CHAPTER-1

1. INTRODUCTION

1.1. Background of the Study

Investment means the sacrifice of current money to increase future money. Generally when cash is needed, investment can be retired. In investment, two attributes are generally involved: time and risk. Risk is the fluctuation of actual returns and expected return. The sacrifice takes place in the present and is certain. The reward comes later and is uncertain. Investor always tries to minimize the risk by investing two or more securities. A set of two or more security is called portfolio. Investment decision depends upon two factors, i.e. risk and returns. The basis objective of portfolio analysis is to minimize risk at the given rate of returns. The reduction of risk is possible by investing in two or more securities. Investing in two or more securities is called portfolio.

Banks are an essential part of the business activities which are established to safeguard people's money and thereby using the money in making loans and investments. There are several commercial banks operating inside and outside the valley. Every bank invests its money in some profitable financial sector, which may result in profitable financial sector, which may result in profitable business in the long range. An investment is the commitment of money that is expected to generate additional money. However every investment entails some degree of risk which calls for at present certain sacrifice for future uncertain benefits.

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 return for any specified level of risk or the lowest possible risk for any specified rate of return. Portfolio theory has been developed for financial asset. Thus making investment from selected optimal portfolio, i.e. the portfolio that provides the highest rate of return with least possible amount of risk is the real investment portfolio.

Most securities available for investment have 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 portfolio from a set of possible portfolios. Hence, this situation is often referred to as the portfolio selection problem. One solution to this problem was put forth in 1952 by Harry M. Markowitz in a landmark paper that is generally viewed as the origin of modern investment theory (Alexander, Sharp & Bailey 2003).

Portfolio management can also 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 affect 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

(www.naruc.org/resource/glossary.shtml).

In finance a portfolio is a collection of investments 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 (www.google.com.np/search).

A portfolio simply represents the practice among the investor of having their fund in more than one asset. The combination of investment asset is called portfolio.

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 buildings. 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 components of a portfolio depends on the population of opportunities from which the selection has been made (Brockington 1990).

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 asset 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 bank & financial institution has created a competitive environment in financial sector. The investment opportunity of trade industry, agriculture and other sector have not comparatively been extended, so, commercial bank have to face so many difficulties to mobilized their fund on profitability sector. The risk is involved in every steps of the return; every investor wants a maximum return from a minimum level of the risk, so to minimization of risk investor should diversify its investment by the means of portfolio.

In this study the trend of investment process of commercial banks in various sector by the mean of portfolio will be analyzed, the existing investment situation and its investment strategy in future will be analyzed. One main focus of the study will be measurement of financial performance of sample banks, their risk, return, trend and portfolio patterns and analysis etc.

1.3 Statement of the Problem

After the restoration of democracy, Nepal has adapted more liberal and open economic policies. The process of economic liberalization and reforms in financial sector introduce in the early 1980s has led to significant changes in the banking industry. The open and liberal policy of government in financial sector has helped in establishing many banks and financial intuitions in the country. These banks have contributed towards introducing new technology, new banking system and efficient service delivery in the country. These

banks have been contributing in line with the thrust 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 resent economic slowdown has started affecting the performance of commercial banks. The effects of slowdown 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 policy 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 productive sector. Political instability has main cause of decrease earning power of Nepalese people. They have compulsion to go foreign countries to earn money and to settlement their life. Lower volume of investment is causing lower growth of gross domestic product and hence foreign trade deficit is increasing day by day. Nepalese commercial banks are also affected by this economic disorder and are facing difficulties in furnishing their loans and advance towards the profitable sectors. Moreover as a result of economic recession, only few entrepreneurs are able to survive and other who is less competitive is backing on from the market. In this kind of situation, banks will be invested their surplus funds in the government such as treasury bills or government securities, which yield lower rate of return.

Now all financial sectors are suffering from troth cut competition. So, Nepalese commercial banks cannot escape from such condition. Because of liberal economic policy, many new banks are coming in existence day by day which creating threatens for existing bank to be competitive. Declinations of price and cost leadership are the best way to compete in the industry.

Bank has to invest is source in different productive sector 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 its invest able fund into different sector, maintenance of sound investment policy is impossible.

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

- How does bank portfolio behave?
- Whether Portfolio investment management is efficient on Nepalese commercial banks or not?
- How does the portfolio investment manage by commercial bank of Nepal?
- What are the existing situations of financial position of Nepalese commercial banks?
- Which banks has the largest degree of financial risk measured in terms of portfolio risk?
- Which banks has a largest portfolio return?
- Whether investment portfolio is directed towards objective of profit maximization or not?

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 explore 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 loans & advance portfolio of commercial banks
- To analyze risk and return ratio of commercial banks.
- To examine the present position trend of loan and advance and investment to total deposit and forecast it.

Research Hypothesis

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

Null hypothesis (H_o): $x_1=x_{2,}$ 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): $x_1 \neq x_2$, 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 any organization flashes its investment policy; sound investment policy makes a good impact on the economy of country. The success and prosperity of any organization or intuition 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 any organization.

In Nepalese commercial banks, they do not have clear vision towards effective investment. They are found to be making investment only on short-term basis. There is hesitation to invest in long-term projects because they are much more safety minded. Even there are various ways to minimize risk, they are not aware and do not take any attention towards such field i.e. they do not think about portfolio management. Hence the main significance of this study of investment portfolio analysis of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. This research is important to acknowledge them how important risk and return calculation and motivate them for rational investment. They can compare market risk and individual risk to conclusion whether the security is as risky as market or

not. This type of research provides filtered information. This research will inform them about valuation of stock is over-priced or under-priced.

As discussed above main target of the study is that potential investor who wants to invest in security but repel by imaginary or unreal risk. Therefore, the study will be more significant for explore the existing situation of portfolio management of Nepalese commercial banks. This study attempt little contribution to Nepalese stock market development.

During the period of last decade due to political conflict, investors were skeptical to invest. After the political change in 2063, people participation in security investment and stock trading is increasing. This situation indicates that there is a high potentially in securities investment. These potentialities can change into fruitful investment by increasing transparency, increasing information flow and developing analytical power of public sector investors that ultimately increase national economic health. This study will give information about Nepalese commercial bank by analyzing risk and return and their portfolio will definitely contribute to increase the analytical power if the investors in commercial banks.

1.6 Limitation of the Study

This study is simply a partial study for the fulfillment of MBS degree. Hence, this study is not far from several limitations of its own kind, which weaken the heart of the study. It has certain limitations. This study has employed secondary data published by and collected from selected banks. Therefore, the consistency of findings and conclusions are dependent upon the reliability of secondary data and information.

