximize risk.

To Maximize return

Whereas its secondary objectives are as follows.

Regular income

Price appreciation/ capital gain

- Tax advantages
- Easy marketability
- Safely of investment etc.

Investor usually diversifies their portfolio in order to maximize their risk given the rate of return. To minimize the risk of portfolio and individual invest insecurities with different risk and return characteristics. This procedure is called diversification. The degree of diversification varies depending on how risk avert the investor is. This determine the level of risk and return for given risk or minimizes risk for a given return. The efficient frontier may be defined as the collection of all possible portfolios that are not dominated or that have the minimum possible expected return, given a level of risk or standard deviation.

Portfolios can be classified as below:

- a. Growth oriented portfolio and
- b. Income oriented portfolio

Growth oriented portfolio is a part of portfolio whose primary objective is long term price appreciation. Income oriented portfolio is a portfolio that stress current dividends and interest return.

2.2.1 Portfolio Return

Expected return on portfolio is the summation of the weighted return of individual security. It is calculated by using probability of each return as weight and summing the products of the rates of return and their respected probabilities.

"The expected return on a portfolio, $E(rp)$ 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 investment in each asset.

$$E(rp) = \sum_{i=1}^n W_i E(r_i) \dots \dots \dots (5.1)$$

$$XW_1E(r_1) + W_2E(r_2) + \dots \dots \dots W_nE(r_n) \dots \dots \dots (5.1a)$$

Where,

$E(rp)$ = Expected rate of return of portfolio

$W_i =$ The fraction of the total value of the portfolio invested in the i^{th} asset or stock

$E(r_i) =$ The expected return from the i^{th} assets or stock" (Thapa, Bhattarai and Basnet; 2006: 149)

2.2.2 Portfolio Risk

Portfolio risk is a function of the proportional invested in the components. The risky ness of the components is correlation of returns on the component securities. It is measured by standard deviation. The risk of a portfolio is not a simple weighted average of the standard deviation of the individual securities. It depends on the investment weight on individual security. Risk on individual security and correlation between given securities.

"Portfolio risk is measured by statistical tool standard deviation and variance. It is a function of the proportions invested in the components. The risk ness of the components and the correlation of returns on the components securities. This risk is computed by using the following equations:

$$Var(rp) \text{ or } \sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n W_i W_j cov_{ij} \text{ or } \sum_{i=1}^n \sum_{j=1}^n W_i W_j P_{ij} \sigma_i \sigma_j$$

Where,

- $\sigma_p =$ Standard deviation of portfolios return
- $W_i =$ Proportion of investment in asset i
- $W_j =$ Proportion of investment in asset j
- $Cov_{ij} =$ covariance of the return between asset i and asset j
- (Thapa, Bhattarai and Basnet; 2006:150)

2.2.3 Optimum Portfolio Selection

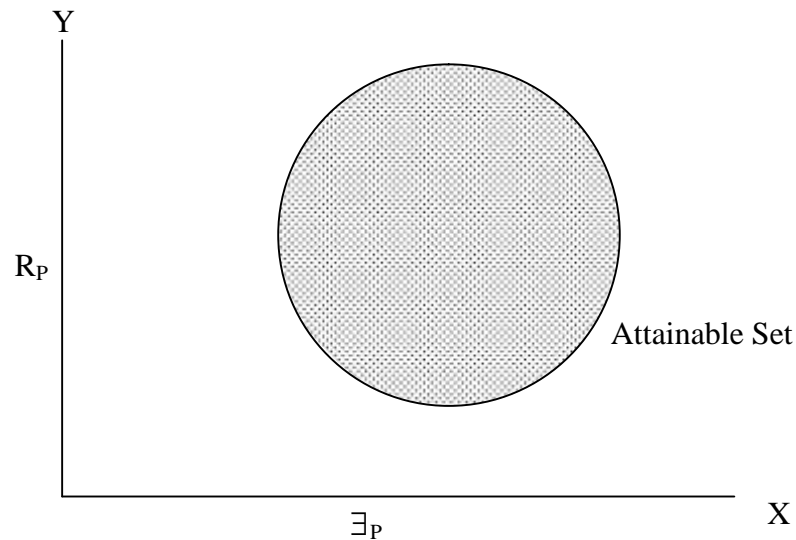
There are three steps to select a portfolio by an investor.

Step- I

Determination of Portfolio Opportunities or Attainable Set of Portfolio

It is the first step to select the optimum selection. From n- assets, we can combine limitless number of portfolios. Each possible will have an expectation rate of return and risk. The hysterial set of all possible portfolios called the portfolio opportunity set or attainable set.

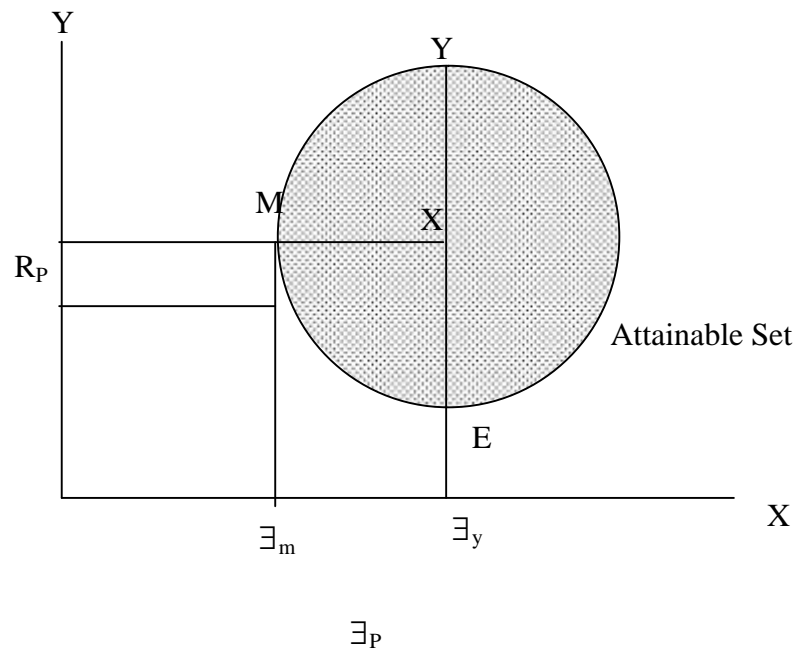
Diagram 2.3
Attainable Set of Portfolio



Step II
Determination of Efficient Frontier:

An efficient frontier or portfolio is a portfolio that provides the highest possible expected return for varying level of risk or the lowest possible degree of risk for varying level of expected return. Portfolio to the left of the efficient frontier are not possible because they lie outside the attainable set whereas the right of the frontier are ineffective because some other portfolio could provide either a higher return with same degree of risk or a lower risk for the same rate of return as shown in figure below.

Diagram 2.4
Efficient Frontier



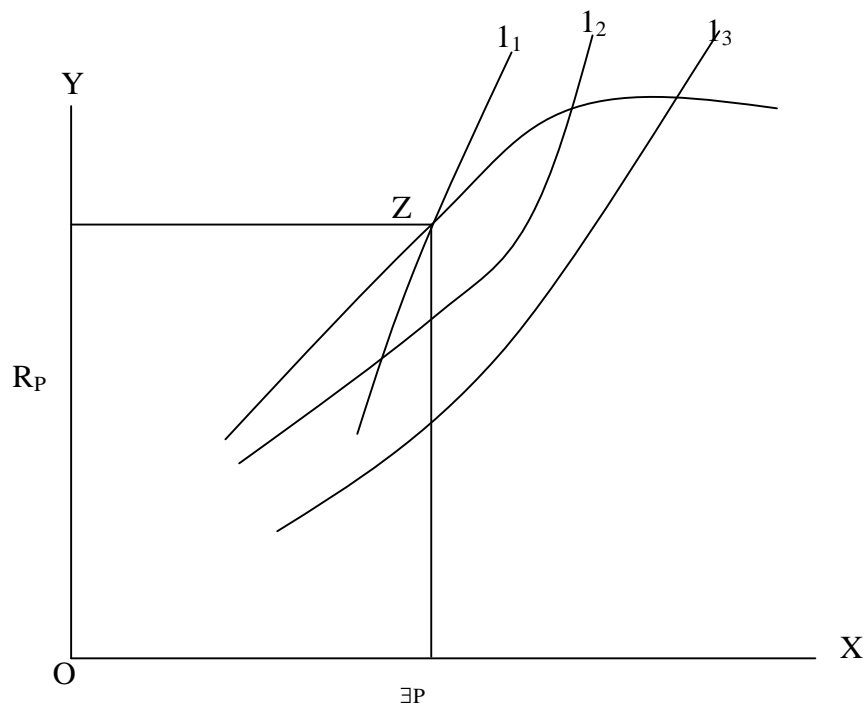
In figure, the efficient frontier is represented by the line from E to X. portfolio along curve EX dominated all other investment possibilities.

Step III

Selection of Optimal Portfolio

After finding the efficient frontier, select the optimal, which maximize the utility of investors with the help of indifference curve as shown in figure below.

Diagram 2.5
Optimal Portfolio Selections



The indifference curve of the investor and the portfolio becomes optimal for him. Indifference curve I_1 tangent with efficient frontier at point Z . here investors optimal portfolio is Z . That's why this point Z makes a highest level of satisfaction an investor can achieve. (Thapa; 2005:31)

2.2.4 Correlation Coefficient and Portfolio Risk

"The risk of the portfolio can be measured by using covariance of the returns of assets in the portfolio. The Covariance's simply means the degree to which the returns to which the returns of the two assets vary together. In other words its

measures how two variables co-vary. A positive covariance indicates that the returns of two assets move in the same direction where as a negative covariance indicates that the return of two assets moves in opposite direction. If the covariance is zero, it means the rate of return on assets is independent. The correlation coefficient is the covariance divided by the product of the standard deviation for the investment.

$$\text{Correlation coefficient } (\rho_{ij}) = \frac{\text{cov}(r_i, r_j)}{\sigma_i \sigma_j}$$

Where,

ρ_{ij} = Correlation coefficient between assets i and j

σ_i = Standard deviations of return for asset i

σ_j = Standard deviation of return for asset j

The correlation coefficient between -1 and 1, if the value of correlation is 1, it is perfectly positively correlated. It indicated that the return on two assets move together exactly the same way. In additional, the value of correlation -1 means perfectly negatively opposite way. If the value of correlation 0 means that, there is no relationship between two assets return." (Thapa; 2005: 38)

2.2.5 Portfolio Performance Evaluation

Risk and return should be considered by giving important priority when considering a portfolio performance. Due to absence of either risk or return we can not measure their performance of portfolio effectively. There are various methods applied to measure the portfolio performance. Among them, one of the important techniques that are Sharpe's Portfolio's performance. Measure is considering here in this study:

Sharpe's Performance Measure

It was developed by William Sharpe. Sharpe's measure divides average portfolio excess return over the sample period by the standard deviation of return over that period.

The Sharpe's measure of portfolio performance (Designated S_i) is stated as

$$S_i = \frac{\bar{r}_i - \bar{R}_f}{\sigma_i}$$

Where,

S_i = Sharpe's index of portfolio performance

\bar{r}_i = average return on portfolio 'i' during a specified time period.

\bar{R}_f = average risk free rate during the same period.

σ_i = Standard Deviation of portfolio 'i'

(Thapa, Bhattarai and Basnet; 2006:421)

2.3 Review from Relevant Studies from Articles, Journals and Reports

In the Nepalese context, there are very limited numbers of articles can be found relating to management of commercial banks of Nepal. Specially, it is rare in the case of this research topic. However, there are available some independent studies which are related to the Nepalese Stock Market, Portfolio Management and shareholders democracy are summarized below in detail.

Pradhan, Radhe Shyam (1993), carried out a study on the topic of "*Stock Market Behavior in a small capital market: a case in Nepal*" in 1993, the study was based on the data collected for 17 enterprises from 1983 through 1990. One of the major objectives, which are related to this study, is "To access the Stock Market behavior in Nepal."

Pradhan has summarized the following findings;

1. Dividend per share and Market price per share was positively correlated.
 2. Higher the earning on stocks, larger the ratio of dividends per share to market price per share.
 3. There are positive relationship between dividend payment and liquidity.
- (Pradhan; 1993:23)

Chopra, Sunil (2046 B.S), in his article "*The Role of Foreign Bank in Nepal*" conclude that the joint venture banks are already playing dynamic and vital role in the economic development of the country and this will undoubtedly increase with time.

(Chopra; 2046:1)

Shrestha, Shiva Raj (2055 B.S) has given a short foretaste on the "*Portfolio Management in Commercial Bank, Theory and Practice*". Shrestha has highlighted the following issues in his article.

The portfolio management becomes very important for both individual as well as institutional investors. Investors would like to select a best mix of investment assets subject to the following aspects.

Higher return which is comparable with alternative opportunities available according to the risk class of investors.

Good liquidity with adequate safety of investment.

Certain capital gain.

Maximum tax concession

Flexible investment.

Economic, efficient and effective investment mix.

In view of above aspects, following strategies are adopted:

Do not hold any single security i.e. try to have a portfolio of different securities.

Do not put all the eggs in one basket i.e. to have a diversified investment (making investment indifferent sectors).

Choose such a portfolio of securities, which ensures maximum return with minimum risk or lower of return but added objectives of wealth maximization.

However, Shrestha also presented the following approaches to be adopted for designing good portfolio and its investment:

To find out the invisible assets (generally securities) having scope for better returns depending upon individual characteristics like age, health, need disposition, liquidity, tax liability etc.

To find out the risk of securities depending upon the attitude of investor toward risk.

The develop alternative investment strategies for selecting a better portfolio this will ensure a trade off between risk and return to attach the primary objective of wealth maximization lowest risk.

To identify securities for investment to refuse volatility of return and risk.

In this study, Shrestha has presented two types of investment analysis techniques i.e. fundamental analysis and technical analysis to consider any securities

such as equity, debentures bond and other money and capital market instruments. He has further suggested that the banks having been international net work can also offer assess to global financial market. He has also point out the required skilled work force research and analysis and proper management information system in any type of commercial banks to get success in portfolio management and customers confidence. (Shrestha; 2055: 13)

Dr. Shrestha, Manohar Krishna (2057 B.S), in his article "*Commercial Banks Comparative Performance Evaluation*" concluded that the joint venture bank are new operationally more efficient, having superior performance while comparing with local banks that are operating in Nepal. Better performance of joint venture banks is due to their sophisticated technology, modern banking method and skill. Their better performance is also due to the governments branching policy is rural areas. Local bank are efficient and expertise in rural sectors but having number of deficiencies. Thus, local banks are facing growing constraints of socio-economic, political system on one hand spectrum and that of the issues and challenge of joint venture bank commanding significant banking business on other spectrum. (Shrestha; 2057:44)

2.4 Review of Master Thesis

In Nepal, some of the student has done independent study for the fulfillment of Master Degree in T.U related to the topic "risk, Return and portfolio Analysis on common stock investment" of Nepalese Joint Venture Banks. Some of the related studies are reviewed here:

Upadhyaya, Sudeep (2001) has undertaken a study entitled "Risk and Return on Common Stock Investment of Commercial Banks in Nepal". The main objective of the study was to assess the risk associated with returns on common stock investment of the listed commercial banks on the basis of selective financial tools. Others objectives of this research were to evaluated common stocks in terms of risk and return, to assess the risk compensating returns, and to analyze the volatility of common stocks and other relevant variables as an affecting factor in portfolio construction of common stocks.

In order to achieve the objectives, he has analyzed risk and return of individual bank, systematic risk and unsystematic risk and portfolio among the sample banks.

The major findings of his study are:

In general, most people see stock market investment as a black art that they know little about. Many people have unrealistically optimistic or pessimistic expectations about stock market investment or perhaps a fear of the unknown. Due to the lack of information and poor knowledge, Nepalese individual investors can not analyze the securities as well as market properly.

He further stated, "Expected return on the common stock of Nepal Grind lays Bank now renamed, as SCBNL is maximum (i.e. 127.84%) which is very high rate of return. In reality this rate exists only due to the effect of unrealistic annual return because of the issue of bonus share and increase in share price at the same. Similarly, expected return of the CS of Nepal SBI Bank Ltd. is found minimum. IN the context of industries (or sector), expected return of "Others" sector is highest (i.e. 15.5%) Manufacturing and production sector is the least performer."

He also revealed, "Common stock of Nepal Grind lays Bank limited now renamed as Standard Chartered Bank Nepal Ltd is most risky and of SBI is least risky. This proves the proverb 'high risk-high return'. Regarding the market volatility, EBL'S common stock is more volatile which has beta value of 3.941 and NIBL'S common stock is least volatile, which has beta value of 0.875. Others are also volatile. All the stocks of commercial banks are overpriced. NGBL stock has maximum difference of expected rate of return and required rate of return."

Upadhyaya further summarized, "most of the Nepalese private investors invest in single security. Some of the investors use their und in two or more securities. But it is found that they don't make any analysis of portfolio before selecting. They invest their fund in different securities on the basis of expectation and assumption of individual security rather than analysis of the effect of portfolio.'

According to him, "The correlation of returns between most of the banks is nearer to +1. It is not favorable to construct a portfolio. Only the correlation between NIBL's CS return and NBBL and EBL CS return is found negative. Investor can

reduce risks through holding the CS of NIBL or EBLO. Portfolio between the CS of NGBL and BBC is very advantageous as far as risk reduction is concerned. Here, portfolio standard deviation is less than individual standard deviation. Hence the portfolio approach of investment is better way to get the maximum return".