- Among the various commercial banks, only three commercial banks are taken under studies which are Everest bank limited, Nepal Bangladesh bank limited and bank of Kathmandu limited.
- The study covers a period of five fiscal years from 2062/63-2066/67 only, which will be tabulated and processed for drawing conclusion.
- The accuracy of the research wok will be dependent on data provided by concerned bank differential coverage of data limits the study.

- The study basically concern with portfolio investment management of commercial banks.
- The study is mainly base on secondary data. Consequently the result depends on the reliability of secondary data. In some case primary data will be also used.

1.7 Organization of the Study

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

Chapter 1: Introduction

This chapter deals with the introduction that includes background, meaning, focus of study, statement of problem, objective of the study, significance of study, limitation of study, and organization of the study.

Chapter 2: Review of literature

This chapter deals on descriptive conceptual frame work 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 study, which includes research design, population and sample, source of data, data collection techniques, data analysis tools.

Chapter 4: Data Presentation and Analysis

This chapter is the major part of the whole study in which all collected relevant data will be 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 concerned authorities and institutions as well as conclusion of the study.

CHAPTER- 2

2. REVIEW OF LITERATURE

Research must be based on past knowledge. It is continuous process, which never ends. The continuity research is ensured by linking the present study with the past research studies. 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 field 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 descriptive 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 within country and outside of country also have been considered as for 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 internet research 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 tights 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 an uncertain position about dividend. Therefore, common stock holder musts 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).

Common stocks are easier to descriptive than fixed income securities such as bonds but they are harder to analyze. Fix income almost always has a limited life and an upper dollar limit on cash payments to investors. Although the basic principles of valuation apply to both, the role of uncertainty is larger for common stocks. 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 are in principle entitled to any value remaining after all of the claimants have been satisfied. (However, in practice, course sometimes violate this principle)

The great advantages of the corporate from organizations the limits 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 and amount equal to the price to buy the shares (Sharpe, Alexander and Bailey 2003).

Common stock represents ownership of a firm. Owners of the common stock of a firm share in the company prospers, the investor receives high rate of return and can become wealthy. In contrast, investor can lose money if the firm does not do well or even goes bankrupt, as the once formidable K-Kart, 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 firms preferred stockholders and common stocks all the advantages and disadvantages of ownership and is a relatively risky investment compare with fixed-income securities (Reilly and Brown; 2004).

Common stock is an ownership security. Common stock holder will get the return from common stock. People typically common stock expecting to earn dividend plus a capital gain when they sell their shares at the end of come holding period. Common stock holders cannot claim on whole earning 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 the principle entitled only to assets remaining after all prior claimants have been satisfied. As expressed above, common stock is the most risk security so must be in its expected return as well. When investors buy common stock they receive certificate of ownership as a part of they are being part ownership of the company. The certificate stated the number of shares purchased and their par value (Bhalla; 2000).

Common stock has one important investment characteristics and one important speculative market policies tend increase irregularly but persistently over the decades as their net worth builds through the reinvestment is undistributed earnings. However, most of the time common stocks are subject to irrational and excessive price function in both directions, as consequences of the ingrained tendency of most people to speculative of gamble4, i.e. to give way to hope fear and greed (Western and Bringham; 1999).

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 investments is a favorite topic for conservation in parties and get together (Prassna and Chandra; 1995).

2.1.2 The Expected Rate and 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 of return and their respective probabilities.

$$\text{Expected value, } E(r) = \sum_{j=1}^{n} rjpj = rlpl + 2p2 \ldots\ldots\ldots\ldots rnpn \ldots\ldots (4.2)$$

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

Pj= probability of occurrence of j^{th} outcome or event

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

$$Expected\ value, E(r) = \frac{\sum_{t=1}^{n} rt}{n} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.3)$$

Where E(r) is the average or mean return and is the number of observed returns (Thapa, Bhattarai and Basnet; 2009).

Investor is main objective to maximize concept of value by investing money in product and project. A company creates value of it the expected return exceeds the return required by the financial market for the risk involved. If someone buy a bond, he expects to revive 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).

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 type's 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:

$$Single\ period\ return\ (R) = \frac{Ending\ price(Pt) - Beginning\ price\ (Pt-1) + Dividend(Dt)}{Beginning\ price(Pt-1)}$$

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 JohnM; 1995).

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 gain period and the second one, which also takes in account the compounding effects of cash receipts over different time intervals, in the geometric mean rate of return.

Simple Arithmetic Mean

$$HPR = \frac{\sum_{i=0}^{n}(1+HPR)^2}{n}$$

The Geometric Mean

$$\mathbf{HPRg} = \sum_{\mathbf{T=1}}^{n} (\mathbf{1}+HPR)^{\mathbf{1}/\mathbf{N}} - \mathbf{1}$$

Where,

HPR= Holding Period Return

N = No. of periods

HPR_g = Geometric mean holding period return (Cheney, Moses; 1992).

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 is the variability of the returns, the riskier the project.

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 invest in speculative 4 stock (or, really, any, stock), you are taking a risk in the hope of making an appreciable return (Weston and Briggham; 1995).

Although there are difference the specific definitions of risk uncertainty, for our purposes and in most financial literature the two 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, well will consider several measures of risk that are used when developing the theory (Reilly and Brown; 2004).

Risk defined as the variability of the returns of a period. The basic random variable that measures an investments risk is one period rate of return. The greater variable 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 that the expected as the return. It referees 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 certainly and consequently cannot make any correct predictions about the cash flow sequences.

It is said that risk refers to the chance that some unfavorable event will occur. If someone invest in speculative stock (really, any stock) he/she is taking a risk in the hope of making an applicable return. High return on common stock involves high risk and vice versa. "Risk defined more generally, is a probability the occurrence of unfavorable outcomes. But risk has different meaning in different contexts. In out 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).

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).

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 rate 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).

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).

2.1.3.2 Standard Deviation

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).

Standard deviation is a statistical measure of the variability of a set of observations. The symbol is σ^2, pronounced "sigma square". It is the measure of total risk. The smaller the variance, the lower the riskiness of the stock and vice versa. The risk or standard deviation 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).

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:

$$E(k) = Pr1k1 + Pr2k2 + \ldots\ldots\ldots\ldots + Prnkn + \sum_{t-1}^{n} Pr1k1$$

Where,

Pr= Probability

K=Expected rate of return

First, we subtract the expected rate of return {E(k)} from each possible (k_1) to obtain a set of deviation from (k):

$$Deviation_i = K_i - E(k)$$

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.

$$\sigma^2 = \sum_{t=1}^{n} [k1 - E(k)]^2 \text{ Pr1}$$

Where,

E (k) =Expected rate of return

P(r) =Probability

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

$$\sigma = \sqrt{\sigma^2} = \sqrt{\sum_{t=1}^{n} [k1 - E(k)^2]\ Pr1}$$

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).