Joshi, Deepak Raj (2004) has conducted a study entitled "*Risk and Return Analysis of common stock of five listed Commercial Banks.*" The major objective of the study are to calculated and analyze the risk and return of banking sector, to evaluate common stock of listed commercial banks and to analyze whether the common stock of commercial banks are correctly priced or not etc.

The major findings of his study are summarized below:

Regarding the market capitalization of selected companies, SCBL has the maximum market capitalization and NBBL has the minimum market capitalization.

Regarding the market capitalization of the inter industry, Banking sector has 65%, Insurance and Finance has 14% Manufacturing and Processing sector has 13% Hotel sector has 7%, Trading sector has 1% and other sector has negotiable proportion of share in over all market capitalization.

Joshi further concludes that the considering return, the return of SCBL is maximum (i.e. 73.30%) but it risk also maximum but if risk is taken into account for consideration, NIBL has the minimum risk of 73.82%. In industry wise analysis, the expected return of finance and insurance has a maximum expected return (i.e. 27.70%) while other sector has a minimum expected return (i.e. 16.61%). If the risk is assessed in term of C.V, Banking sector has minimum C.V. like 1.66, which indicated that it is better to invest on the shares of banking sector.

Theme of Joshi's study is summarized as below:

As analyzing the coefficient of variation, he suggests that the banking industry is the best one for investment. Similarly, while analyzing individual securities, SCBNL is the best for investment due to highest return and lowest C.V

Based on the findings and conclusion of the study, it is recommended to the investor that if they wish to generate higher return, then they should bear higher risk and invest in the shares of SCBNL. But if they are risk investors

and they want to invest in single assets, then they can invest in the share of NIBL of HBL because these two stocks lower risk than that of portfolio risk. Portfolio analysis shows that the portfolio investment can reduce risk significantly. Thus, portfolio investment is recommended to receive high return at minimum risk.

Pokhrel, Krishna Raj (2005) has under taken a study entitled "*Risk and Return on Common Stock Investment of Commercial Banks, with reference to six Commercial Banks.*" Among various objectives of his study, some majors basic objectives of his research are to analyze, whether the common stock of commercial banks are correctly priced or not, by analyzing the required rate of return and to study systematic and unsystematic risk associated with securities of the commercials banks.

Majors finding of his study are given below;

Among the six commercials banks, NABIL bank has highest expected rate of return on common stock (i.e. 14.03%) and NIB bank has negative expected rate of return of common stock (i.e. -3.9698%). Similarly, the common stock of BOKL is most risky asset, which has highest standard deviation (i.e. 19.49%). Regarding the market capitalization of six selected companies, SCBNL has the maximum market capitalization (i.e. 31.36%) and the market capitalization of BOKLL is low by 7.11%.

Considering the different investment sectors, the expected return of other sector is maximum by 34.53% and the processing sector has very low expected return (i.e. -12.076%). Similarly, considering coefficient of variation of different sectors, the trading sector has maximum by 18.49 units, which indicate that to earn 1 unit of return, the investor has to bear 10.49 unit of risk. The coefficient of variation on manufacturing and processing is -3.1349 and -3.28 (negative) respectively.

On the basis of required rat of return and expected rate of return, the study shows that RRR of NIBL, NABIL, SCBNL, HBL, EBL and BOKL is 0.0175, -0.0677, -0.0174,, -0.0099, -0.0526 and -0.0903 respectively. The ERR of NIBL, NABIL, SCBNL, HBL and BOKL is -0.0396, 0.1403, 0.2264, 0.1158, 0.1312 and 0.0021 respectively. As his study shows that the common stock of NIBL is overpriced and rest of all's common stocks are under priced.

At the end of study, Mr. Pokhrel recommended that before making investment decision, the investor should visit and discussion with investment companies, with export and researchers because sharing experience, idea and view of export will provide greater help. He also advice that the investor needs to diversify their investment reduce risk. Proper construction of portfolio never takes any considerable loss.

Mainali, Umesh Prasad (2005) has performed a study entitled "*risk and Return Analysis on Common Stock Investment.*" In his study, he has performed an analysis of risk and return on common stock investment with special reference to banking industry. In this study, he writes, the main objective of the study's to determine whether the shares of selected commercial banks are overpriced, under priced or correctly valued by analyzing the risk and return. His others objectives are evaluate the common stock, to analyze the risk and return and to provide relevant suggestion to concerned authority based on analysis of data. His major findings on his study are given below in details.

Among the selected commercials banks, he writes that the SCBNL has highest (i.e. 32%) market capitalization which indicated that the size of the stock market of SCNBL is greater one.

Regarding the expected rate of return among the selected commercial banks, the highest expected rate of return of SBI is 19.9% and lowest expected return on common stock of NBBL is -27.9%. So, it indicated that the investment in SBI will earn best return.

Among the selected banks, the highest C.V on common stock of NABIL is 12.23 and lowest C.V common stock of SCBNL is 3.0191. It indicated NABIL stock is more risky and SCBNL is less risky than other. Similarly, bet coefficient of SBI is highest (i.e. 3.30) and the NIBL has lowest beta coefficient (i.e. 0.5831). So, it means C.S of NSBIL is most aggressive stock and C.S of NIBL is most defensive than other.

At the last, he writes at major finding of his study that the correlation between NIBL and NSBIL is in negative. It indicated making portfolio investment in these two stocks will minimize risk without loosing considerable return. On the basis of his findings, he recommended that the investors should make their decision on the basis of reliable information rather than the imagination and

rumors. He further advises that, the investors should make several analyses like risk and return analysis and ratio analysis etc.

Chhetri, Dil Bahadur (2005) has conducted his study on the topic of *"Risk and Returns Analysis on Common Stock Investment with reference to listed Commercial Banks* where, he has taken six banks as a sample size from listed commercial banks of NEPSE. The main objective of the study is to evaluate the common stock of selected joint venture banks in terms of risk and return and to perform sector-wise comparison on the basis of market capitalization. Another major objective of his study is to analyze the volatility of difference stock and other relevant variables that should be considered while deciding investment on stock. His major findings are summarized below:

On the basis of market capitalization, he has found that size is SCNBL is the biggest one (i.e. 6537.47). Out of the total market capitalization of various industries, banking sector covers most of the share i.e. 65.54% NEPSE index shows that banking sector has higher return than others.

On his study, he has found that EBL has highest expected return (i.e. 45.12%) where SCNBL has the lowest standard deviation (i.e. 31.30%). Similarly, the EBL has least CV (1.51). Thus, he recommended that the common stock of EBL is the best investment alternative as it has least risk per unit of expected return.

At the end of his study, he has recommended that the investors need to diversify their fund to reduce risk. He further advises that for the portfolio construction, in sector should the stock that have higher and negative correlation or moderate positive correlation between stocks of different and sector.

He writes that common stock investment is very risky. So, investor should learn about the operation of the security market, the characteristics or various investment avenues, concept of the time value money, the basic model of security evaluation, the approach of fundamental analysis, the tools and technique of analysis and the way of resolving the key issues relating to the process of portfolio management. After learning above topics and subject matter, investor should translate the knowledge and insight to gain from common stock investment.

2.5 Research Gap

Risk, return and portfolio are the most important part of finance because they can strong impact on investment. Thus, it is not totally new concept. Many researchers have done research on this aspect. As long as researchers knows, no specific research has yet been able to go in depth of the topic and has successfully of this topic has been based on only showing the risk and return analysis of the stocks of commercial banks. Hence, this research will fulfill the prevailing research gap by calculating the portfolio risk, return and market price of different companies and estimating the optimal portfolio among the common stock on the basis of all relevant data and information of the latest ten fiscal year of six. Nepalese joint venture banks, which are the major concern of public share holders and others stockholders. Furthermore, the portfolio performance has also been evaluated with using Sharpe index of portfolio performance measure, which has not been calculated on other studies.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology describes the methods and process applied in the entire aspect of the study focus of data, data gathering instrument and procedure, data tabulating and processing and methods of analysis.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are adopted by a researcher in studying his research problem along with the logic behind them. (Kothari, 1990:10)

This chapter will include research design, a nature of data, data gathering procedure, population and samples and data processing procedures.

3.1 Research Design

As per nature of the study, descriptive cum analytical research design has been followed. The descriptive research design describes about the pattern of the Nepalese investor, problem and uses of portfolio management, structure of business etc. The analytical research design makes analysis of collected information and data and makes a critical evaluation of it.

3.2 Source of Data

This research study is mainly based on secondary data. Published annual report of the concerned banks are taken as the basic source of data. Similarly, related books, magazine, journals, articles, reports, bulletins, data from Nepal Stock Exchange and Nepal Rastra Bank Banking directive and financial statistics, related website etc as well as other supplementary data and various economic surveys are also used. Previous related studies to the subject are also counted as the source of information.

3.3 Population and Sample

All seventeen licensed Nepalese commercial banks will consider as the total population out of then this study will be concern with four commercial bank as a sample, those banks are: Bank of Kathmandu Ltd, Nepal Bangladesh Bank Ltd, Nepal investment bank ltd, Everest Bank Ltd. Because these banks are categories at same category. Their market prices of stocks are also not so vast different between each others. Their establishment and operation date are also not so different. Their Earning Per Share are also not so different between each other.

3.4 Data Gathering Procedure

As this study will mainly base on secondary data, Primary data will be used it necessary. The secondary will be collected from various libraries, various related literatures, from related website, from concern bank's information section. Primary data will collect by developing as schedule questionnaire and distributing it to manager and finance chief that will available. To get most reliable result discussion with respondent will be conduct. In this way data will collect and use analysis and interpretation.

3.5 Data Analysis Tools

Financial as well as the statistical tools will be used to make the analysis more convenience, reliable and authentic.

3.5.1 Financial Tools

There are several financial tools which can be applied in order to analyze the performance of commercial banks. But the following main financial tools are used to analyze:

Liquid Ratio

This ratio measures the short run solvency of the firm. These ratios are calculated to judge the financial position of concern firm, long term as well as short term solvency point of view.

Commercial banks need liquidity to meet loan demand and deposit withdrawals. This ratio is calculated by dividing liquid funds by total deposits. This can be started as follows.

$$\text{Liquidity ratio} = \frac{\text{Liquid funds}}{\text{Total deposit}}$$

Profitability Ratio

The profitability ratio as the name suggest, measure the profitability of business operation in terms of profit margin return on equity, return on total investment, and reflect the overall efficiently and effectiveness of management. (Pradhan, 192: 39)

Profitability can be measured is terms of relationship between net profit and assets. This ratio is also known as profit-to assets ratio. It measures the profitability of investment. The overall profitability can be known as: (Pillai and Bagavathi)

$$\text{Return on total assets} = \frac{\text{Net profit}}{\text{Total assets}}$$

Activity Ratio

These ratios are very important for a concern to judge how well facilities at the disposal of the concern are being used or to measure the effectiveness with which a concern uses its resources at its disposal (Jain and Narang, 1998: 55). These ratios are called turnover ratio. a proper balance generally reflects that assets are managed well.

Total investment to total deposit ratio measure the utilization of outsider fund in the form of investment to generate profit and loans and advance to total deposit ratio measure the extent to which banks are able to issue loan and advances from total deposits which are as follows,

$$\text{Total investment to total deposit} = \frac{\text{Total Investment}}{\text{Total Deposit}}$$

$$\text{Loans and advances to total deposit} = \frac{\text{Loans and Advances}}{\text{Total Deposit}}$$

Single period Rate of Return/Holding Period Rate of Return

Single period return is also known as holding period return. Holding period or single period returns is simply the total return an investor would earn during the period of holding the securities. Holding period returns are often calculated for period other than the one year. For this reason the length of holding period must always be indicated for a specific single period return. (Bhattacharai 2004: 72)

Single period rate of returns of holding period rate or returns

$$(r_e) = \frac{P_t + \Gamma c_t - P_0}{P_0} \times 100$$

(Ending Price + Cash dividend) / Beginning price

The return, which we expect in the future, is the weight average rate of return. The expected return on the basis of past performance is the arithmetic mean return of the past returns. So, (Bhattacharai 2004:77)

$$\text{Expected return for stocks } j = \frac{r_1 + r_2 + \dots + r_n}{n}$$

Where,

r_t = single period return at time 't'

n = number of observation or returns

Risk can be defined as the deviation between actual return and expected return. Various factors play important role to bring deviation or variability. Such variability, statistically is measured by standard deviation (σ) or variance. Variance is the sum of the square difference between each return and expected return divided by number of period (Bhattacharai, 2004:75)

$$\text{Variance } (\sigma^2_j) = \frac{\sum [R_j - \bar{R}]^2}{N}$$

Portfolio Analysis

CAPM Model

CAPM suggests that any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk the only relevantly risk's non diversifiable risk; therefore the investment decision and the pricing of capital asset should be based on un-diversifiable risk. The CAPM further suggest that the price of capital assets should determine in a way that to compensate the systematic risk.

The required rate of return to bear certain level if systematic risk can be determined by using following equation

$$\text{Required rate of return}(K_j)=R_F+(R_m-R_F) S_j$$

Where,

R_j = risk free rate of return

R_m =expected return on market portfolio

S_j =Beta of systematic risk index of assets j

Analysis of Total Risk

Total variability of returns of an asset or portfolio is measured by variance and standard deviation. This total risk can be divided into two arts i.e. diversifiable and indivertible risk.

Therefore total risk= diversifiable risk+ Un-diversifiable risk

Diversifiable Risk

Diversifiable risk is also known as unsystematic risk. This types of risk unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. It is caused through the event like, labor strikes, management errors, invention, advertising campaign, and shifts in consumer test, availability of raw materials. It can be stated as:

Therefore Unsystematic risk= Total risk-systematic risk

$$\text{Var}(e) = \sum_j S_j^2 \sigma_j^2 + \sigma_m^2$$

Where,

Var (e)=variance of standard error

Un-diversifiable Risk

Un-diversifiable risk is known as the systematic risk. This risk is those portions of total variability in return caused by market factor (also called market risk) that simultaneously affect the price of all securities. This risk created due to the changes in macro economic factor like, interest rate, inflation, investors' expectations, gross domestic product (GDP etc. Un-diversifiable risk is that part of total risk that can not be eliminated by allocating capital to a diversified portfolio of investment. It can be stated as:

$$\text{Systematic risk} = S_{jm}^2 + \sigma_m^2$$

Proportion or percentage of systematic risk is also measured by coefficient of determination. Coefficient of determination is the square is the square of correlation coefficient.

$$\begin{aligned} \text{Percentage of systematic risk} &= \frac{\text{Systematic risk}}{\text{Total risk}} \times 100 \\ &= \frac{S_{jm}^2 + \sigma_m^2}{\sigma_j^2} \times 100 \end{aligned}$$

$$\begin{aligned} \text{Coefficient of determination } (r_{jm}^2) &= \frac{\text{Systematic risk}}{\text{Total risk}} \\ &= \frac{S_{jm}^2 + \sigma_m^2}{\sigma_j^2} \end{aligned}$$

Portfolio returns

The expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each asset, and sum of the weights must be equal one. (Cheney John. M and Edward A. Moses, n.d: (652)

$$R_p = XW_A R_A + W_B R_B + \dots + W_N R_N$$

Where,

R_p = Portfolio expected returns

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Expected return for stock 'A'

R_B = Expected return for stock 'B'

Portfolio risk

The portfolio risk is measured by either variance or the standard deviation of returns. "The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weights". (Pradhan, 1992: 295)

The variance of return from portfolio made up an asset is defined by following equation.

$$\text{Variance } (\sigma_p^2) = W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2W_A W_B \text{COV}(r_A, r_B)$$

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2W_A W_B \text{COV}(r_A, r_B)}$$

Where,

σ_p = standard deviation of portfolio rate of return

$\text{COV}(r_A, r_B)$ = Covariance of returns between asset A and B

The covariance is related to correlation coefficient as shown in equation :

$$\text{COV}(r_A, r_B) = \rho_{AB} \sigma_A \sigma_B$$

ρ_{AB} = Correlation coefficient between variable A and B

Portfolio Beta

The portfolio beta is the weighed average of the individual beta. The portfolio beta is calculated by using the following formula.

$$\text{Portfolio beta } (\beta_p) = \sum_{j=1}^n W_j \beta_j$$

Where,

W_j = proportion of portfolio

B_j =beta coefficient of asset j

Portfolio Performance Measure

Sharpe's Performance Measure

One performance measure that has been developed to evaluate a portfolio performance, considering both return and risk simultaneous, is the sharp index of portfolio performance. Sharp's measure divides average portfolio excess return over the sample period by the standard deviation of returns over that period. It measures the reward to (total) volatility trade off. It can be stated as:

$$S_p = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{r_i - R_f}{\sigma_i}$$

Where,

s_p = Sharp's index of portfolio performance for portfolio i.

r_i =Average returns from portfolio i.

σ_i = Standard deviation of returns for portfolio i.

R_f = Risk free rate of return

Beta Coefficient

Beta is an index of systematic risk. Beta coefficient measures how much systematic risk a stock j has relative to market portfolio. Symbolically

$$S_j = \frac{\text{COV}(r_j, r_m)}{\sigma_m^2}$$

Where,

S_j =Beta coefficient of stock j

$\text{COV}(r_j, r_m)$ = Covariance between stock j and market return M

Beta of market returns equals to 1. If beta is greater than 1, then the asset is more volatile than market and is called aggressive beta. If the beta is less than 1, then

the asset is called defensive beta and its price fluctuation is less volatile than market (Bhattacharai, 2004: 122).