2.1.3.3 Systematic Risk and Unsystematic Risk

Systematic Risk

Systematic risk is the portion of the total risk of an individual security caused by market factors that simultaneously affect the price of all securities. It can't be diversified away. It is also called market risk or unavoidable risk or undiversifiable risk or beta risk. It stems from factors, which systematically affect all firms, such as war, inflation, recession, high interest rates, depressions and long term changes in consumption in the economy.

Unsystematic Risk

Unsystematic risk is the portion of the total risk that can be diversified away. It is also called diversifiable risk or avoidable risk or company-specific risk or non market risk. This type of risk differs from one company to another. It is caused by events particulars to the firm. For example, labour strikes, management errors, inventions, advertising campaigns, shifts in consumer taste and law suits etc. this type of risk can be eliminated through efficient diversified portfolio.

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 if 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 reduce through diversification. The relationship among total risk, systematic risk and unsystematic risk are shown below:

Total risk= Systematic risk + Unsystematic risk

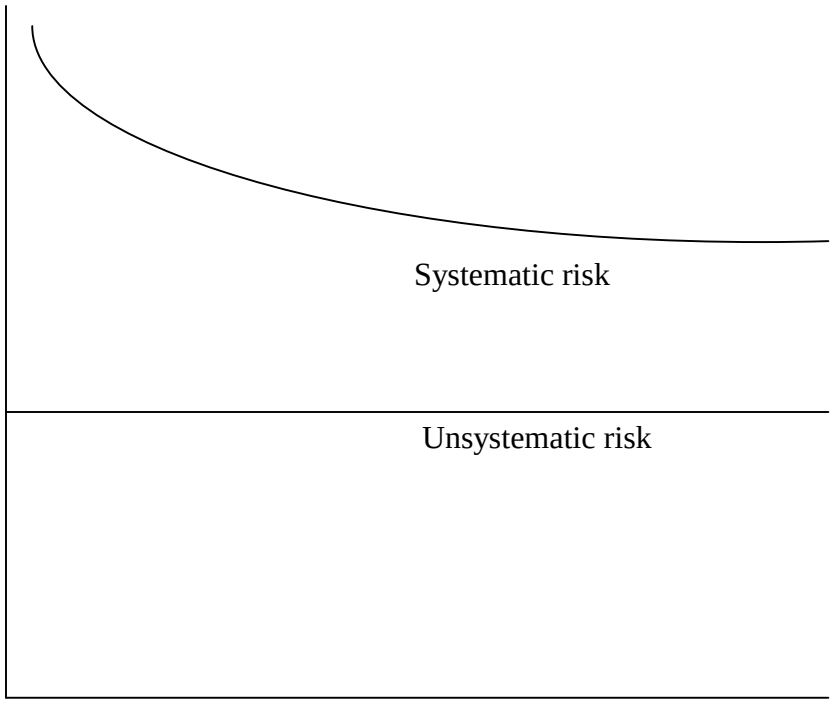
While systematic risk = (σ_j) (P_{jm}) and unsystematic risk = (σ_j) $(1\text{-}P_{jm})$

In this equation p_{jm} is the correlation between the return of given stock (i) and the return on market portfolio.

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



2.1.4 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 asset 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 risks 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 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 Brown; 2004).

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).

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 amount are a given risk free rate of interest KRF, 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).

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:

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

Where,

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

E (Rm) =expected return for the market portfolio

Bj=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).

The major implication of the CAPM is that expected return of assets will be related at a measure of risk for that asset knows as beta (β). The exact manner in which expected return and beta rare 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).

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.

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

Where,

Rj = required rate of return on stock j.

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

Rm=the expected rate of return on the market portfolio.

Bj=beta coefficient of stock j.

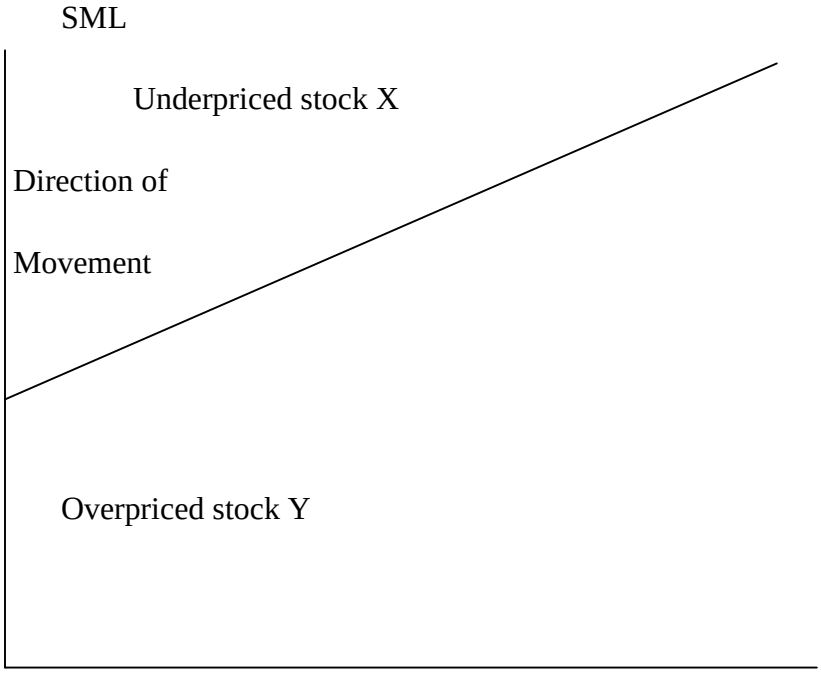
Hence, beta is the index of systematic risk. It means the sensitivity of a stock return to change in returns on the market portfolio. The beta of a portfolio is simply weighted average of the individual stock betas in the portfolio (Van Horne and Wachowicz; 1995).

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 beta 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 that 5 the perfect capital markets exist and those investors have homogeneous expectations (Van Horne; 1997).

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 the basis of what investors as a whole know to be the approximate relationship between the required cal than X and Y is improperly priced. Stock X is under priced relative to the security market line, while stock Y is overpriced.

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 be 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; 1995).

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).

The basis foundation of arbitrage pricing theory is 'low of one price' law of one price states that two identical goods cannot be sold at different process 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: 2009).

$$E(r_i)=\lambda_0 + \lambda_1 . B_{i1} + \ldots\ldots\ldots\ldots + \lambda_n . b_{in} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.35)$$

Where,

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

λ_0 = risk free rate of return

λ_1 = constant variable

b = systematic risk factor or independent variable

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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 cannot 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 "don't 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 b 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; 2009).