3.5.2 Statistical Tools

The following statistical tools will be used while making analysis of data.

Standard Deviation of Stock Return

Standard deviation (S.D) is defined as the positive square root of the mean of the square of the deviations taken from the arithmetic means (Bajracharaya, 2004: 177). It is the square root of the variance and measures the unsystematic risk on the stock investment. It is denoted by σ_j . Symbolically

$$\sigma_j = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{N}}$$

Where,

σ_j = Standard deviation of return of stock j during period n

Variance of Stock Returns

Variance is the means of squared deviation about the mean of a series. The variance also shows the total risk of investment. Thus, variance is the square of the standard deviation and denoted by σ_j^2 . Symbolically

$$\sigma_j^2 = \frac{\sum (R_j - \bar{R}_j)^2}{N}$$

Where,

σ_j^2 = Variance of the return of stock j

Coefficient of Variance

Standard deviation is the absolute measure of dispersion. The relative measure of dispersion based on the standard deviation is known as coefficient of standard deviation. The coefficient of dispersion based on standard deviation multiplied by 100 is known as coefficient of variation (C.V). C.V measure risk "per unit of expected

return" less the C.V will be the uniformity, consistency etc and more the C.V less will be the uniformity, consistency etc. Symbolically

$$\text{Coefficient of Variation (C.V)} = \frac{\sigma}{R_j}$$

Covariance

Covariance is the joint variance of any two securities. It measures how two random variable, such as the return as securities A AND B move together. A positive value of covariance indicated that the securities returns tend to move in the same direction. A negative value of covariance indicated the returns of securities move in the opposite direction and the zero value of covariance indicated no relationship between the securities return. The covariance between the securities return can be calculated by using following formula. (Bhattacharai, 2004: 96)

$$\text{COV}(r_j, r_m) = \frac{(R_j - \bar{R}_j)(R_m - \bar{R}_m)}{N}$$

Where,

COV (r_jr_m)= Covariance between stock j and market return M

Correlation

Covariance and correlation are closely related. The correlation measure the degree of relation ship of movement of securities return. Correlation coefficient always lies between +1 and -1. A value of +1 represent perfectly positive correlation and value of 1 represent perfectly negative correlation (Bhattacharai, 2004: 97. Symbolically

$$r_{jm} = \frac{\text{COV}(r_j, r_m)}{\sigma_j \sigma_m}$$

Where,

r_{jm} X correlation between stock and maket return

Tools for Testing Hypothesis

Population is all the listed companies' common stock is NEPSE that makes the market portfolio. Sample is all listed common stock of commercial banks. As the test is 'test of significance for a difference of mean' the test statistic (t) is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{S^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Where,

\bar{x}_1 = Arithmetic mean of first sample

\bar{x}_2 = Arithmetic mean of second sample

n_1 = First sample size

n_2 = Second sample size

S^2 = Estimated standard deviation of the market portfolio (Population)

In order to fulfill the objective of research study the following is formulated for testing:

Null hypothesis (H_0): $\bar{x}_1 = \bar{x}_2$, i.e. There is no significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In other words, average return on the share of commercial banks is equal to market return.

Alternative hypothesis (H_1): $\bar{x}_1 \neq \bar{x}_2$, i.e.. There is significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In other words, average return on the share of commercial banks is not equal to market return.

Coefficient of Determination: Coefficient of determination gives the ratio of explained to total variance. The coefficient of determination is given by the square of the correlation coefficient (r_{jm}^2). The coefficient of determination is a much useful and better measure for interpreting the value of r_{jm} . (Gupta, 2004: 585)

Trend Analysis

Trend analysis is an analysis of financial ratio over time used to determine the improvement of determination of its financial situation (Gupta, 1996: 541). The trend line is represented by following equation:

$$y = a + bx \dots \dots \dots (i)$$

Where,

Y = trend values

a = y interceptor value of y when x = 0

b = Slope of the trend line or amount of change that comes in y for a unit change in x

x = Variable that represent time or time variables.

To find the values of a and b, we have to solve the following equations;

$$\sum Y = Na + b \sum x \dots \dots \dots (1)$$

$$\sum XY = a \sum X + b \sum X^2 \dots \dots \dots (2)$$

Where,

N = No of years

To make calculation easier, the deviation of the independent variable (i.e. time) are taken from the middle of the time period so that $\sum x = 0$, then the above two equation change to:

Therefore,

$$a = \frac{\sum Y}{n}$$

$$b = \frac{\sum XY}{\sum x^2}$$

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

This chapter is the heart of the whole study. This chapter makes an analysis and interpretation of all collected relevant data related to the study.

This chapter is separated into different parts. The first parts deals with analysis of financial performance of concern banks by the means of various ratios. Second parts is related with making investment and loan and advance portfolio analysis on different investable sector of commercial banks. Third part is concern with risk and return analysis of commercial bank stock and portfolio risk and return analysis. Forth part shows linear trend analysis about of sample banks and last.

4.1 Ratio Analysis

Investment to total deposit ratio

This ratio measures that which banks are more successful in mobilizing their total deposit on investment. Higher the ratio better the utilization of collected fund and it generates regular income to the banks. This ratio is calculated by dividing investment by total deposit. This can be between as:

$$\text{Investment to total deposit ratio} = \frac{\text{Investment}}{\text{Total Deposit}}$$

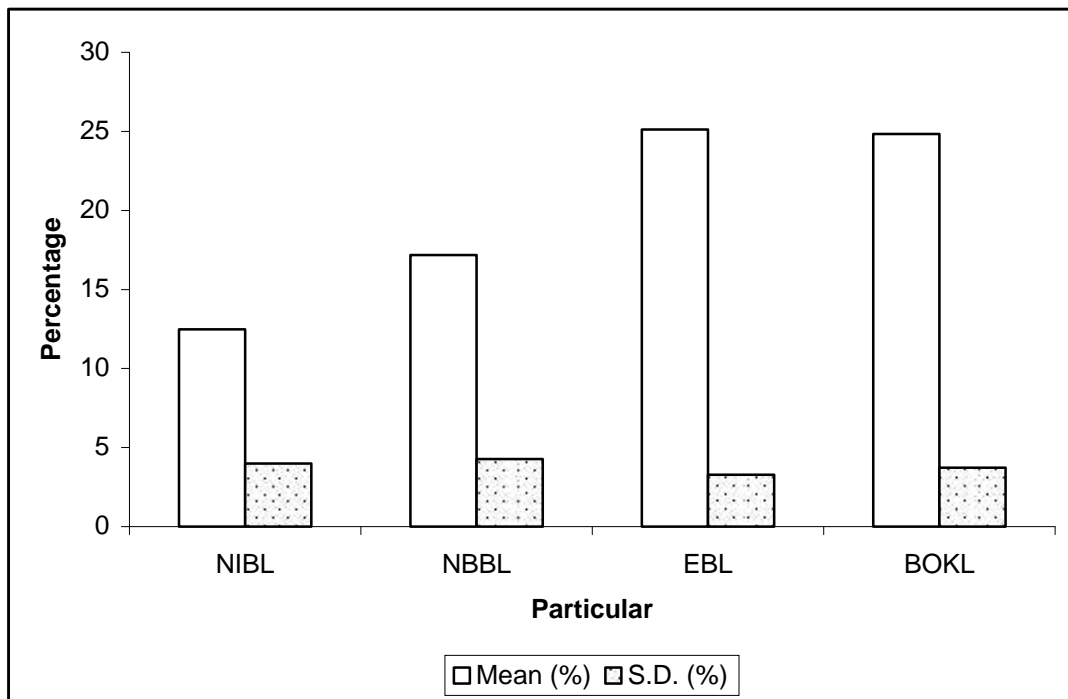
Investment Includes Investment on government securities, government bond, treasurg bonds and others. The total deposits consists current deposits. Fixed deposits saving deposits. Mony at call deposits and other deposit.

The table shows the ratio of investment to total deposit of NIBL, NBBL, EBL and BOKL (see detail calculation on Annex A).

Table 4.1

Particular	NIBL	NBBL	EBL	BOKL	Industry Average
Mean (%)	12.47	17.18	25.11	24.83	17.36%
S.D. (%)	3.99	4.27	3.28	3.73	-
C.V. (%)	31.99	24.85	12.66	15.022	37.13%

Figure 4.1
Mean and S.D. of Investment to Total Deposit Ratio Banks



In the above table mean investment to total deposit ratio of EBL is highest i.e. 25.11 and NIBL has lowest ratio i.e. 12.47 percent among four commercial banks. The other banks NBBL and BOKL have the mean ratio of 17.18 percent and 24.83 percent respectively.

The industrial average mean ratio of investment to total deposit is 17.36 percent. The NIBL and NBBL have the lower ratio then the above industrial average i.e. 12.47 and 17.18 < 17.36 percent and other banks EBL and BOKL have the grater investment to total deposit ratio. Then the industrial average i.e. 25.11 percent > 17.36, 24.83 percent, 17.36 percent respectively. From the above data analysis what we can say that the performance of EBL, BOKL is very nice then the other bank NIBL and NBBL, comparing between EBL and BOKL, EBL has more effectively mobilizing it's deposit on investment to generate the return. The ratio of NIBL has below the industrial average, it is not assumed worse because it is quite nearest to the industrial average ratio i.e. (17.18 β 17.36). It is also utilizing it's deposit essiciently but ratio's of NBBL is lower then the industrial average it is not utilizing it's deposit more efficiently. It may the various causes like, management, disqualified of

manpower, or, human resources. Unable to collect deposit weak strategy. High competition people could not believe due to unedited financial report since last 5 years and its management taken over by Nepal Rastra Bank in 2007.

Likewise the CV of the EBL is the lowest i.e. 12.66 percent and NBBL has the highest ratio 31.99 percent among four commercial banks the BOKL and NIBL have the C.V. ratio of 15.22 and 24.85 percent respectively the industrial C.V. ratio is 37.13 percent C.V. ratio of four banks are lesser than the Industrial ratio. Comparing among the four banks, the variability of the EBL is most consistent and NBBL is the least consistent among four banks. The NIBL and BOKL are moderate consistent in variability of Ratio.

Loan and Advance to total Deposit

The loan and advance is also one of major sector of an investment. This ratio measures extend to which banks are successful to mobilize their deposits fund to earn profit by providing the fund to outsider in the form of loan and advances. The higher the ratio represents the greater efficiency of the firm in utilizing fund and vice versa. This ratio is calculated by dividing loan and advance by total deposit. This can be stated as

$$\text{Loan and advance to total deposit} = \frac{\text{loan and advance}}{\text{total deposit}}$$

Where loans and advances included loans to government enterprises. Private sectors foreign bills. Renewable and discount total deposit included current deposit fixed deposit, saving deposit, money at call deposit and other deposit.

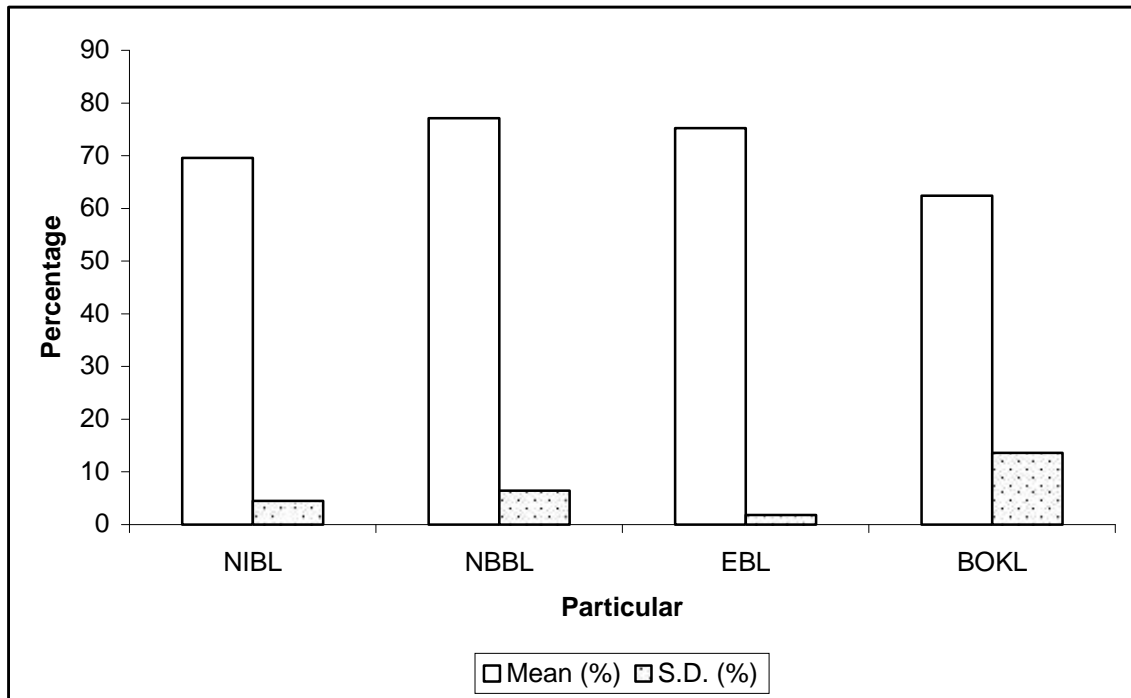
The table shows the ratio of loans and advance to total deposit of NIBL, NBBL, EBL and BOKL (See detail on Annex 'A').

Table 4.2
Mean and S.D. of Loan and Advance to Total Deposit ratio of Bank.

Particular	NIBL	NBBL	EBL	BOKL	Industry Average
Mean (%)	69.56	77.13	75.26	62.41	72.87
S.D. (%)	4.48	6.42	1.81	13.64	-
C.V. (%)	6.44	8.3	2.4	21.85	12.15

Figure 2

Mean and S.D. of Loan and Advance to Total Deposit ratio of Bank.



In the above table the mean loan and advance to total deposit ratio of NBBL is highest i.e. 77.13 percent and BOKL is lowest ratio i.e. 62.41 percent among four commercial bank. Other banks EBL and NIBL have a mean ratio of 75.26 percent and 69.56 percent respectively the industrial average mean ratio is 72.87 percent. The NBBL and EBL has grater ratio then the above industrial average ratio i.e. $77.13 > 72.87$, $75.26 > 72.87$ and NIBL and BOKL has lower ratio then industrial average ratio i.e. $69.56 < 72.87$ percent $62.41 < 72.87$ percent. Therefore NBBL and EBL has been invested highest amount of deposit fund in loans and advance.

The C.V ratio of EBL is lowest i.e. 5.28 percent among four commercial banks. Which indicates that the investment as eBL is the most uniform. BOKL has the highest C.V. ratio i.e. 21.85 percent among four commercial banks. It indicates that the investment of BOKL is more fluctuating the lowest C.V. is better then highest C.V. The industrial average C.V. ratio is 12.15 percent three banks EBL, NIBL, and NBBL have lowest C.V. then industrial average C.V.

From the above description it can be concluded that NBBL is the most effective, EBL and NIBL moderate assertive and BOKL is least effective to mobilize its deposits on loans and advances.

Liquid Funds to total Deposit Ratio

This ratio measures the short run solvency of the firm. It can be defined as the firm's ability to reply the bills and meet the urgent need of money. It's measured by the speed which a bank assets can be converted into cash to meet deposit with drawals and current obligations. The higher the ratio represents the good liquidity position of firm and vice versa. But too high ratio is not good because the fund will be lide up this ratio is calculated by dividing liquid funds by total deposit. This can be stated as follows.

$$\text{Liquid funds to total deposit ratio} = \frac{\text{Liquid fund}}{\text{Total Deposit}}$$

Where, liquid fund consist cash in hand, balance with NRB Balance with domestic banks, balance with other financial institutions balance held abroad, call money etc. Total deposit consists. Fixed deposit current deposit, call deposit and other deposit. The table shows the ratio of liquid fund to total deposit of NIBL, NBBL, EBL and BOKL (See detail calculation on Annex 'A').

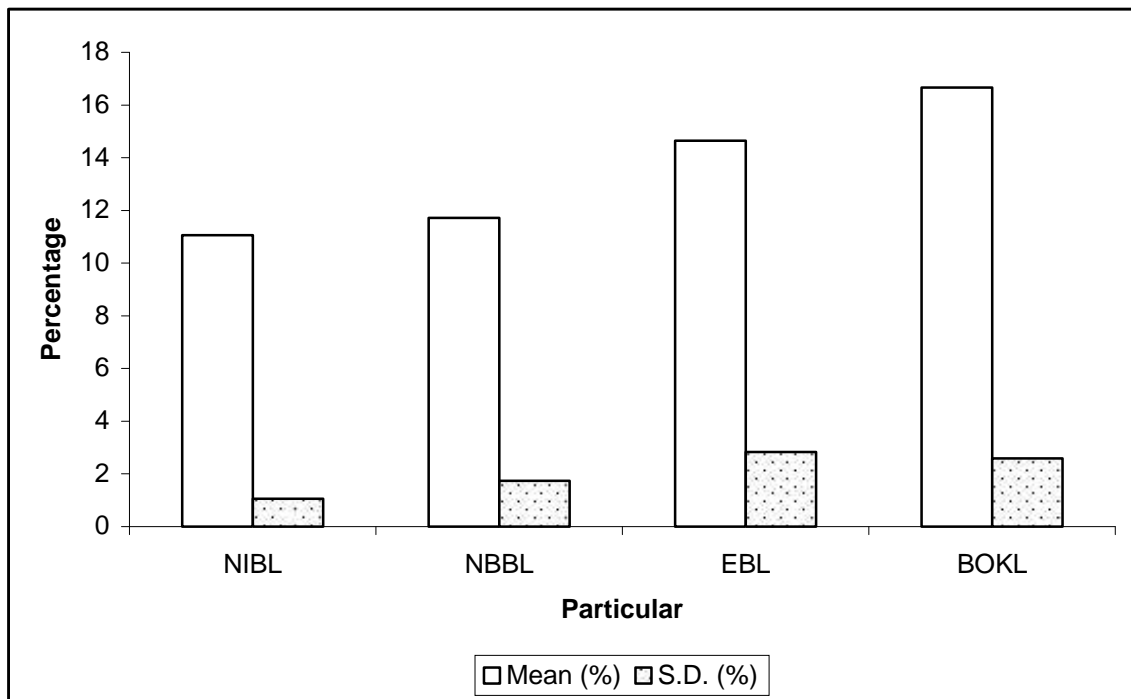
Table 4.3

Mean and S.D. of Liquids Funds to Total Deposits Ratio of Banks

Particular	NIBL	NBBL	EBL	BOKL	Industry Average
Mean (%)	11.06	11.72	14.65	16.66	15.06
S.D. (%)	1.06	1.74	2.83	2.59	
C.V. (%)	9.58	14.84	19.31	17.66	27.06

Figure 4.3

Mean and S.D. of Liquids Funds to Total Deposits Ratio of Banks



In the above table, the mean liquid fund to total deposit of BOKL is the highest i.e. 16.66 percent and NIBL has the lowest ratio i.e. 11.06 percent. Other bank EBL and NBBL have mean ratio of 14.65 percent and 11.72 percent respectively. The industrial average mean ratio of liquid fund to total deposit is 15.06 percent. The only bank BOKL has greater ratio above industrial average i.e. $16.66 > 15.06$ other banks NIBL, NBBL and EBL have a ratio of $11.06 < 15.06$ percent, $11.72 < 15.06$ percent, $14.65 < 15.06$ percent respectively. It shows that BOKL has good liquidity position, among four commercial banks. NIBL and NBBL has lower ratio it shows that the both banks have a poor liquidity position. EBL has moderate liquidity position.

Similarly, EBL has the highest CV ratio i.e. 19.31 percent among four commercial banks. It means the ratio on liquid fund to total deposit of EBL has lesser consistency. The CV of NIBL is lowest i.e. 9.58 percent it means the ratio on liquid fund to total deposit of NIBL is more consistent among four commercial banks. The NBBL and BOKL have a moderate ratio of variability. The industrial CV ratio is 22.12 percent the four commercial banks have lowest CV ratio then industrial average

C.V. So it shows that the liquidity ratio of BOKL is better than other but it has also a moderate variability among for commercial banks.

Return on total Assets

This ratio measure the effectiveness of the bank in using its overall resources. It measure in terms of relationship between profit and total assets. Higher the ratio represents the efficient of the bank utilizing its overall resources and vice versa. This ratio is clculated by deviding net profit after tax by total assets. This can be stated as:

$$\text{Return on total Assets} = \frac{\text{Net profit after tax}}{\text{Total Assets}}$$

The net profit after tax represent that profit available to common stock holder and total assets includes the total assets of balance sheet item.

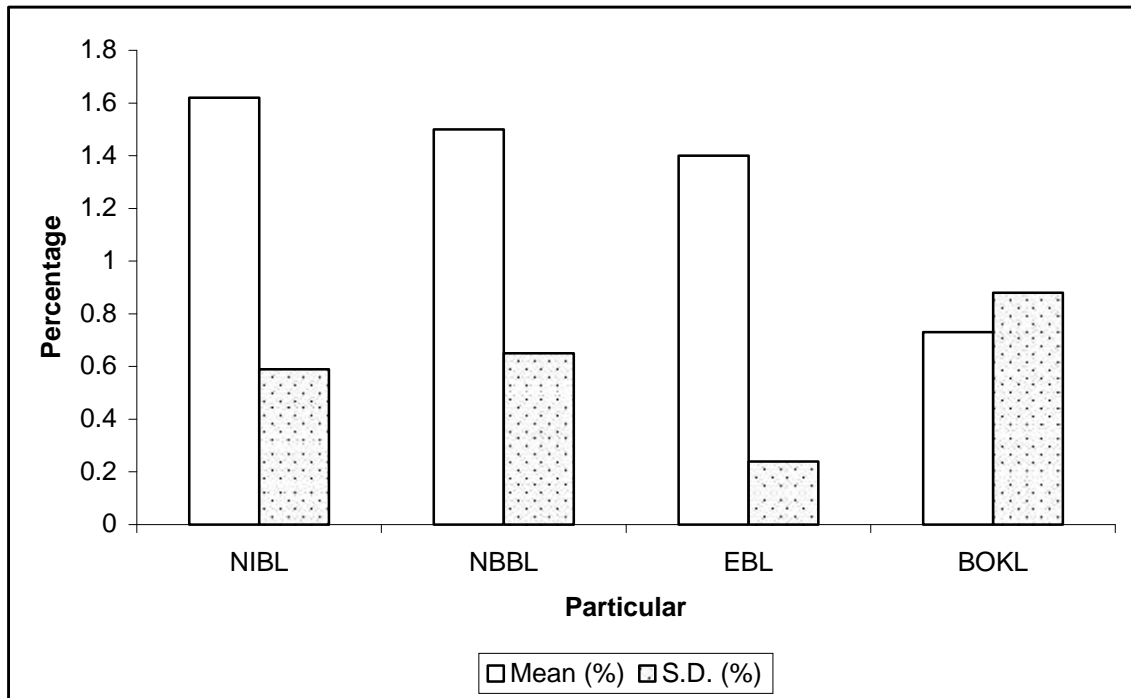
The table shows the ratio of return on total assets of NIBL, NBBL, EBL and BOKL (See detail calculation on Annex 'A').

Table 4.4
Mean and S.D. of Return on Total Assets of Banks

Particular	NIBL	NBBL	EBL	BOKL	Industry Average
Mean (%)	1.62	1.50	1.40	0.73	1.43
S.D. (%)	0.59	0.65	0.24	0.88	-
C.V. (%)	36.69	43.63	17.25	120.20	39.65

Figure 4.4

Mean and S.D. of Return on Total Assets of Banks



4.2 Investment Portfolio Analysis

Commercial banks cannot utilize whole of its fund raised through deposit and borrowing into loans and advance. In order to fulfill the gap between borrowing and landing banks rather goes for investment on such as government securities share and debenture, NRB bond etc.

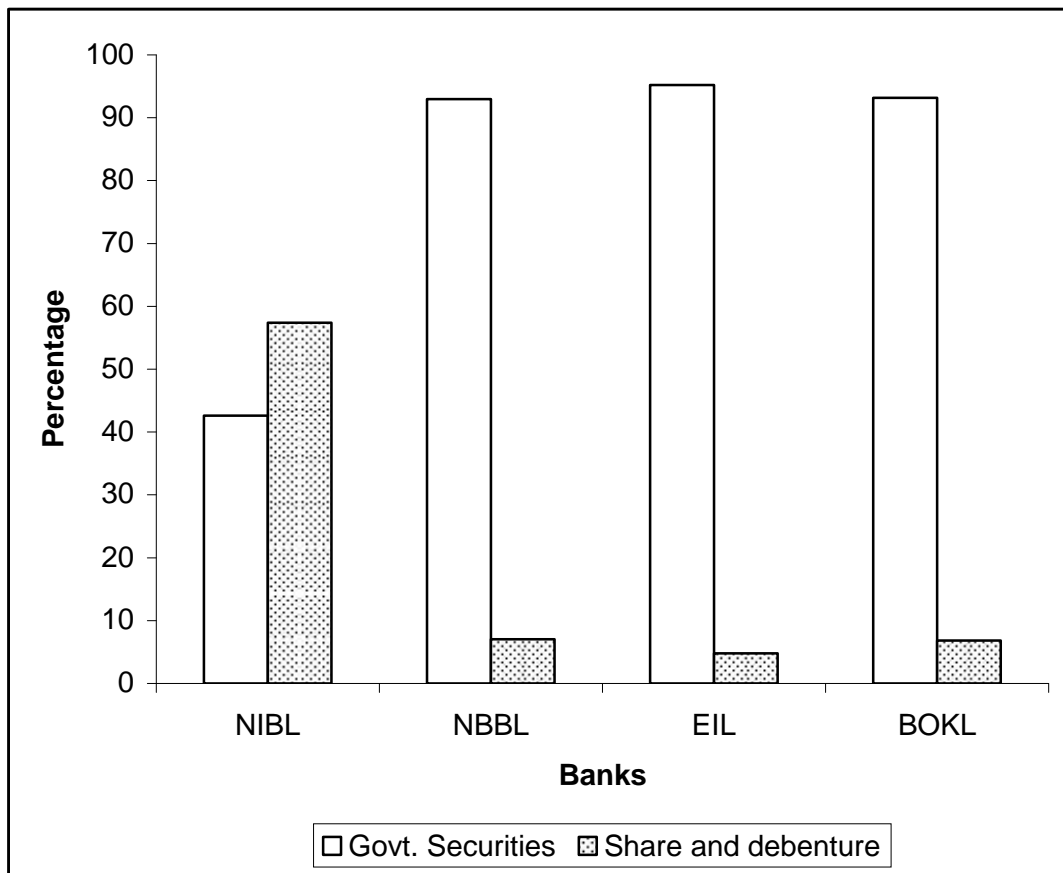
The profit of making investment by four commercial bans i.e. NIBL, NBBL, EBL and BOKL has been analyzed in table (see detail) calculation on Annex B)

Table 4.5

Investment Portfolio of Banks

Banks	Govt. Securities (%)	Share and debenture (%)	NRB bank (%)
NIBL	42.61	57.39	0
NBBL	92.96	7.04	0
EIL	95.23	4.77	0
BOKL	93.18	6.82	0

Figure No 4.5
Investment Portfolio of Banks



The above table shows the average investment portfolio of four commercial banks. NIBL is investing 42.61% on government security, 57.39% of fund on share and debenture and 0% of its fund on government securities. Investing in share and debenture is higher, but other banks NBBL, EBL BOKL are investing higher funds in government securities and only little fund in share and debenture. From this we concluded that NIBL is risk taken investor bank and other bank risk averter. Where, is risk there is profiles, therefore NIBL earns more profit then other bank such NBBL, EBL and BOKL.

4.3 Loan and Advance Portfolio Analysis

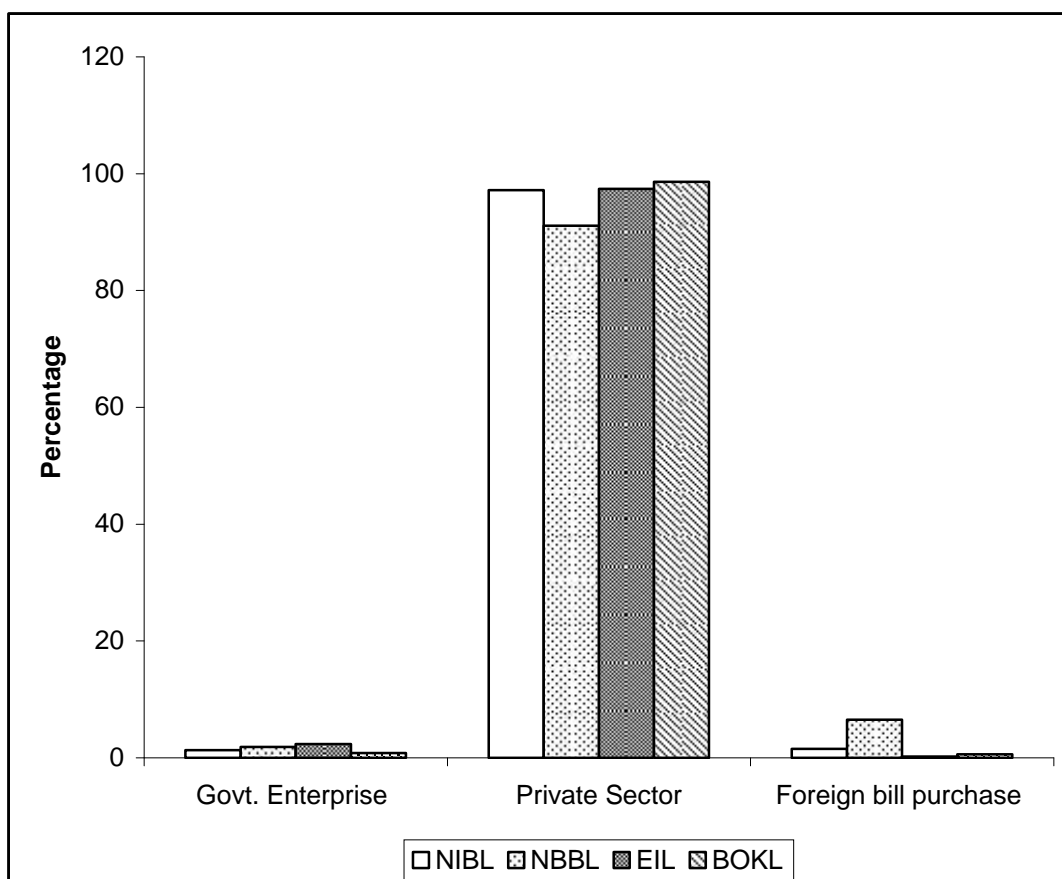
Commercial banks provides loans and advance from the money which it receive by way of the person against personal security of moveable and immovable properties. Mainly commercial banks are providing their funds to government enterprise, private sector and foreign bills purchase and discount. The portfolio of

making loans and advance by four commercial banks NIBL , NBBL, EBL and BOKL has been analyzed in table (see detail on Annex ‘c’)

Table 4.6
Loan and Advance Portfolio Analysis

Banks	Govt. Enterprise (%)	Private Sector(%)	Foreign bill purchase (%)
NIBL	1.29	97.18	1.53
NBBL	1.88	91.098	6.5072
EIL	2.348	97.42	0.1930
BOKL	0.82	98.604	0.576

Fig No. 4.6
Loan and Advance Portfolio Analysis



The above table shows the average loan and advance portfolio of four commercial banks. Comparing among the four commercial banks. NIBL is providing very high amount of its loans and advance in private sector. The mean percentage of loans and advance granted to the private sector is 97.18%. NIBL is providing very low amount on government enterprise and foreign bill purchase and discount the

mean percentage of loans and advance to the government enterprises and foreign bill purchase and discount the mean percentage of loans an advance to the government enterprises and foreign bill purchased and discount are 1.29% and 1.53% respectively.

NBBL is providing high amount of loan and advance in private sector. The mean% of loan and advance to the private sector is 91.098% NBB has given first priority to foreign bill purchase and discount. The mean percentage of loan and advance foreign bill purchased is 6.5.72% and mean percentage of government enterprise is 1.88% of it's total loan and advance.

EBL is also providing very high amount of loan and advance of private sector the bank provides 97.42% in private sector. 2.348% in government enterprise and 0.1938% provide in foreign bills purchase and discount. It gives the first priority to the government enterprise then the other banks.

BOKL is providing very high amount of loans and advance to the private sector which is 98.604% and 0.82%, 0.576% providing in government security and foreign bills purchase and discount.

From the above analysis the commercial banks have first high priority to providing fund as loan and advance in private sector and lower priority in foreign and government enterprise. Because earning for (return) from private sector is higher then the foreign bill purchase and discount and government security.

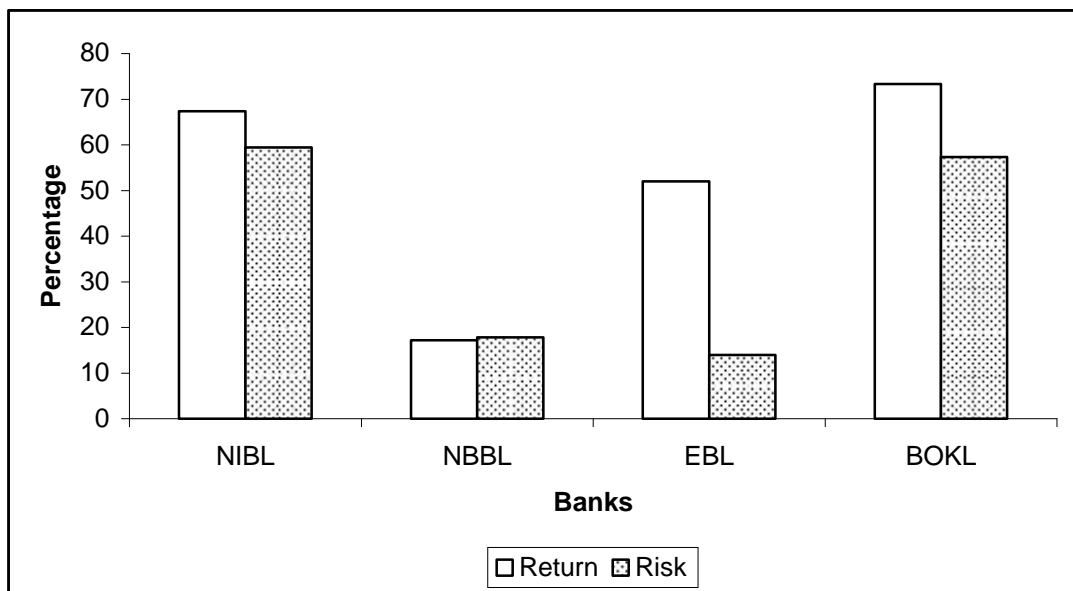
4.4 Analysis of Common Stock Risk and Return of Commercial Banks

The single period return, expected rate of return and variance of commercial bans are shown in the table (see detail calculation on Annex 'D)

Table 4.7
Expected Risk and Return of Commercial Banks

Banks	Rs (%)	(Ξ) %	(Ξ) ² (%)
NIBL	67.34	59.43	3532.14
NBBL	17.2	17.8	6340.2
EBL	52	14	196.62
BOKL	73.32	57.31	32.85

Figure 4.7
Expected Risk and Return of Commercial Banks



Above table shows that BOKL has the highest expected return i.e. 73.32% among four commercial banks. Other banks NBBL, NIBL and EBL are 17.2%, 67.34%, 52% respectively. According to return we can say that BOKL stock is comparatively better than other and NIBL stand second position and its expected return is 67.34% EBL stand at third position and its expected return is 52% NBBL stand at last at expected return is 17.2%.