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).

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

To maximize risk

To maximize return

Whereas it's 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 determines the level of risk and returns for given risk or minimizes risk for a given return. The efficient frontier may be defined as the collection of all possible expected return, given a level of risk or standard deviation.

Portfolios can be classified as below:

Growth oriented portfolio

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.

$$E(rp) = \sum_{i=1}^{n} WiE(ri) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.1)$$

$$= W1E(r1) + W2E(r2) + \ldots\ldots\ldots\ldots\ldots WnE(rn) \ldots\ldots\ldots\ldots\ldots (5.1a)$$

Where,

E (rp) = Expected rate of return of portfolio

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

E (ri) = The expected return from the i^{th} assets or stock.

2.2.2 Portfolio Risk

Portfolio risk is a function of the proportional invested in the components. The riskiness 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 riskiness of the components and the correlation of returns on the components securities. This risk is computed by using the following equations:

$$Var(rp)or\ \sigma p^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} WiWj\ covijor = \sum_{i=1}^{n}\sum_{j=1}^{n} WiWjcovijWiWjPij\sigma i\,\sigma j.$$

Where,

σp = Standard deviation of portfolios return

Wi = Proportion of investment in asset i

Wj = Proportion of investment in asset j

Covij = Covariance of the return between asset I and asset j

2.2.3 Optimum Portfolio Selection

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

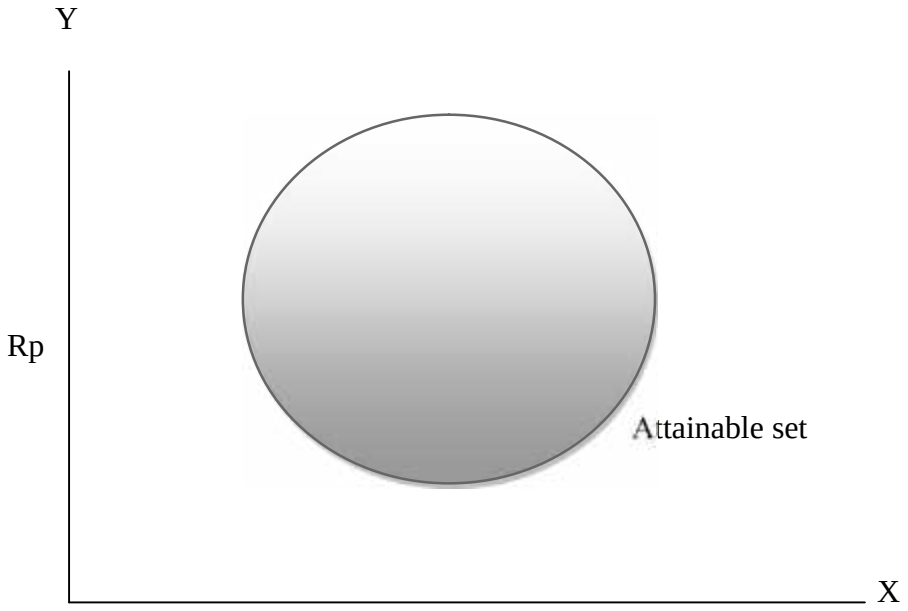
Step-I

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 hysterical set of all possible portfolios called the portfolio opportunity set or attainable set.

Diagram 2.3

Attainable Set of Portfolio



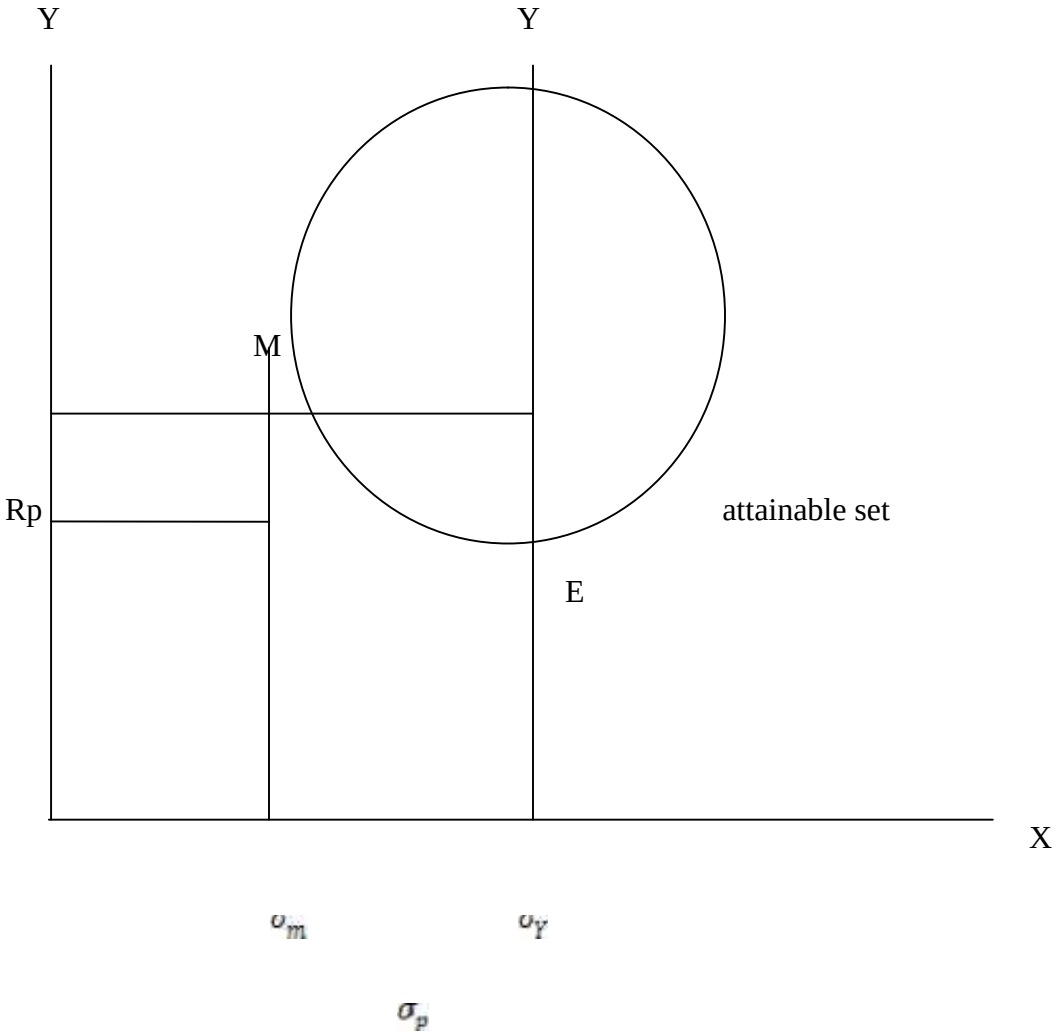
Step 11

Determination of Efficient Frontier:

An efficient frontier or portfolio is a portfolio that provides the highest possible degree of risk for varying level of expected return. Portfolio to the left of the efficient frontier are not possible because they are outside the attainable set whereas the right of the frontier are ineffective because some other portfolio could provider 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.

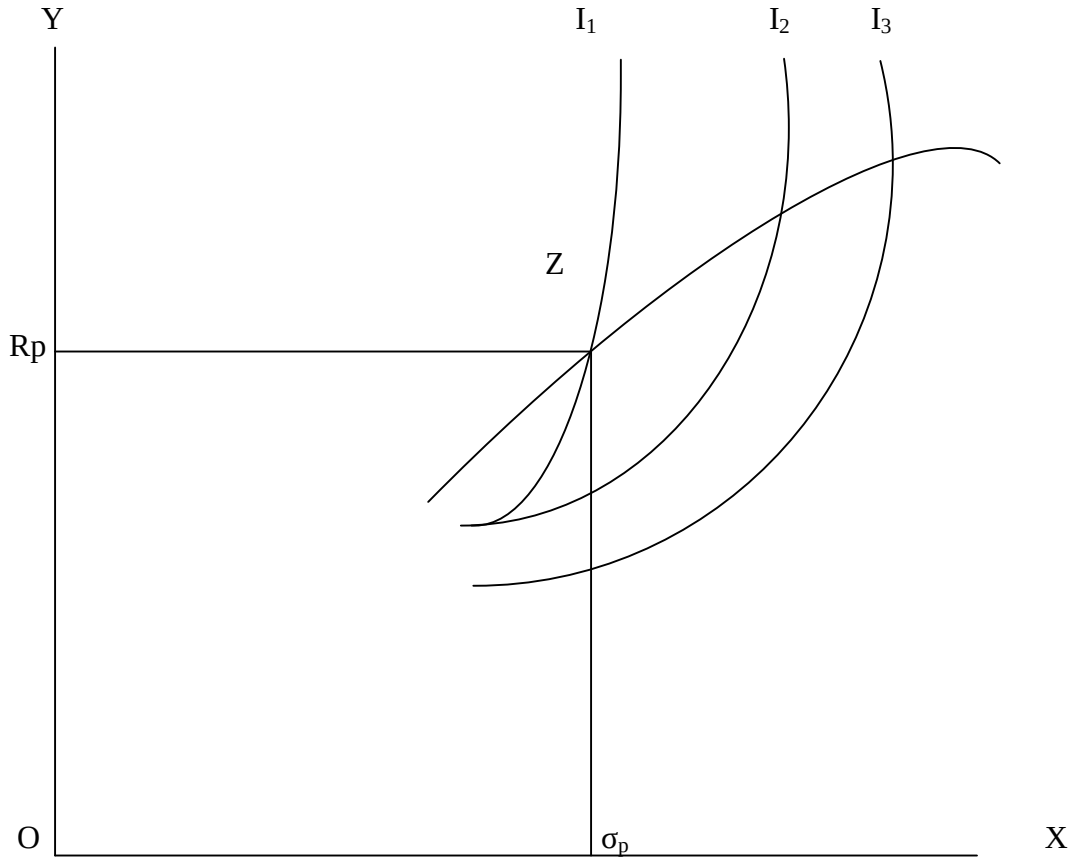
Step 3

Selection of Optimal Portfolio

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

Diagram 2.5

Optimal Portfolio Selections



In indifference curve of the investor and the portfolio becomes optimal for him. Indifference curve I 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 σreturns 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.

$$Correlation\ coefficient\ (Pij) = \frac{Cov(rirj)}{\sigma i \sigma j}$$

Where,

Pij = Correlation coefficient between assets I and j

∑i= Standard deviations of return for assets i

∑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.

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 wither risk or return were methods applied to measure the portfolio performance. Among them, one of the important techniques that are shape'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 Si) is stated as

$$Si = \frac{Ri - Rf}{\sigma i} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (9.4)$$

Where,

Si= Sharpe's index of portfolio performance

Ri= average return on portfolio 'i' during a specified time period.

Rf= average risk free rate during the same period.

σi= standard deviation of portfolio 'i'

2.3 Reviews from Relevant Studies

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 rate 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 Shareholder's democracy are summarized below in detail.

Pradhan, Radhe Shayam (1993), carried out an article 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 190. One of the major objectives, which are related to this study, as "To access the Stock Market Behavior in Nepal."

Pradhan has summarized the following finding;

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

Mr. Shiva Raj Shrestha, Deputy Chief Officer of Nepal Rastra Bank, in his study ***"Portfolio management in commercial bank, theory and practice"***. According to him, the portfolio management becomes very important for both individuals as well as institutional investors. Investors would like to select a best mix of investment assets subject to select mix of investment assets subject to following aspects:

- Higher return which is comparable with alternative opportunities available according to the risk class of investors.
- Certain capital gain.
- Flexible investment.
- Good liquidity with adequate safety of investment.
- Maximum tax concession.
- Economic, efficient & effective investment mix.

Following findings have been point out from the research:

- To find out the investible assets having some for better returns depending upon individual characteristics like age, health, need, disposition etc.
- To find out the risk of the securities depending upon the attitude of investors towards risk.
- To develop alternative investment strategies for selecting a better portfolio.
- To identify securities for investment to refuse volatility of return and risk.

Mr. Shrestha has expressed his view that the portfolio management activities of Nepalese commercial bank at present are in growing stage. However most of the banks are not doing such activities so far because of following reason:

- Unawareness of the clients about the service available.
- Hesitation of taking risk
- Lack of proper technique to run such activities in the best and successful manner
- Less developed capital market and availability of few financial instruments the financial market.

Conclusion:

The survival of the banks depends upon its own financial health and various activities.

- The portfolio manager could enhance the opportunity for each investor to each superior return over times.
- Do not hold any single security.
- Try to have a diversified investment.

- Choose such type of portfolio securities, which ensure maximum return with minimum risk.

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 government 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 Previous Related 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:

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 finding of his study is 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. 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 finding 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 basis 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.

As 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 this 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, underpriced 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, beta 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 losing 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 furthers advice that, the investors should make several analysis 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 sleeted joint venture banks in terms of risk and return and to perform sector-wise comparison on the basis of market capitalization. Another major on objective of his study is to analyze the volatility of difference stock and other relevant variable 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 next 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 diversity their fund to reduce risk. He further advice 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 war 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- 3

3. 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 includes research design, a nature of data, data gathering procedure, population and samples and data processing procedure.