Like wise looking at the risk pattern the NIBL has the highest risk (S.D) i.e. 59.43%. EBL has the lowest risk i.e. 14% other bank BOKL and NBBL is 57.31 and 17.8% respectively. According to risk we can say that the holding a NIBL stock is the most risky and holding a EBL is not

so risky among for commercial banks. Holding a stock of NBBL and BOKL and NBBL is moderate risky.

Aggressive investor chooses a BOKL but conservative investor choose a stock of EBL moderate investor chooses a stock of NBBL and NIBL.

4.4.1 Analysis of Market Risk and Return

Market risk (stander deviation) and return are most important factors to analyze the risk and return of individual stock. For estimating the marketer parameters company listed in NEPSE are taken in to consideration up to now there are 108 companies listed in NEPSE. Overall market movement is represented by market index (i.e. NEPSE index)

Market return and stander deviation and market variance are shown in table (see detail calculation on Annex D)

Table 4.8
Analysis of Market Risk and Return

Expected return on market	37.31
Stander deviation on market	25.97
Variance of market	674.68

The market expected return is 29.84 it has a stander deviation of 23.23% the return of market before 2003 is negative and after year 2003. It is slowly increase therefore return of year 2004, 2005, 2006 , 2007 is 8.38, 29.10, 34.88, 76.88 respectively.

4.4.2 Analysis of Market Sensitivity

Market sensitivity looks how sensitive are stock return to the average market returns by looking at the percentage change in stock and market return during the same period. The systematic risk is a function of co-variability of single stock return with the average market return. It measures of volatility of s security rate of return in response to the volatility of the market rate of return.

The relevant risk of individual assets is measured in terms of sensitivity of its return to change in the market return. It is known as systematic or beta risk. The term beta is popularly used to measure the sensitivity of assets return to the change in the market return. Beta coefficient of market (β_m) is always equal to 1 (Pradhan 1992:277)

Analysis of co-variance, between market return and stock j return $\text{cov}(R_j, R_m)$ correlation between market return and stock j return ρ_{jm} and Beta coefficient of market and stock j β_{jm} (see detail calculation on Annex E)

We know,

$$\text{Cov}(R_j, R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{N}$$

- Covariance between market return and return of NIBL Stocks.

$$\frac{988.32}{4} = 247.08$$

- Covariance between market return and return of NBBL stock

$$\frac{1259}{4} = 314.76$$

- Covariance between market return and return of EBL

$$\frac{1180.48}{4} = 295.12$$

- Covariance between market return and return of BOKL stock

$$\frac{623.97}{4} = 155.99$$

Seeing the above result it can be concluded that two variables such as return on market and return on stock of commercial banks move together. A positive value of covariance indicates that the stock return tends to move in the same direction of market return.

Again

We know

$$P_{jm} = \frac{\text{cov}(r_j, r_m)}{r_j \uparrow m} \text{ (see also annex E for detail calculation)}$$

- Correlation between market return and return on NBBL stocks

$$\frac{247.08}{1380.55} \times 0.1789$$

- Correlation between market return and return on NBBL stock

$$\frac{314.76}{4134.94} \times 0.076$$

- Correlation between market return and return of EBL bank

$$\frac{259.12}{325} \times 0.79$$

- Correlation between market return and return of BOKL

$$\frac{155.99}{1331.31} \times 0.11$$

The above calculation shows all of the return of commercial banks are positively correlated with return of market because all values are positive. The highest positive correlated with return of market is the return of EBL stocks. And the lowest positive correlated with the return of NBBL which has the +0.076 the other bank NIBL and BOKL have the correlation value 0.1789 and 0.11 respectively. It means the return of commercial banks are related with the market returns. If the market returns had decreased, the return of commercial banks had also decreased. If market return was increased the return of commercial banks was also increased.

Again we know

$$\beta_m = \frac{\text{cov}(r_j, r_m)}{\uparrow m^2}$$

- Beta coefficient of market and stock of NIBL.

$$\frac{247.08}{549.748} \times 0.1$$

- Beta coefficient of market and stocks of NBBL.

$$\frac{314.76}{549.748} \times 0.076$$

- Beta coefficient of market and stock of EBL.

$$\frac{259.12}{549.748} \times 0.79$$

- Beta coefficient of market and stock of BOKL.

$$\frac{155.99}{549.748} \times 0.28$$

The above table shows that the NBBL has the highest beta and BOKL has the lowest beta i.e. 0.57 and 0.28 among four commercial banks. Other banks NIBL and EBL have a beta 0.44 and 0.47 respectively. All the commercial banks have a beta less than one (1) the beta less than one indicates that stocks returns are less volatile than the market returns. Any change in the market returns causes lesser than proportionate change in stock return. Stock returns will increase or decrease by more than one percent for every percentage increase or decrease in market return. The stock returns are sensitive to market.

4.5 Analysis of Diversifiable and Un-diversifiable Risk

Table 4.9

Calculation of diversifiable and un-diversifiable risk

Com.bank	Total risk	U ^d risk	D risk	Coff. deter ⁿ
NIBL	3532.114	130.61	3401.5	0.032
NBBL	6340.2	219.20	6121	0.00577
EBL	196	149.037	46.96	0.6241
BOKL	3285	52.89	3232.12	0.0121

The above table shows that the total risk of NBBL is the highest i.e. 636340.2% and total risk of EBL is 196% among four commercial banks. Other banks NIBL and BOKL has a total risk of 3532.14 and 32.85% respectively.

The coefficient of determination shows the proportion of systematic risk in total risk. Higher the systematic risk higher will be the coefficient of determination and vice-versa. From the above analysis the four commercial banks have very low systematic risk and very high unsystematic risk systematic risk cannot be eliminated at any cost, but unsystematic risk can be diversified by constructing optimal portfolio. The bank NIBL has only 3.2% systematic risk the bank has eliminated 96.8% by constructing optimal portfolio. So, on other bank NBBL, EBL, BOKL have 0.57%, 62.41%, 1.225 systematic risk and remaining is unsystematic which can be diversified by constructing optimal portfolio.

4.6 Portfolio Analysis

4.6.1 CAPM Equation/SML

Using CAPM the investor can estimate the required rate of return for the stock. The intrinsic value of stock is inversely related to required rate of return. If other things remaining same higher the required rater, lower the intrinsic value of stock. CAPM theory helps for pricing implication of common stocks.

The relationship between an assets return and its systematic risk can be expressed by CAPM which is also called the security market line (SLM) SLM is the line showing the relationship between the systematic risk index (beta) and required rate of return. The equation for the CAPM or SML is required rate of return $(R_j) = R_f + (R_m - R_f) \beta$

$$8 + (29.84 - 8) \beta$$

Where R_f = Risk free rate of return

R_m = Return on market

β = Beta of systematic risk

Calculation of required rate of return and comparing with expected rate of return are shown on table.

Table 4.10

Calculation of Required Rate of Return and Comparing with Expected Rate of Return

Banks	R_f (%)	Risk	β	(K_j) %	(\bar{R}_j) %	Evaluation
NIBL	8	21.84	0.44	17.60	67.34	$K_j < K_r$ 4p
NBBL	8	21.84	0.57	20.44	17.2	$K_j < K_r$ 4p
EBL	8	21.84	0.47	18.26	52	$K_j < K_r$ 4p
BOKL	8	21.84	0.28	14.11	73.32	$K_j < K_r$ 4p

Sources: R_f is taken from NRB quarterly economic bulletin, R_f is average of treasury bills rate (364 days) of past 5 year's rate of +B.

From the above calculation the required rate of return (K_j) NBBL is the highest i.e. 20.44% and its beta is also highest i.e. 0.57 and the required rate of BOKL is lowest i.e. 0.28 among four commercial banks. Other banks NIBL and EBL have required rate of return are 17.6% and 18.26% and their beta are also 0.44 and 0.47

respectively. It means that higher the beta higher will be the required rate of return and vice versa. So required rate of return depend on Beta of assets.

The all banks stock required rate of stock is less then the expected rate of return. So all of the stock are under priced. Thus from the investor point of view the under-priced stock should be accepted (purchased). So long position strategy is beneficial on these stock. According to the theory of the expected demand will cause the price to rise.

4.6.2 Portfolio Risk and Return

In previous analysis of risk and return are based on the investment on single assets. The analysis of risk and return made up was only as a point of view of individual investor, that is he should invest in which banks security which banks security is more risky to comparing with each other. Construction of portfolio or making an investment in more then one assets which are negatively correlated can reduced unsystematic risk without loosing any return.

This attempt is to make which of the commercial bank among the simple bank had constructing a portfolio to reduce risk and increase it's return. The analysis is based on two assets portfolio risk free assets i.e. share and debenture. Risk free assets are denoted by R_f and risky are denoted by μ portfolio of risky of assets is also known as market portfolio.

$$\text{Expected return on portfolio } (R_p) = W_m \bar{R}_m + W_{rf} R_f$$

Where,

W_m = Weight of market portfolio or risky assets

W_{rf} = Weight of risky free assets

R_f = Risk free assets

\bar{R}_m = Expected return on market portfolio.

Total risk for two security portfolio.

$$\sigma_p = \sqrt{W_{rf}^2 \sigma_{rf}^2 + W_m^2 \sigma_m^2 + 2 W_{rf} W_m \rho_{rf,m} \sigma_{rf} \sigma_m}$$

$$\sigma_p = \sqrt{W_{rf}^2 \sigma_{rf}^2 + W_m^2 \sigma_m^2 + 2 W_{rf} W_m \rho_{rf,m} \sigma_{rf} \sigma_m}$$

or, $w_m \uparrow m$

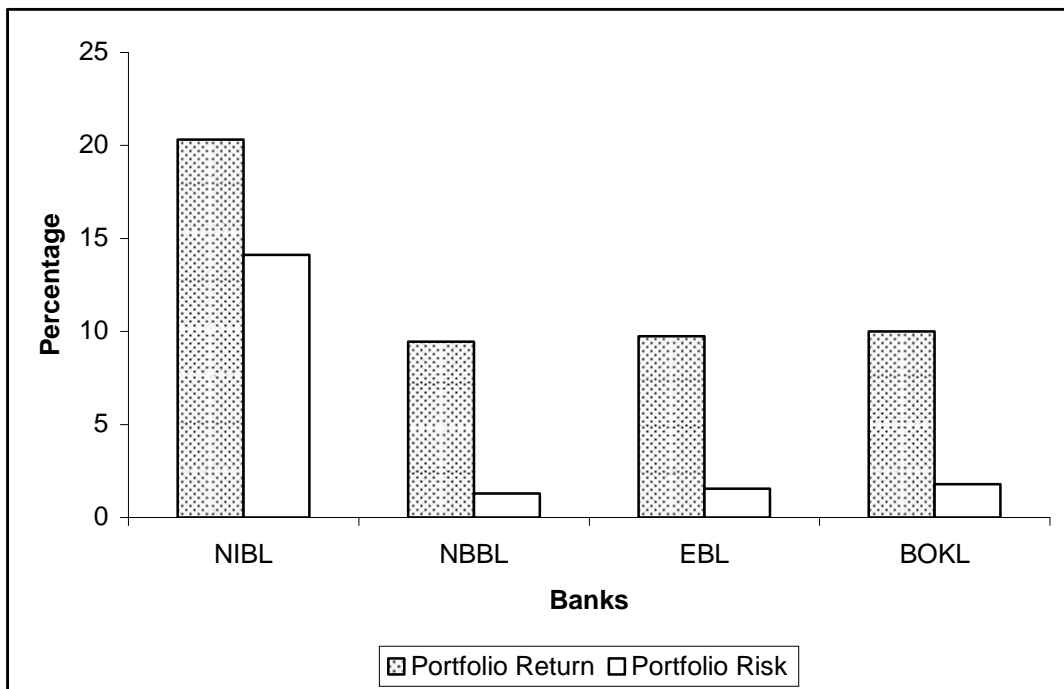
Note: Risk (Stander deviation) of risk free assets=0

Calculation of portfolio risk and return of concern banks are shown on table.
(See detail calculation on Annex F)

Table 4.11
Portfolio Risk and Return of Banks

Banks	$R_f(\%)$	$R_m(\%)$	W_m	$(W_{rf})\%$	$(R_p)\%$	$\exists p (\%)$
NIBL	8	37.31	54.34	45.66	20.31	14.11
NBBL	8	37.31	5	95	9.46	1.2985
EBL	8	37.31	6	94	9.75	1.55
BOKL	8	37.31	6.9	9.31	10.00	1.79

Figure 4.8
Portfolio Risk and Return of Banks



The above table shows portfolio of return and risk of commercial banks. Risk free rate of return for all commercial banks is 8% it is calculated by $R_{f/n}$ and expected return an market is 37.31% NIBL has the highest portfolio return i.e. 20.31% and NBBL has the lowest portfolio return i.e. 9.46% among four commercial banks.

Because NIBL is investing 54.34% of its total investment in risky assets and remaining 45.66% in risk free assets. Also it has highest total risk on portfolio (σ_p) i.e. 14.115 higher the return will be the higher the risk. Likewise NRB has invested only 5% of its total investment only 5% of its total investment in risky assets and 95% investment in risk free assets, so it has the lowest portfolio return and it has the lowest portfolio return and it has also lowest portfolio risk (σ_p) i.e. 1.2985% among four commercial banks. Other bank EBL and BOKL has a portfolio return of 9.75 and 10.02 respectively. These banks has invested 6% and 6.9% of total investment on risky assets and 94 and 9.31% in risk free assets respectively. They have portfolio risk (σ_p) 1.55% and 1.79% respectively.

So from above it can be concluded that higher the investment in risk free assets lower will be the risk and return also. But if higher the investment in risky assets higher will be the risk and return.

4.7 Portfolio Performance Measure

Sharp's Portfolio performance Measure

Portfolio performance evaluation on the basis of return will be insufficient therefore it is necessary to consider both risk and return. One performance measure that has been developed to evaluate a portfolio's performance considering both return and risk simultaneously is the sharp index also known as the reward to variability ratio is used to same the performance of investment funds it can be symbolically.

$$SP = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{\bar{r}_p - r_{rf}}{\sigma_p}$$

Where,

S_p = Sharp index of portfolio performance of portfolio

\bar{r}_p = Average return on portfolio

r_{rf} = Risk Free rate of return

σ_p = standard deviation of portfolio

$(\bar{r}_p - r_{rf})$ = Risk premium for portfolio

Table 4.12

Portfolio Performance measure by using sharp's measure

Banks	rf (%)	...p(%)	Rp(%)	Sp	Ranking
NIBL	8	20.31	14.11	0.87	4 th
NBBL	8	9.46	1.2985	1.12	3 rd
EBL	8	9.75	1.55	1.14	1 st
BOKL	8	10.02	1.79	1.13	2 nd

The above table shows that sp of stock of EBL is the highest i.e. 1.14 and sp of stock NIBL is worst i.e. 0.87. Stock of BOKL is 2nd higher i.e. 1.13 and stock of NBBL is third position. i.e. 1.12 among four commercial banks.

4.8 Trend Analysis

Trend analysis is a statistical tool which highlights the previous trend and forecast. For a future with the help of past and present information.

The purpose of trend analysis in this work is to analysis loan and investment and total deposit trend of loans and investment and total deposit of next 5 years. Loan and advance included loan provided to government enterprise, private sector and foreign bill purchase and discount. Investment included investment in government securities, share debenture and NRB bond. The deposit consist fixed, current saving call and other deposit.

Table 4.13

Position of Total Loan and Investment and Total Deposit of NIBL

(In Million)

Year	Total Loan and Investment	Total Deposit	Ratio (%)
2003	7694.5	7922.8	97.12
2004	11442.7	11706.3	97.91
2005	14584.6	14254.8	102.31
2006	18844.6	18927.3	99.56
2007	24287.7	24488.9	99.21

The above table shows the NIBL total deposit reached Rs. 24488.9 million in year 2007. From 7922.8 million in year 2003. Likewise reached Rs.24287.7 million in

year 2007 from Rs.7694.5 in year 1998. Its mean percentage ratio of total investment to total deposit ratio is 99.21%.