3.1 Research Design

Research design is the conceptual structure within which research is performed. Research design is an overall framework or plan, which specifies the sources and types of information relevant to the research problem. In this study, the research is based on recent historical data, which are collected from various secondary sources. The research study covers the data of five fiscal years up to 2066/67. It relates with the study of risk, return and portfolio analysis of commercial banks that based on available information.

This study is more analytical, empirical and less descriptive. Analytical in the sense that all the available data are analyzed by using various statistical tools and techniques such as mean, standard deviation and coefficient of variation etc. All the data used in this study have been taken from related sources. The study is purely empirical due to purely historically data. The Risk, return and portfolio are main subjects of the study that follow the numerical data. For explanation of result, description has been also followed. Thus, this study is descriptive as well as analytical research design.

3.2 Source of Data

This research study is mainly based on secondary data. Published annual report of the concern 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 statistic, related website etc as well as other supplementary data and various economic survey's 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 of our 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. There 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.

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

- **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.

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 Bagavati; 1998).

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

- **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,

$$Total\ investment\ on\ total\ deposit = \frac{Total\ investment}{Total\ deposit}$$

$$Loan\ and\ advance\ to\ total\ deposit = \frac{Loans\ and\ advance}{Total\ deposit}$$

- **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 durning the period of holding the securities. Holding period returns are often calculated for period other the none year. For this reason the length of holding period must always be indicated for a specific single period return.

Single period rate of returns of holding period rate or returns

$$\frac{P_{t+1} - P_1 + C_t}{P_t} \times 100$$

$$(r_e) = \frac{(ending\ price - Begenning\ price + cash\ dividend}{Begenning\ price}$$

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. (Bhattarai; 2004:77)

$$(Rj) = \frac{\epsilon r_t}{n}$$

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

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 castors 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 deference between each return and expected return divided by number of period.

$$Variance(\sigma^2 j) = \frac{\sum(Rj - \overline{Rj})^2}{N}$$

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.

Required rate of return (k_j) = R_f + (R_m- R_f)β_j

Where,

R_j= risk free rate of return

R_m = expected return on market portfolio

β_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

Var (e) = $\sigma^2 - \beta^2 jm\sigma^2 m$

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 macroeconomic factor like, interest rate, inflation, investors' expectations, gross domestic product (GDP) etc. un-diversifiable risk is that part of total risk that cannot be eliminated by allocating capital to a diversified portfolio of investment. It can be stated as:

Systematic risk = $\beta^2 jm\sigma^2 m$

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.

$$Percentage\ of\ systematic\ risk = \frac{Systematic\ risk}{Total\ risk} \times 100$$

$$= \frac{\beta^2 j\sigma^2 m}{\sigma^2 j} \times 100$$

$$Coefficient\ of\ determination(P^2 jm) = \frac{Systematic\ risk}{Total\ risk}$$

$$= \frac{\beta^2 \sigma^2 m}{\sigma_j^2}$$

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 weight must be equal one. (Cheney John. M and Edward A. Moses, n.d: 652)

$R_p = W_A R_A W_B R_B$ +……+ $W_N R_N$

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 or 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.

Variance $(\sigma^2 p) = W_A^2\sigma_A^2 + W_B^2\sigma_B^2 + 2W_A W_B \text{cov}(r_A r_B)$

$$\sigma p = \sqrt{W_A^2\sigma_A^2 + W_B^2\sigma_B^2 + 2W_A W_B\, cov(r_A r_B)}$$

Where,

σp = standard deviation of portfolio rate of return

Cov ($r_A r_B$) = Covariance of returns between asset A and B

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

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

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

Portfolio Beta

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

Portfolio beta $\beta_p = \sum_{i=0}^{n} W_j B_j$

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 sharpe index of portfolio performance. Sharpe'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:

$$Sp = \frac{Risk\ primium}{Total\ risk} = \frac{ri - R}{\sigma}$$

Where,

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

r_i= Average returns from portfolio i.

σ = Standard deviation of returns for portfolio i.

R_i= 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,

$$\beta_j = \frac{cov(r_j r_m)}{\sigma m^2}$$

Where,

β_j = Beta coefficient of stock j

$Cov(r_j r_m)$ = 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 then 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 then market.

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 symbolically,

$$\sigma_j = \sqrt{\frac{\varepsilon(R_j . \overline{R_j})}{N}}$$

Where,

$$\sigma_j = Standard\ deviation\ of\ return\ of\ stock\ j\ during\ period\ n$$

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,

$$\sigma_j^2 = \frac{\varepsilon(R_j - \overline{R_j})}{N}$$

Where,

$$\sigma_j^2 = Variance\ of\ the\ return\ of\ stock\ j$$

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 the will be the uniformity, consistency etc. symbolically,

$$Coefficient\ of\ Variance(C.V) = \frac{\sigma}{Rj}$$

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.

$$Cov(rjrm) = \frac{\sum(Rj - \overline{R}j)(Rm - \overline{R}m)}{N}$$

Where,

Cov ($r_j r_m$) = Covariance between stock j and market return M

Correlation

Covariance and correlation are closely related. The correlation measure the degree of relationship 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. Symbolically,

$$pjm = \frac{Cov(rj - rm)}{opm}$$

Where,

$$\rho_{jm} = Correlation\ between\ stock\ and\ market\ return$$

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:

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{s^2(\frac{1}{n_1} + \frac{1}{n_2})}}$$

Where,

X_1= Arithmetic mean of first sample

$\overline{x_2}$= 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 (Ho): $\overline{x_1} = \overline{x_2}$ i.e. there is no significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In order words, average return on the share of commercial banks is equal to market return.

Alternative hypothesis (H1): $\overline{x_1} \neq \overline{x_2}$ i.e. there is significant difference between the portfolio return of common stock of commercial banking industry and return of market

portfolio. In order 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 ($б^2_{jm}$). The coefficient of determination is a much useful and better measure for interpreting the value of P_{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…….(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;

$$\varepsilon y = Na + b\varepsilon x \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$\varepsilon xy = a\varepsilon x + b\varepsilon x \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

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 $\varepsilon x=0$, then the above two equation change to:

Therefore,

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

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

CHAPTER-4

4. DATA PRESENTATION AND ANALYSIS

The chapter is devoted to the presentation, analysis interpretation and scoring the empirical finding of the study through a defined research methodology. Getting at the study objectives, a set of financial and statistical tools has been applied. Data collected from several source have been inserted in the tabular from in term of homogeneity of data. Table complied for the analyses have been presented in annexes necessary graphs and diagrams have been included to clarify the actual status of the banks.