Table 4.14
Position of Total Loan and Investment and Total Deposit of NBBL

(In Million)

Year	Loan and Investment	Total Deposit	Ratio (%)
2003	10768.7	10548	102.92
2004	12871.3	12747.3	100.97
2005	11999.8	12125.5	98.96
2006	12496.3	13014.8	96
2007	10168.3	9474	107.09

Average ratio 101.09

The above table shows the NBBL total deposit decreased Rs.9474 million in year 2007 from 10548 million in year 2003. Likewise loan and investment of NBBL also decrease in year 2007 i.e. 10168.3 whereas it was 10768.7 million in year 2003. It's mean percentage ratio of total loan and investment to total deposit is 101.09%.

Table 4.15

Year	Loan and Investment	Deposit	Ratio (%)
2003	6647.4	6694.9	99.29
2004	8600.1	8064	106.64
2005	10063.8	10097.8	99.66
2006	14356.2	13802.5	104.01
2007	19084.9	19097.7	99.93

Average ratio 101.09

The table shows the EBL total deposit reached Rs.19097.7 million in year 2007 from 6694.9 million in year 2003. Likewise loan and investment of EBL also reached Rs.19084.9 million in year 2007 from 6647.4 in year 2003. Its mean percentage ratio of total loan and investment to total deposit is 101.9%.

Table 4.16**Position of Total Loan and Total Deposit of BOKL**

(In Million)

Year	Loan and Investment	Deposit	Ratio (%)
2003	6575	6169.6	106.57
2004	8499.5	7741.6	109.78
2005	8514.2	8942.8	95.20
2006	10334.8	10429.3	99.09
2007	12717.3	12358.6	102.9

Average mean=102.7%

The table show the BOKL total deposit reached 12358.6 million in year 2007 from Rs.6169.6 million year 2003. Likewise loan and investment of BOKL also reached 12717.3 million in year 2007 from 6475 million in year 2003. It's mean percentage ratio of total loans and investment to total deposit is 102.7%.

From the above description it can be said that the BOKL is utilizing its more collected fund on loans and advance and investment which mean percentage ratio is 102.7. It is the highest average ratio among four commercial banks. Likewise the second position average ratio is 101.95 of EBL. NBBL stood up third position. It has an average ratio of 101.09%. NIBL is the last position among four commercial banks. Its average utilizing a deposit to loan and investment is 99.21%.

The total deposit trend and total loan and advance and investment trend for casting of NIBL, NBBL, EBL and BOKL for coming next 5 years, 2008-2012 are shown below (calculation of straight line trend are shown in Annex G)

Table 4.17**Trend Value ($y = a + bx$) of Loan and Investment to Total Deposit Ratio of NIBL**

Year	Loan and Investment $y = 15374.78 + 4056.81x$	Deposit $y = 15460.02 + 4035.05x$	Ratio (%)
2008	27545.21	27565.17	99.92
2009	31602.02	31600.7	100
2010	35658.83	35635.27	100.0
2011	39715.64	39670.32	100.11
2012	43772.45	43705.37	100.15

NIBL loan and investment have been increasing by Rs. 4056.81 million per year. It is expected to reach Rs. 43772.45 million at the end of year 2012. Similarly NIBL total deposit has been increasing by 4035.53 million per year. It is expected to reach Rs. 43705.37 t the end of year 2012. The rate of loan and investment to total deposit of NIBL at the end of year 2012 will be 100.15%.

Table 4.18
Trend Value (y= a+bx) of Loan and Investment to Total
Deposit Ratio of NBBL

(In Million)

Year	Loan and Investment y= 11660.88-154.88x	Deposit y= 11581.92- 188.05x	Ratio (%)
2008	11196.24	11017.77	101.61
2009	11041.36	10829.72	101.95
2010	10885.84	10641.67	102.29
2011	10731.6	10453.62	102.65
2012	10576.72	10265.57	103.31

NIBL loan and investment have been decrease by 154.88 million per year. It is expected to decrease Rs.10576.72 m up to year 2012. Similarly NBBL total deposit have been decrease by 188.05m per year and expected to decrease Rs, 10265.57 upto 2012. The ratio of loan and investment to total deposit of NBBL at the end of year is 103.31%.

Table 4.19
Trend Value (y=a+bx) of Loan and Investment to Total
Deposit Ratio of EBL.

(In Million)

Year	Loan and Investment y= 11750+3063.1x	Deposit y= 11551.38+3054.41x	Ratio (%)
2008	20939.3	20714.61	101.08
2009	24002.4	23769.02	100.98
2010	27065	26823.43	100.90
2011	30128	29877.84	100.83
2012	33191.7	32932.25	100.78

EBL loans and investment have been increasing by Rs.3063.1 million per year and expected to reach Rs.33191.7 million at the end of 2012. Similarly EBL total deposit have been increasing by 3054.41 per year and expected to reach 32932.25 at the end of 2012 the ratio of loan and investment to total deposit of EBL at the end of year 2012 100.78%.

Table 4.20
Trend Value (y=a+bx) of Loans and Investment to
Total Deposit Ratio of BOKL

(In Million)

Year	Loan and Investment y= 9328.16+1411.99x	Deposit y= 9128.38+1506.57x	Ratio (%)
2008	13564.13	13648.09	99.38
2009	14976.12	15154.66	98.82
2010	16388.11	16661.23	98.36
2011	17795.3	18167.8	97.94
2012	17795.09	19674.37	97.65

BOKL loan and investment have been increasing by Rs. 1411.99 million per year and expected to reach Rs. 19212.09 at the end of 2012. Similarly BOKL total deposit have been increased by 1506.57 million per year and expected to reach Rs. 19674.37 m at year 2012. The ratio of loan and investment to total deposit of BOKL at the end of year 2012 will be 97.65%.

From the above analysis it can be concluded that NBBL will be utilizing it's more collected fund on loan and investment among four commercial banks only the deposit NBBL will utilize it's other collected fund on loan and investment. The ratio of loan and investment to total deposit of NBBL at the end of year 2012 is 103.321% it means is 100% of loan and investment is from collected deposit then 3.31% of loan and investment is from other sources of collected fund.

The NIBL and EBL deposit utilization position on loan and investment at the end of the year 2012 is 100.15% and 100.78% respectively which are in moderate position among four sample banks. Deposit utilization position on loan and investment ratio of BOKL is the lowest i.e. 97.65% at the end of the year 2012 among four commercial banks.

4.9 Testing of Hypothesis

The hypothesis is based on the best of significance of difference of mean.

(Student test)

Null Hypothesis (H_0): $\bar{x} = \bar{x}_2$ There is no significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In other words, average return on the share of banking industry is equal to market return.

Level of significance = () = 10%, 5%, 2% and 1%

Test statistic: The test assume significant difference between two mean, so T Test is used.

Under H_0 test statistic is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Where,

\bar{X}_1 = Arithmetic mean of first sample = 9.05%

\bar{X}_2 = Arithmetic mean of second sample 37.31.

$n_1 = n_2$ = Sample size = 4

S^2 = Estimated standard deviation of market portfolio (Population)

$$S^2 = \frac{n_1 S_1^2 + n_2 S_2^2}{n_1 + n_2} = \frac{4 \times 1541.95 + 4 \times 674.68}{6} = 1477.75$$

Where,

S_1^2 = Variance of banking industry

S_2^2 = Variance of market

$$t = \frac{9.05 - 37.31}{\sqrt{1477.75 \left(\frac{1}{4} + \frac{1}{4} \right)}} = \frac{-28.24}{\sqrt{369.43}} = \frac{-28.24}{19.22} = -1.47$$

... Tab -1-1.47 - 1.47

Critical Region: T_{ab} value at 10%, 5%, 2% and 1% level of significance for two tail test at $4+4-2=6$ degree of freedom is 1.943, 2.447, 3.143 and 3.707 respectively.

Decision: $T_{cal} < T_{tan}$ at 10%, 5%, 2% and 1% level of significance. For two tail test at 6 degree of freedom 50 nul hypothesis is accepted. It means the average return on the share of banking industry is equal to market return.

4.10 Major Findings

The industrial mean ratio of investment to total deposit is 17.36 EBL have highest the ratio NIBL and NBBL has lower the investment tot total deposit ratio then industrial mean ratio. It shows that EBL has effectively mobilizing it's deposit on investment to generate the return. BOKL also effectively mobilizing it's deposit on investment but other bank NIBL and NBBL are investing it's deposit on lower ratio then average industry ratio then average industry ratio.

* The industrial mean ratio of loan and advance to total deposit is 72.87% NBBL and EBL have a greater ratio above industrial average ratio. NIBL and BOKL have lower ratio hen industrial average ratio. So it shows that NBBL,EBL have invested large amount of it's deposit fund in loan and advance among the bank.

* The industrial mean ratio of liquid fund to total deposit is 15.6% only the BOKL has greater ratio above industrial mean ratio. But other banks have lower ratio then industrial average ratio. It shows that BOKL have a good liquidity position. NIBL and NBBL have a lower ratio it shows that both bank have a poor liquidity position. EBL has moderate liquidity position.

* The industrial average mean ratio of return on total assets is 1.43% ratio of EBL and BOKL is the lowest then industrial average. It shows that performance of EBL and BOKL are the worst among four commercial banks.

* Among four commercial banks EBL has invested it's move fund on government security (i.e. risk free asset) and lesser fund on share and debenture (i.e. risky asset) and NIBL has invested lesser amount on government securities (i.e. risk free asset) and larger amount on share and

debenture (i.e. risky assets) non of the banks have invested any amount on NRB bond.

- * All of the commercial banks are granting very high amount of it's loan and advance to private sector. Second priority to granting a loan and advance of all banks is foreign bill purchase and discount and all of bank have granted very low loan and advance to government enterprises.
- * BOKL stock has the highest expected return i.e. 73.31% and NBBL has the lowest expected return i.e. 17.2%. NIBL and EBL stock have the expected return of 67.34, 52% respectively. The market expected return is 37.31% the risk (S.D) of BOKL is the highest i.e. 57.31%. EBL has the lowest risk i.e. 14% NIBL and NBBL have a risk of 59.73% and 17.8% respectively. The market risk (S.D) is 25.97%. So it shows that the higher the risk, higher the return and vice versa.
- * All the return of commercial bank are positively correlated with return of market because all values are positive. EBL stock return are the highest positively correlated and NBBL stock are least positively correlated with return of market. All bank has beta less then 1. NBBL has the highest beta i.e. 0.57%. BOKL has the lowest beta i.e. 0.28% so stock return of NBBL are more volatile and stock return of BOKL is less volatile among four commercial bank.
- * Total risk of NBBL is highest and total risk of EBL is lowest among four commercial banks. NBBL has 0.577% diversifiable risk on total risk. NIBL has 3.2% undiversifiable risk and remaining diversifiable risk on total risk. EBL BOKL have 62.4% and 1.22% un-diversifiable risk and remaining diversifiable risk respectively.
- * The required rate of return (R_e) of NBBL is the highest i.e. 20.44% and BOKL stock is lowest i.e. 14.11% other bank NIBL and EBL have required rate of return are 17.6% and 18.26% respectively. All banks stock required rate of return are less then expected rate of return. So all stock are under-priced.

- * NIBL has the highest portfolio return i.e. 20.31% and it has highest portfolio i.e. 14.11%. NBBL has the lowest portfolio return i.e. 9.46% and it has the lowest portfolio risk i.e. 1.35 EBL and BOKL has portfolio return of 9.75%, 10% and portfolio risk are 1.55% and 1.79% respectively.
- * The performance measure shows that stock of EBL is the highest i.e. 1.14 stock of NIBL is lowest i.e. 0.87, stock of BOKL is second higher i.e. 1.13 and stock of NBBL is in the 3rd position among banks.
- * BOKL utilizing it's more collected fund on loan and advance and investment which mean percentage ratio 102.7% it is the highest average ratio among four commercial banks NIBL is in the last position on it's average of utilizing the deposit of loan and investment is 99.21%.
- * NBBL has utilized it's more collected fund on loan and investment among four commercial bank. Not only the deposit of NBBL has utilized its other collected fund on loan and investment. The ratio of loan and investment to total deposit of NBBL at the end of year 2012 is 103.31%. Deposit utilization position on loan and investment ratio of BOKL is the lowest i.e. 97.65% at the end of 2012.
- * The hypothesis is based on the test of significance of banking industry returns and market return's has been formulated to test whether return on common stock of banking industry is equal to market return of not. Thus the study period it was found null hypothesis is accepted at different level of significance which means that average return of common stock of banking industry is equal to market returns.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter summarize the whole study summary of the study has been mentioned in the first section. The second section reflect the conclusion drawn from the study. The third part is recommendation to enable the weakness drawback of concern banks and portfolio investment on the basic of finding and conclusion of the study.

5.1 Summary

The investment decision is one of the major function of financial management. It depend upon two factors i.e. risk and return. Risk is the fluctuation of actual returns and expected return. Higher risk may have greater possible return. Investor attitude, perception and risk handling capacity also play essential role in rational investment decision. The risk is involved in every step of return every investor wants a maximum return from minimum level of risk. So as to minimize the risk investor should diversify their investment by the means of portfolio. The basic objective of portfolio management is to minimize. The risk at the given rate of return.

Portfolio management is one of the changing tasks for every financial institution. Now a days there is very high competition in banking industry but very less opportunity to make on investment without proper management of portfolio any institution cannot compete effectively in market. Portfolio management of bank assets basically means allocation of fund to different degree of risk and varying rates of return in such way that it can balance the conflicting goal of maximum yield in minimum risk. Bank has to invest its resources in different productive sector of investment alternative to earn profit. Uncertainty of profit creates risk to an investor. So every investor has to diversify their investment indifferent sector to minimize risk. Diversification of assets on different sectors lower the risk of portfolio.

The main objective of the study is to identify the situation of portfolio management of commercial banks of Nepal, analyze the risk return on common stock investment level of portfolio risk and return of commercial banks. While making an analysis and interpreting the data on portfolio various financial tools like ratio

analysis holding period return, CAPM models. Portfolio performance measures etc and statistical tools like mean S.D coefficient of variation. Covariance, correlation, coefficient of determination trend analysis etc have been used. Information are tabulated and presented as per the requirement of study. The data which are used in this study are mainly secondary nature. From this study it is found that those investor who had made diversification on their investment in different sector have got a better result rather than investing in only one sector.

5.2 Conclusion

-) Investment to total deposit ratio shows that EBL has effectively mobilized its deposit on investment to generate the return. Variability ratio of EBL is more consistent and NIBL is least consistent among banks. Likewise loan and advance total deposit ratio shows that NBBL and EBL have been investing larger amount and BOKL is investing lesser amount of its deposit fund on loan and advance. Investment and loan and advance directly effect on banks which had invested lowest amount of deposit fund on investment and loan and advances had a good liquidity position and vice versa. So, NIBL has well and NBBL has poor liquidity position among banks.
-) Investment portfolio analysis shows that how the investor is maintaining its investment by the means of portfolio. In other words, it shows that making an investment in more than one asset by an investor. In this study banks had made an investment in only two asset i.e. risky asset (share and debenture) and risk free asset (government securities). Among four banks EBL has invested its highest fund on risk free asset and lowest amount on risky asset NIBL has invested lowest amount on risk free asset and highest amount on risky asset. None of the banks have invested any amount on NRB bond.
-) All of the banks are granting very high amount of its loans and advances to private sector and very low amount of its loans and advances to government enterprises.
-) BOKL common stock has the highest expected returns and the highest risk also NBBL common stock has the lowest expected return and the lowest risk

also. According to risk, it can be said that holding a stock of BOKL is the most risky and holding a stock NBBL is not so risky among banks.

-) The term beta is used as an index to measure the sensitivity of asset return to the changes in market return. Beta coefficient of market is always equal to 1. NBBL has the highest beta BOKL has the lowest beta so stock return of NBBL is more volatile among banks. Stock of these banks consider as an aggressive asset. Higher the beta index higher will be required rate of return and vice versa, so required rate of return depends on beta of assets.
-) Among selected banks NBBL has a more systematic risk and BOKL has a least systematic risk.
-) The portfolio risk and return analysis shows that higher the investment in risk free asset (i.e. government securities) lower will be the return and lower will be the risk also, but if higher the investment in risky asset (i.e. share and debentures) higher will be the return and higher will be the risk also.
-) The purpose of trend analysis in this study is to analyze loan and investment and total deposit trend of NIBL, NBBL, EBL and BOKL during the year 2007-2002 and forecast the trend of loan and investment and total deposit of next 5 years. Past trend shows that BOKL is utilizing its more collected fund on loans and advances and investment. Future forecasting shows that BOKL will utilize its more collected fund on loan and investment among banks.

5.3 Recommendation

On the basis of overall analysis and finding of the study, following recommendation could be made for the concern parties.

-) The mean investment to total deposit ratio of NIBL is the lowest among the banks. Utilization of collected fund on investment generates more return to the banks, so NIBL needs to identify the new investment sectors and make an efficient investment on various sectors which will help to meet the industrial average investment to total deposit ratio. NIBL, has to increase its investment to total deposit ratio 4.9% to meet the industrial average.

-) BOKL is investing lowest amount of its deposit funds on loans and advances among banks. So BIK has to increase its loans and advances ratio to meet industrial average by 10.46% which will definitely help bank to earn profit and improve its performance.
-) The liquidity position of NIBL is the lowest among the bank so NBBL has to increase its liquidity position to meet deposit withdrawals and current obligations.
-) Investment portfolio analysis shows that EBL is investing its more funds on government securities (risk free asset) which caused very low return on its investment. So, to increase its return, EBL, should invest its more funds on share and debenture (risky asset). Likewise BOKL is providing very high amount of its loans and advances to private sec or which may increase risk to bank. So EBL should maintain the loans and advances portfolio to decrease the level of risk.
-) The expected return and risk shows that BIKL has a greater expected return and greater risk. It has a greater C.V. Also it is because of BOKL returns, is least consistent it has a greater fluctuation on its return. So, to reduce its risk and reduce its C.V. BOKL return should have stability.
-) The common stock returns of commercial bank are sensitive to market. They are positively correlated to the market. So, market condition should be analyzed.
-) Expected rate of return is greater than required rate of return of all banks stock. So all of the stock are under prices, so stock of these banks should be purchased by an investor.
-) Portfolio condition of bank should be regularly revised from time to time and should maintain the equilibrium in the optimal portfolio condition. The banks should always try to make continuous efforts to explore competitive and highly yielding investment opportunities to optimize its investment portfolio. Construction of portfolio is a dynamic job. Because efficient portfolio depends on market movements. For construction of portfolio, select the stocks that the

higher return with negatively correlated stocks. Positively correlated stock can not diversify the risk.

-) Generally, it is believed that higher the return, higher will be the risk. Investment risks are better covered through a large and diversified portfolio. Diversifying an investment is a way of reducing the risk.

BIBLIOGRAPHY

- Alexander J. Gordon, William F. Sharp and Jeffery V. 2003, *Fundamentals of investments*, 3rd edition: Pearson Educations
- Brockington; Raymond, 1990, *Financial Management*, 5th edition. London: DP Publication Ltd.
- Bajracharya B.C, 2002, *Business Statistics and Mathematics*, Kathmandu: Buddha Academic publisher and distributors.
- Bhattarai Rabindra, 2004, *Investment Theory and Practice*, 1st edition, Kathmandu: Buddha Academic publisher and distributors.
- Bhalla V.K, 2001, *Investment Management*, 8th edition. New Delhi: S. Chanda and Company Limited
- Cambridge international dictionary of English, edition 1995
- Cheney, John M. and Moses Edward A, n.d. *Fundamentals of Investments*, 10th edition, St, Paul: Wet Publishing Company
- Cohen George B, Zinbarg Edward D, and Zeikel Arthur, n.d, *Investment Analysis and Portfolio Management*, 3rd edition, n.p
- Dr. Maheshwari S.N, 1997, *Financial Management Principles and Practice*, New Delhi, Sultan Chanda and Sons, Educational Publisher
- Francis, Jack Clark, n.d, *Investment Analysis and Management*, 6th edition, New York: Mc Grow Hill.
- Francis, Jack Clark and Archer Stephen H, 1979, *Portfolio Analysis*, 2nd edition Englewood Cliffs: Prentice- Hall, Inc
- Gupta S.C, 1996, *Fundamental of Statistics*. 7th edition, Bombay: Himalayan Publishing House
- J.F Weston and E.F Brigham, 1992, *Financial Management*, 8th edition. Chicago: The Dryden Press.

Jain S.P and KL Narang, 1998, *Financial and Management Accounting*, New Delhi: Kalyani Publisher.

Kothari, C.R, 1990, *Research Methodology: Methods and Technique*, 2nd edition, New Delhi: Welley Eastern: Limited

Kanel Nav Raj, 2003, *Guidelines to Format Theses and Dissertations*, 1st edition. Kathmandu: New Hira Books Enterprises

Munakarmi, Shiva Prasad, 2002 *Management Accounting* 1st edition; Kathamandu: Buddha Academic Publishers and Distributors Pvt. Ltd

Prasannra Chandra, 1998, *Managing Investment*, 2nd edition, New Delhi: Tata Mc Hill Publishing Co .Ltd.

Pillai R.S.N and Bagavati, 1998, *Advanced Accountancy*, 2nd revised edition, New Delhi: Kanark Publishers Pvt. Ltd.

Pardhan Surendra, 1992, *Basic of Financial Management*, 1st edition, Kathmandu: Educational Enterprises (p) Ltd

Thapa Kiran, 2001, *Investment, Theory and Practice (MBS 2nd year)*, 2nd edition, Kathmandu: Ansmitta Books and Stationary

Van Horn James C. and Wachowicz John M, 1996, *Fundamental of financial Management*, 9th edition, New Delhi: Prentice Hall of India Private Limited.

Van Horn James C. 1997, *Financial Management and Policy*, 10th edition, New Delhi Prentice Hall of India Limited

Journals, Reports and Articles

Ansura Bill, Fall 2002, “Current issues in Technology Management”, The article on Portfolio Management, VOL, 6 Issue 3, pp 1-6

Lewellen Jonathan and Shanken, June 2002, Learning Asset-Pricing test, and Market Efficiency. The Journal of Finance, Vol. LVII, No. 3

Rouwenhorst, K Great, 1999, Local Return Factor and Turnover in Emerging Stock Markets, The Journal of Finance, VOL, 16, No. 2

Shrestha R. Shiva, 1998, Portfolio Management in Commercial Bank, Theory and Practice, Nepal Rastra Bank Patrika

Mahat L.D, 2004, Efficient Banking. The Kathmandu Post Daily 28th April

Thapa Chandra, 2003, Managing a Banking Risk, The Kathmandu Post daily 9th

Thesis

Bhatta, Dipesh, 2003, “Portfolio Management of Listed Finance Companies in Nepal”. An Unpublished masters Degree Thesis, Shanker Dev Campus, T.U

Basnet Jagadish, 2002, “Portfolio Management of Listed finance Companies in Nepal”, An Unpublished Master Degree Thesis, Shanker Campus, T.U

Bhatta, Tarka Raj, 2003, “Investment in shares of Commercial Banks in Nepal an Assessment of Risk and Return Element” An Unpublished Masters Degree Thesis, Shanker Dev Campus, T.U

Gautam, Guna Nidhi, 2004. “Risk and return Analysis of Common Stock Investment of Finance Companies in Nepal”. An Unpublished Masters Degree Thesis, Shanker Dev Campus, T.U

Joshi, Roopak, 2002, “Investor problems in choice of optimum Portfolio of Stock in Nepal Stock Exchange”. An unpublished Masters Degree Thesis, Shanker Dev, Campus, T.U

Khaniya, Kalpana, 2003, “Investment Portfolio Analysis of Joint Venture Banks”. An Unpublished masters Degree Thesis, Shanker Dev Campus, T.U

Manandhar, Manilata, 2003, “Analysis of Risk and Return on Common Stock Investment of Commercial Banks in Nepal” An Unpublished Masters Degree Thesis, Shanker Dev, Campus, T.U.

Mishra Shankar Kumar, 2002, “risk and Return on Common Stock Investment of Commercial Banks in Nepal” Un Unpublished Masters Degree Thesis, Shanker Dev Campus, T.U

Pandey, Pramina, 2000, “Risk and return Analysis of Common Stock Investment”, AN Unpublished Masters Degree Thesis, Shanker Dev Campus, T.U

Tamang, Buddhi Raj, 2003, “Risk and Return Analysis of Commercial Banks in Nepal”. An unpublished Masters Degree Thesis, Shanker Campus, T.U

Websites

www.nepalstock.com/7.txt

www.google.com.np/search?hi=en

www.citibank.com/baharain/oersonal/product/glossary.htm

www.nibl.com.np/intro.htm

www.bokltd.com/profile.asp

www.obbl.com.np/intro.htm

www.nrb.com.org

www.fiscalagents.com/newsletter/gloss/Glossary/p.shtml

www.naruc.org/resoruces/glossary.shtml

www.everestbankltd.com/briefprofile.php

Annex 'A'

Investment to Total Deposit

F/Y	Particular	NBL	RBB	NABIL	NIBL	SCBNL	HBL	SBI	NBBL	EBL	BOK	NCC	LBL	NICB	MBL	KBL	LBL	SBL	ADB
2003	Ratio %	33.74	10.52	27.26	5	35.84	18.94	18.23	19.34	23.88	24.44	7.34	9.28	34.19	4.45	9.39	16.85	0.97	0
2004	Ratio %	29.19	7.24	26	17.09	37.55	12.22	25.87	20.23	30.58	30.63	8.58	11.46	24	2.58	12.49	13.24	3.26	0
2005	Ratio %	39.82	14.93	19.37	13.66	37.24	22.027	29.93	18.24	20.79	24.78	4.89	9.33	19.12	2.27	19.46	13.54	11.25	0.00073
2006	Ratio %	33.22	19.74	12.26	13.32	37.50	19.44	33.91	19.40	25.70	25.45	7.87	11	20	11.45	14.28	9.56	10.07	0
2007	Ratio %	34.26	20.18	22.95	13.29	28.87	16.17	20.49	8.73	24.63	18.86	17.77	13.20	9.97	10	12.29	12.84	9.44	5.42
Mean (\bar{X})		34.0	14.52	21.56	12.47	35.4	17.75	25.54	17.18	25.11	24.83	9.29	10.85	21.45	6.15	13.58	13.20	6.99	1.08
S.D. (Ξ)		3.39	5.06	5.39	3.99	3.32	3.29	5.80	4.27	3.18	3.73	4.41	1.46	8.07	3.83	3.33	2.31	4.25	2.16
CV. %		9.9	34.84	25	31.99	9.3	18.53	22.70	24.85	12.66	15.022	47.47	13.45	37.62	62.27	24.52	17.5	60.80	200
Coefficient of S.D. (Ξ)		0.09	0.34	0.25	0.31	0.093	0.18	0.22	0.24	0.126	0.150	0.47	0.13	0.37	0.62	0.24	0.17	0.60	200

Source: Banking and Financial Statistics Mid July (2007).

$$\text{Loan and Advance to total deposit} = \frac{\text{Land and advance}}{\text{Total deposit}}$$

Average : 72.87

Loan and Advance to Total Deposit

F/Y	Particular	NBL	RBB	NABIL	NIBL	SCBNL	HBL	SBI	NBBL	EBL	BOK	NCCB	LBL	NICB	MBL	KBL	LBL	SBL	ADB
2003	Ratio %	54.92	71.15	59.51	74.12	32.14	51.87	72.90	79.28	75.14	79.63	77.35	88.74	80.39	83.99	85.32	110.43	160.62	38.22
2004	Ratio %	52.65	65.77	61.25	61.28	31.48	57.47	75.92	78.41	75.85	78.24	74.12	84.89	72.46	92.27	77.00	100.99	121.42	35.10
2005	Ratio %	50.24	65.79	75.94	72.22	42.46	53.34	76.55	72.07	78.37	68.95	89.5	94.72	78.41	90.42	88.02	89.17	107.02	39.65
2006	Ratio %	34.36	58.78	67.29	68.72	38.63	58.64	74.26	69.23	73.35	72.15	88.17	90.14	78.51	76.43	88.69	96.17	98.75	36.81
2007	Ratio %	34.55	50.23	67.07	71.38	42.76	59.09	86.03	87.73	73.61	78.19	78.21	81.96	90.45	76.84	85.33	85.76	95.39	105.61
Mean (\bar{X})		45.34	62.35	66.21	69.54	37.49	56.08	77.13	77.34	75.26	62.41	81.47	88.09	80.04	83.99	84.87	96.50	116.64	51.07
S.D. (Σ)		9.01	7.21	5.78	4.48	4.89	2.92	4.62	6.42	1.81	13.64	6.18	4.39	5.84	6.60	4.16	8.75	23.75	27.30
CV. %		19.87	11.56	8.72	6.44	12.96	5.20	5.98	8.30	2.40	21.85	7.58	4.98	7.29	7.85	4.90	9.06	20.36	53.45
Coefficient of S.D. (Σ)		0.198	0.115	0.05	0.06	0.129	0.05	0.059	0.083	0.024	0.21	0.0758	0.049	0.072	0.78	0.049	0.09	0.20	0.53

ii. Liquidity Fund to Total Deposit

F/Y	Particular	NBL	RBB	NABIL	NIBL	SCBNL	HBL	SBI	NBBL	EBL	BOK	NCCB	LBL	NICB	MBL	KBL	LBL	SBL	ADB
2003	Ratio %	13.73	20.75	30.97	11.69	16.90	39.43	20.41	8.45	17.26	11.22	18.47	15.74	11.06	23.70	11.60	24.35	24.79	8.84
2004	Ratio %	17.75	26.55	27.78	10.38	20.04	37.84	10.71	11.67	10.78	14.85	17.19	18.02	8.72	20.34	22.16	29.13	19.10	8.80
2005	Ratio %	16.94	15.44	9.22	9.40	17.42	92.91	5.31	12.31	16.08	15.97	10.71	11.64	17.53	13.35	8.18	17.47	6.90	8.48
2006	Ratio %	15.56	16.40	12.22	12.44	14.11	10.12	8.24	13.55	11.73	18.65	12.16	9.44	12.52	19.23	10.43	5.06	9.24	12.27
2007	Ratio %	18.09	11.37	8.41	11.39	16.21	10.89	15.32	12.62	17.43	12.63	12.80	13.79	8.52	15.13	13.49	6.34	11.06	10.85
Mean (\bar{X})		16.41	18.10	17.72	11.06	16.93	26.23	11.99	11.72	14.65	14.66	14.26	13.72	11.67	18.35	13.17	16.47	14.21	2.84
S.D. (Σ)		1.59	5.17	9.65	1.06	1.91	13.02	5.33	1.74	2.83	2.59	3.01	3.00	3.28	20.16	36.52	57.98	47.07	14.93
CV. %		9.68	28.56	28.56	9.58	11.28	49.63	44.45	14.84	19.31	17.66	21.10	21.86	28.10	0.201	0.365	0.57	0.47	0.149
Coefficient of S.D. (Σ)		0.096	0.285	0.285	0.095	0.112	0.496	0.44	0.148	0.193	0.176	0.211	0.2186	0.281	3.70	4.81	9.55	6.69	1.47

Annex 'B'

Investment Portfolio Analysis

Portfolio	2003	2004	2005	2006	2007	Mean %
1. NIBL						
Gvt. Securities	22.91%	47.95%	47.82%	44.46%	49.95%	42.61%
Share and debenture	77.09%	52.05%	52.18%	55.64%	50.05%	57.39%
NRB Bond						
2. NBBL						
Gvt. Securities	89.62%	98.53%	97.23%	97.49%	81.94%	92.96%
Share and debenture	10.38%	1.47%	1.028%	2.51%	18.66%	7.04%
NRB Bond						
3. EBL						
Gvt. Securities	98.94%	99.31%	99.08%	84.46%	94.37%	95.23%
Share and debenture	1.057%	0.69%	0.92%	15.54%	5.63%	4.77%
NRB Bond						
4. BOKL						
Gvt. Securities	93.32%	99.047%	99.14%	96.59%	77.85%	93.18%
Share and debenture	6.68%	0.953%	0.8587%	3.405%	22.15%	6.82%
NRB Bond						

Annex C

Loan and Advance Portfolio Analysis

Portfolio	2003	2004	2005	2006	2007	Mean %
1. NIBL						
Gvt. ent.	1.93%	2.33%	1.096%	0.63%	0.47%	1.29%
Pvt. See bill	96.84%	96%	97.041%	98.11%	97.91%	97.1802%
P and B	1.28%	1.67%	1.85%	1.25%	1.69%	1.53%
2. NIBL						
Gvt. ent.	3.33%	3.25%	0.59%	1.6%	0.64%	1.88%
Pvt. See bill	95.14%	94.22%	89.27%	91.02%	85.84%	91.098%
P and B	1.51%	2.51%	10.14%	9.036%	9.34%	6.5072%
3. EPL						
Gvt. ent.	1.19%	1.13%	-	4.86%	4.56%	2.348%
Pvt. See bill	98.81%	98.87%	99.62%	94.66%	95.14%	97.42%
P and B	-	-	0.38%	0.30%	0.289%	0.1938%
4. BOKL						
Gvt. ent.	-	-	-	1.08%	3.02%	0.82%
Pvt. See bill	99.45%	99.58%	98.68%	98.67%	16.66%	98.604%
P and B	0.57%	0.42%	1.32%	0.25%	0.32%	0.576%

4.4 Analysis of Common Stock Risk and Return of Commercial Banks.

Calculation of Annual rate of return, expected return and variance of NIBL

Year	C.P.	Cash dividend.	Stock dividend	D	CI (%)	(RT-φCRT)	[RT-φ(RTC)] ²
2003	940	15	15	135	-	-	-
2004	800	12.5	12.5	170	3.19	-64.15	4115.22
2005	1260	20	55.40	978	179.75	112.41	12636
2006	1729	5	30	740	95.95	28.61	818.53
2007	2450	7.5	40.83	7.5	57.81	-9.53	90.82
					φRT=336.7		φ(RI-φC(RT)) ² = 17660.57

$$\text{Expected return } \phi(RI) = \frac{336.7}{5} \times 67.34$$

$$\text{Stander Deviation } (\Xi) = \sqrt{\frac{\phi(RI - \phi(RI))^2}{2}} \times \sqrt{\frac{17660.57}{5}} \times 3532.114\%$$

$$\text{Variance } (\Xi^2) = \frac{\phi(RI - \phi(RI))^2}{n} \times \frac{17660.57}{5} \times 3532.114$$

$$\text{CV} = \frac{\dagger}{\phi(RI)} \times \frac{59.43\%}{67.34} \times 0.88\%$$

Year	MPS	Cash dividend.	Stock dividend	D	RI	(RT-φ(RT))	[RT-φCRT)] ²
2003	740	50	50	550	-	-	-
2004	1000	65	65	10433.25	176.11%	4.11	16.89
2005	1505	70	70	1638	214.3%	42.3	1789.29
2006	2240	85	85	4377.5	339.7%	167	28123.29
2007	5050	140	140	100	129.91%	-42.09	1771.56
					φRT=860		φ(RI-φCRT) ² = 31701

$$\text{Expected return of NABIL } \phi(\text{CR}) = \frac{\phi RI}{n} = \frac{860}{5} \times 172\%$$

$$\text{Stander Deviation } (\Xi) = \sqrt{\frac{\phi [RI - \phi(RI)]^2}{n}} \times \sqrt{\frac{31701}{5}} \times 178\%$$

$$\text{Variance of NABIL } (\Xi^2) = \frac{\phi (RI - \phi CRT)^2}{n} \times \frac{31701}{5} \times 6340.2\%$$

$$\text{Coefficient of Variation (CV)} = \frac{\dagger}{\phi(RI)} \times \frac{178\%}{172} \times 1.03\%$$

Everest Bank Ltd.