This chapter is separated into different parts. The first part deals with analysis of financial performance of concern banks by the means of various ratios. Second part is related with making investment, loan & advance portfolio analysis on different investable sector of commercial bank stock and portfolio risk and return analysis. Fourth part shows linear trend analysis about investment, loan and advance and total deposit of sample banks. And last part is testing a hypothesis test.

4.1 Ratio Analysis

4.1.1 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 collect fund and it generates regular income to the banks. This ratio is calculated by dividing investment by total deposit. This can be stated as:

$$Investment\ to\ total\ deposit\ ratio = \frac{investment}{total\ deposit}$$

Investment includes investment on government securities, government bond, treasury bonds and others. The total deposit consists, current deposit, fixed deposit, saving deposit, money at call deposit and other deposit.

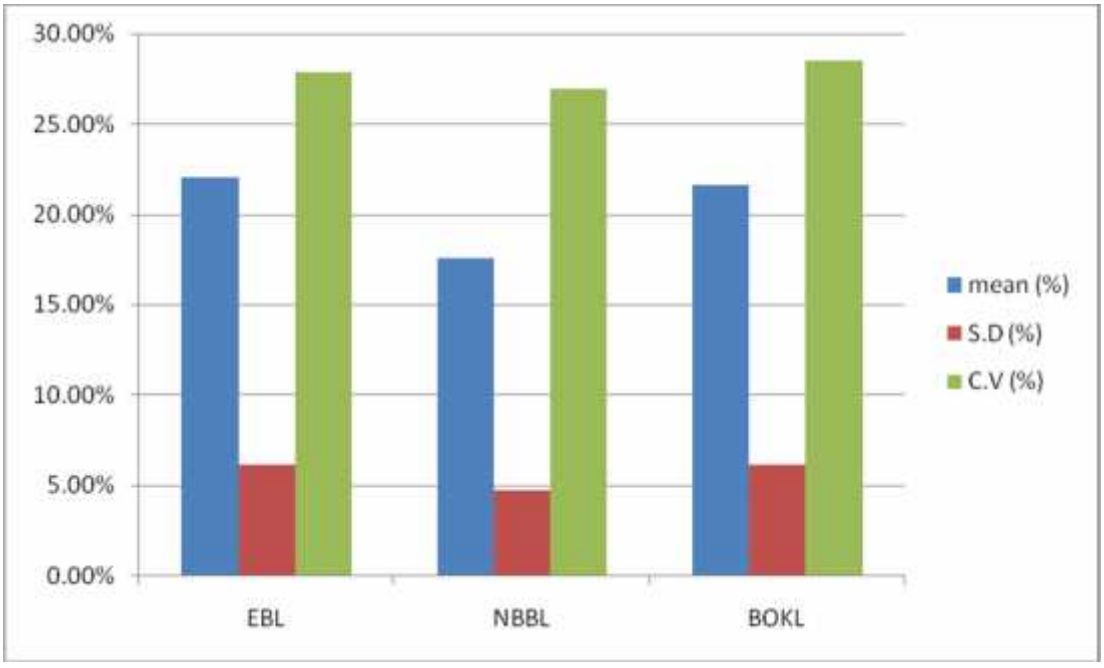
The table shows the ratio of investment to total deposit of EBL, NBBL and BOKL. (See detail calculation on Annex 'A')

Table No. 4.1

Investment to total deposit ratio

Particular	EBL	NBBL	BOKL	Industry average
Mean (%)	22.08%	17.61%	21.63%	20.44
S.D (%)	6.16%	4.74%	6.16%	-
C.V (%)	27.90%	26.92%	28.48%	27.77

Figure No. 4.1



Mean S.D and C.V of Investment to Total Deposit Ratio of Banks

The above table, shows investment to total deposit ratio of EBL is highest i.e. 22.08% and NBBL has a lowest ratio i.e. 17.61% among three commercial banks. The BOKL has the mean ratio is 21.63%.

The industrial average mean ratio of investment to total deposit is 20.04%. The EBL and BOKL have the greater investment to total deposit industrial average i.e. 22.08%>20.04% and 21.63%>20.04% respectively. But NBBL has the lower ratio. The only NBBL has the lower investment to total deposit ratio than industrial average i.e. 17.61 %< 20.04%. It shows that the performance of EBL and BOKL are quite nice than the other banks. It also shows that they have effectively mobilizing its deposit on investment to generate the return. But NBBL is investing its deposit on fewer ratios than average mean ratio of industry.

The C.V of the BOKL is the highest ratio i.e. 28.48% and NBBL has the lowest ratio i.e. 26.92% among three commercial banks. The EBL has the C.V ratio of 27.90%. The industry C.V ratio is 27.77%. The only NBBL has the lesser C.V ratio to the comparison with industrial C.V ratio i.e. 26.92 %< 27.77%. It shows variability of ratio of NBBL is the most consistent among three commercial banks and the variability of the ratio of BOKL is the least consistent among three banks. The EBL is moderate consistent in variability of ratio.

4.1.2 Loan and Advance to Total Deposit Ratio

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

$$Loans\ and\ Advance\ to\ Total\ Deposit = \frac{Loan\ and\ Advance}{Total\ Deposit}$$

Where, loans and advances included loans to government enterprises, private sectors, foreign bills purchase and discount. Total deposit included current deposit fixed deposit, saving deposit, money at call deposit and other deposit.

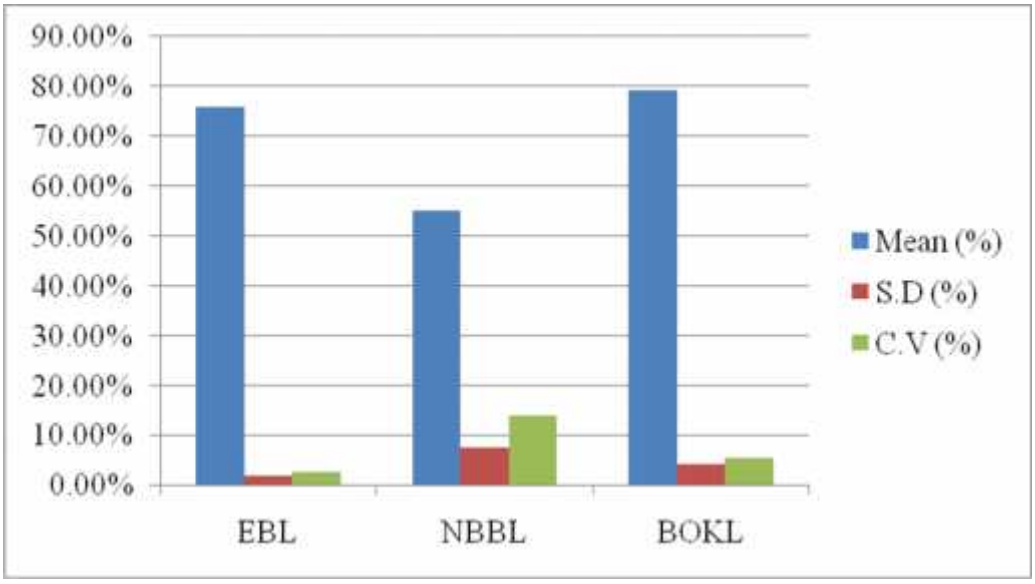
The table shows the ratio of loans and advance to total deposit of EBL, NBBL and BOKL. (See detail calculation on Annex 'A')