Year	MPS	CD	SD	TD	RT	(RT-φ(RT))	[RT-φ(RT)] ²
2003	445	20	-	20	-	-	-
2004	680	20	-	20	53.25	1.25	1.5625
2005	870	-	20	275.8	68.5	16.5	272.25
2006	1379	25	-	25	61.37	9.37	87.79
2007	2430	10	30	10	76.93	24.93	621.5
					φRT=260		φ(RI-φCRT) ² = 983.10

$$\text{Expected return of EVL } \phi(CR) = \frac{\phi RI}{n} = \frac{260}{5} \times 52\%$$

$$\text{Stander Deviation of EVL } (\Xi) = \sqrt{\frac{\phi [RI Z \phi(RI)]^2}{n}} \times \sqrt{\frac{983.10}{5}} \times 14\%$$

$$\text{Variance of EVL } (\Xi^2) = \frac{\phi (RI Z \phi CRI)^2}{n} \times \frac{983.10}{5} \times 196.62\%$$

$$\text{Coefficient of Variation (CV)} = \frac{\dagger}{\phi(RI)} \times \frac{14}{52} \times 0.2692 \times 26.92\%$$

Bank of Kathmandu

Year	MPS	CD	SD	D	RT	(RT-φ(RT))	[RT-φ(RT)] ²
2003	198	5	-	5	-	-	-
2004	295	10	-	10	54%	-19.32	373.26
2005	430	15	-	15	50.84%	-22.48	505.35
2006	850	18	30	430	197.67%	124.35	15462.92
2007	1375	20	-	20	64.11%	-9.21	84.82
					φRT=366.62		φ(RI-φCRT) ² = 16426.35

$$\text{Expected return of BOK } \phi(CR) = \frac{\phi RI}{n} = \frac{366.62}{5} \times 73.32\%$$

$$\text{Stander Deviation of BOK } (\exists) = \sqrt{\frac{\phi [RI - Z\phi(RI)]^2}{n}} \times \sqrt{\frac{16426.35}{5}} \times 57.31\%$$

$$\text{Variance of BOK } (\exists^2) = \frac{\phi (RI - Z\phi CRT)^2}{n} \times \frac{16426.35}{5} \times 3285\%$$

$$\text{Coefficient of Variation (CV)} = \frac{\dagger}{\phi(RI)} \times \frac{57.31}{73.32} \times 78.16\%$$

4.4.1 Analysis of Market Risk and Return

Everest Bank Ltd.

Year	NEPSE in Dex.	$R = \frac{(N_1 - N_D)}{N_0}$	$R_m - \bar{R}_m$	$[R_m - \bar{R}_m]^2$
2003	204.86	-	-	-
2004	222.04	8.38%	-21.46	460.87
2005	286.67	29.10%	-0.748	0.55
2006	386.67	34.88%	5.032	25.32
2007	683.95	76.88	47.032	2212
				$\phi [R_m - \bar{R}_m]^2 = 2698.74$

$$\text{Expected return on Market } (\bar{R}_m) = \frac{\phi R_m}{n} \times \frac{149.24}{4} \times 37.31$$

$$\text{Stander Deviation of Market } (\Xi_m) = \sqrt{\frac{\phi [R_m - \bar{R}_m]^2}{n}} \times \sqrt{\frac{2698.74}{5}} \times 25.97\%$$

$$\text{Variance of Market } (\Xi_m^2) = \frac{\phi [R_m - \bar{R}_m]^2}{n} \times \frac{2698.74}{5} \times 674.685\%$$

Annex E

Bank	Year					Total
	2003	2004	2005	2006	2007	
NIBL						
(RI- \bar{RI})		-64.15	112.41	28.61	-9.53	
[Rm- \bar{R} m]		-21.46	-0.748	5.032	47.032	
(RI- \bar{RI})						
[Rm- \bar{R} m]		1376.65	-84.08	143.96	-448.21	988.32
NBBL						
(RI- \bar{RI})		4.11	42.3	167	-42.09	
[Rm- \bar{R} m]		-21.46	-0.748	5.032	47.032	
(RI- \bar{RI})						
[Rm- \bar{R} m]		-88.20	-31.64	840.34	-19.79	1259.07
EBL						
(RI- \bar{RI})		1.25	16.5	9.37	24.93	
[Rm- \bar{R} m]		-21.46	-0.748	5.032	47.032	
(RI- \bar{RI})						
[Rm- \bar{R} m]		-26.82	-12.34	47.14	1172.5	1180.48
BOKL						

(RI- \bar{RI})		-19.32	-22.48	124.35	-9.21	
[Rm- \bar{R}_m]		-21.46	-0.748	5.032	47.032	
(RI- \bar{RI})						
[Rm- \bar{R}_m]		414.6	16.81	625.72	-433.16	623.97

Again,

We know,

$$P_{gm} = \frac{Cov(r_g r_m)}{\sigma_j \sigma_m} \text{ (See also Annex 'E' for detail Calculation)}$$

Correlation between market return and return on NIBL stock.

$$P_{IM} = \frac{Cov(r_I r_m)}{\sigma_i \sigma_m} \times \frac{247.08}{59.43 \times 23.23} \times \frac{247.08}{1380.55} \times 0.1789$$

Correlation between market return and return of NBBL stock

$$P_{BM} = \frac{Cov(r_B r_M)}{\sigma_B \sigma_M} \times \frac{314.70}{178 \times 23.23} \times \frac{314.70}{4134.94} \times 0.79$$

Correlation between market return and return of BOKL

$$P_{KM} = \frac{Cov(r_K r_M)}{\sigma_K \sigma_M} \times \frac{155.99}{57.31 \times 23.23} \times \frac{155.99}{1331.31} \times 0.11$$

And,

Again we know,

$$\beta_M = \frac{\text{Cov}(r_j, r_m)}{\sigma_m^2}$$

Beta coefficient of market and stock of MIBL

$$\beta_M = \frac{247.08}{549.748} \times 0.44$$

Beta coefficient of market and stock of NBBL

$$\beta_M = \frac{\text{Cov}(r_B, r_m)}{\sigma_m^2} \times \frac{314.76}{549.748} \times 0.57$$

Beta coefficient of market and stock of EBL

$$\beta_M = \frac{\text{Cov}(r_E, r_m)}{\sigma_m^2} \times \frac{259.12}{549.748} \times 0.47$$

Beta coefficient of market and stock of BOKL

$$\beta_M = \frac{\text{Cov}(r_K, r_m)}{\sigma_m^2} \times \frac{155.99}{549.748} \times 0.28$$

Annex F

Calculation Weight (amount) invested in government security risky free and weight (amount) invested in risky assets (Share and debenture) of NIBL in post 5 years.

Year	Amount Invested 'S' and 'd'	Amt. Invested in Govt. Sector	total Investment
2003	1345.3	400	1745.3
2004	2171.4	2001.1	4172.5
2005	2125.7	1948.5	4074.2
2006	3150.6	2522.3	5672.9
2007	3262.2	3256.4	6518.6
Total	1255.2	10128.3	22183.5
Weight	54.34%	45.66%	100%

Now,

$$\text{Portforio return } (R_D) = WM\bar{R} + Wrf R_j.$$

$$0.5434 \times 37.31 + 0.4566 \times 0.08 = 2.031\%$$

$$\text{Portforio risk } (\sigma_D) = WM\sigma_m$$

$$= 0.5434 \times 25.97$$

$$= 14.11\%$$

Calculation Weight (Amount invested in Government Securities risk free rate) and weight (Amount) invested in risky asset (Share and debenture) of NBBL in part 5 years.

In million

Year	Amt. Invested 'S' and 'D'	Amt. Invested in Govt. Sect.	Total Investment
2003	236.3	2040.4	2276.7
2004	38.4	2578.9	2617.3
2005	62.8	2212.5	2275.3
2006	64.8	2525.3	2590.1
2007	182.2	826.8	1009
Total	584.5	10183.9	10768.4
Weight	0.05	0.95%	100%

Now,

$$\text{Portfolio return } (\bar{R}_D) = W_M R_M + W_{rf} R_{rf}$$

$$0.05 \times 37.31\% + 0.95 \times 8\% = 9.46\%$$

$$\text{Portfolio risk } (\sigma_D) = W_M \sigma_M$$

$$= 0.05 \times 25.97$$

$$= 1.2985\%$$

Calculation weight (Amount) invested in government security (risk free assets) and weight (amount) invested in risky assets (Share and Debenture) of EBL in past 5 years.

In million

Year	Amt. Invested 'S' and 'D'	Amt. Invested in Govt. Sect.	Total Investment
2003	17.1	1599.4	1616.5
2004	17.1	2466.4	2483.5

2005	19.4	2100.3	2119.7
2006	652.7	3548.6	4201.3
2007	280.5	4704.6	4985.1
Total	986.8	14419.2	15406.1
Weight	6%	94%	100%

Now,

$$\begin{aligned}
 \text{Portfolio return } (R_D) &= W_M \bar{R}_M + W_{rf} R_{rf} \\
 &= 0.06 \times 37.31\% + 0.94 \times 8\% \\
 &= 9.758\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Portfolio risk } (\sigma_D) &= W_M \sigma_M \\
 &= 0.06 \times 25.97 \\
 &= 1.5582\%
 \end{aligned}$$

Calculation of weight (amount) invested in government security (risk free assets) and weight (amount) invested in risky assets (Share and debenture) of BOKL in past 5 years.

In million

Year	Amt. Invested 'S' and 'D'	Amt. Invested in Govt. Sect.	Total Investment
2003	108	1510.8	1618.8
2004	22.8	2371.8	2394.6
2005	19.2	2216.5	2235.7
2006	93.6	2654.8	2748.4
2007	663.2	2332	2995.2
Total	906.8	12085.9	12992.7
Weight	0.69	0.931	100%

Now,

$$\begin{aligned}
 \text{Portfolio return } (R_D) &= W_M \bar{R}_M + W_{rf} R_{rf} \\
 &= 0.069 \times 37.31\% + 0.931 \times 8\% \\
 &= 10.02\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Portfolio risk } (\sigma_D) &= W_M \sigma_m \\
 &= 0.069 \times 25.97\% \\
 &= 1.79\%
 \end{aligned}$$

Annex G

Calculation of total deposit trend of NIBL. Let the stright line trend be $Y = a + b + \dots$ (i)

Year (x)	Total Deposit (y)	x=x-2005	x ²	xy	Land and invest (y)	x	x ²	xy
2003	7922.8	-2	4	-15845.6	7694.5	-2	4	-15389
2004	11706.3	-1	1	-11706.3	11462.7	-1	1	-11962.7
2005	14254.8	0	0	0	14584.6	0	0	0
2006	18927.3	1	1	18927.3	18844.4	1	1	18844.4
2007	24488.9	2	4	48977.8	24287.7	2	4	48575.4
N=5	$\phi y=773001$		$\phi x^2=10$	$\phi xy=403505$	$\phi y=76873.9$		$\phi x^2=10$	$\phi xy=405681$

Now,

$$a = \frac{\phi y}{n} \times \frac{77300.1}{5} \times 15460.02$$

$$b = \frac{\phi xy}{x^2} \times \frac{40350.5}{10} \times 4035.05$$

Substituting the value of a and b in equation (i) the last square total deposit trend of NIBL is $y = 15460.02 + 4035.05$

$$a = \frac{\phi y}{n} \times \frac{76873.9}{5} \times 15374.78$$

$$b = \frac{\phi xy}{x^2} \times \frac{40568.1}{10} \times 4056.81$$

Loan and Investment trend analysis $y = 15374.78 + 4056.81$

Calculation of total deposit of NBBL

Let the straight line trend by $y = a + b x \dots$ (i)					Let the straight line trend be $(y_1 = a_1 + b_1 y_1) \dots$ 9ii)			
Year (x)	Total Deposit (y)	$x = x - 2005$	x^2	xy	Land and invest (y)	x	x^2	xy
2003	10548	-2	4	-21096	10768.7	-2	4	-21537.4
2004	12747.3	-1	1	-12747.3	12871.3	-1	1	-12871.3
2005	12125.5	0	0	0	11999.8	0	0	0
2006	13014.8	1	1	13014.8	12496.3	1	1	12496.3
2007	13014.8	2	4	18948	10168.3	2	4	20336.6
N=5	$\phi y = 57909.6$		$\phi x^2 = 10$	$\phi xy = 1880.5$	$\phi y = 58304.4$		$\phi x^2 = 10$	$\phi xy = 1545.8$

Now,

$$a = \frac{\phi y}{n} \times \frac{57909.6}{5} = 11581.92$$

$$b = \frac{\phi xy}{x^2} \times \frac{1880.5}{10} = 188.05$$

Substituting the value of a and b in equation (i)

$$y = 11581.92 - 188.05 x$$

$$a = \frac{\phi y}{n} \times \frac{58304.4}{5} = 11660.88$$

$$b = \frac{\phi xy}{x^2} \times \frac{1545.8}{10} = 154.58$$

Substituting the value of a and b in equation (ii)

$$y_1 = 11660.88 - 154.58 x$$

Calculation of total deposit trend of EBL

Calculation of total loan and Investment of EBL

Let the straight line trend by $y = a + b x \dots$ (i)					Let the line be $y = a + bx$			
Year (x)	Total Deposit (y)	$x=x-2005$	x^2	xy	Land and invest (y)	x	x^2	xy
2003	6694.9	-2	4	13389.8	6647.4	-2	4	-13294.8
2004	8064	-1	1	8064	8600.1	-1	1	-8600.1
2005	10097.8	0	0	0	10063.2	0	0	0
2006	13802.5	1	1	13802.5	14356.2	1	1	14356.2
2007	19097.7	2	4	38195.4	19084.9	2	4	38169.8
N=5	$\phi y=57756.9$		$\phi x^2=10$	$\phi xy=30544.1$	$\phi y=58751.7$		$\phi x^2=10$	$\phi xy=3063.11$

Now,

$$a = \frac{\phi y}{n} \times \frac{57756.9}{5} \times 11551.38$$

$$b = \frac{\phi xy}{x^2} \times \frac{30544.1}{10} \times 3054.41$$

Substituting the value of a and b in equation (i)

The least square total deposit trend of EBL is Loan and investment equation

$$y = 11551.38 - 3054.41 x$$

$$a = \frac{\phi y}{n} \times \frac{58751.7}{5} \times 11750$$

$$b = \frac{\phi xy}{x^2} \times \frac{3063.11}{10} \times 3063.1$$

Substituting the value of a and b

$$y_1 = 11750 - 3063 x$$

For the estimation of total deposit of NRBL in year 2008

is (x = 6) [...The mean of year is 3th year]

$$y = 2008 = 6 - 3 = 3$$

$$x = 2007 = 7 - 3 = 4$$

$$2010 = 8 - 3 = 5$$

Calculation of total deposit trend of BOKL

Calculation of total loan and Investment of BOKL

Let the equation $y = a + bx$					Let the equation $y = a + bx$			
Year (x)	Total Deposit (y)	$x-x-2005$	x^2	xy	Land and invest (y)	x	x^2	xy
2003	6169.6	-2	4	-12339.2	6575	-2	4	-13150
2004	7741.6	-1	1	7741.6	8499.5	-1	1	-8499.5
2005	8942.8	0	0	0	8514.2	0	0	0
2006	10429.3	1	1	10429.3	10334.8	1	1	10334.8
2007	12358.6	2	4	24717.2	12717.3	2	4	25434.6
N=5	$\phi y=45641.9$		$\phi x^2=10$	$\phi xy=$	$\phi y=46640.8$		$\phi x^2=10$	$\phi xy=14119.9$

Now,

$$a = \frac{\phi y}{n} \times \frac{45641.9}{5} \times 9128.38$$

$$b = \frac{\phi xy}{x^2} \times \frac{15065.7}{10} \times 1506.57$$

Then the equation,

$$y = 9128.38 + 1506.57 x$$

$$a = \frac{\phi y}{n} \times \frac{46640.8}{5} \times 9328.16$$

$$b = \frac{\phi xy}{x^2} \times \frac{14119.9}{10} \times 1411.99$$

Then the equation

$$y_1 = 9328.16 + 1411.99x$$