Table No. 4.2

Loan and advance to total deposit ratio

Particular	EBL	NBBL	BOKL	Industry Average
Mean %	75.82%	55.09%	79.35%	70.09
S.D. %	2.08%	7.82%	4.41%	-
C.V %	2.74%	14.19%	5.56%	7.50%

Figure No. 4.2



Mean, S.D. and C.V of Loan and Advance to Total Deposit Ratio of Banks

The above table, reveals loan and advance to total deposit ratio of BOKL is highest i.e. 79.35% and NBBL is lowest ratio i.e. 55.09% among three commercial banks. The EBL has a mean loan and advance to total deposit ratio is 75.82%.

The industrial average mean ratio is 70.09%. EBL and BOKL have a greater ratio above industrial average i.e. 75.82%>70.09% and 79.35%>70.09% respectively. NBBL has lower ratio than industrial average ratio i.e. 55.09 %< 70.09%. Therefore EBL and BOKL have been invested highest amount of deposit fund in loan and advance.

The C.V ratio of EBL is lowest i.e. 2.74% among three commercial banks. This indicates that the investment as EBL is the most uniform. NBBL has the highest C.V ratio i.e. 14.19% among three commercial banks. It indicates that the investment of NBBL is more fluctuating. the lowest C.V is better than highest C.V. The industrial average C.V ratio is 7.50% EBL and BOKL have a lowest C.V than industrial average C.V.

From the above description it can be concluded that BOKL is the most effective, EBL is moderate effective and NBBL is least effective to mobilize its deposit on loan and advance.

4.1.3 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's asset can be converted into cash to meet deposit withdrawals and current obligations. The higher ratio represents the good liquidity position of firm and vice-versa. But too high ratio is not good because the fund will be tide up. This ratio is calculated by dividing liquid funds by total deposit. This can be stated as follows:

$$Liquid\ Funds\ to\ Total\ Deposit\ Ratio = \frac{Liquid\ Fund}{Total\ Deposit}$$

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 consist, fixed deposit, saving deposit, current deposit, call deposit and other deposit.

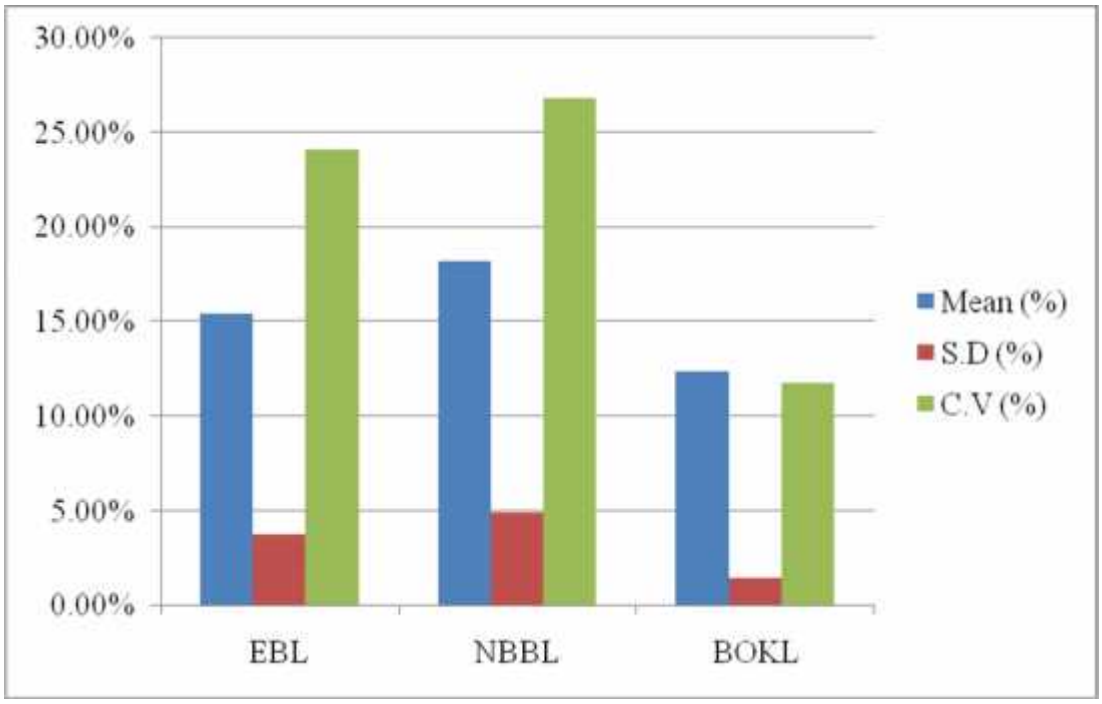
The table shows the ratio of liquid fund to total deposit of EBL, NBBL and BOKL. (See detail calculation on Annex 'A')

Table No. 4.3

Liquid funds to total deposit ratio

Particular	EBL	NBBL	BOKL	Industry Average
Mean %	15.43%	18.16%	12.35%	15.31%
S.D. %	3.72%	4.87%	1.45%	-
C.V %	24.11%	26.82%	11.74%	20.89%

Figure No. 4.3



Mean, S.D and C.V of Liquid Funds to Total Deposit Ratio of Banks

In the above table, it shows liquid fund to total deposit of NBBL is the highest i.e. 18.16% and BOKL has the lowest ratio i.e. 12.35%. EBL has a mean ratio of 15.43%. The industrial average mean ratio of liquid fund to total deposit is 15.31%. EBL and NBBL have a greater ratio above industrial average i.e. 15.43%>15.31% and 18.16%>15.31% respectively. The BOKL has a ratio of 12.35 %< 15.31%. It shows that NBBL has a good liquidity position among three commercial banks. BOKL has a lower ratio; it shows that the bank has a poor liquidity position.

Similarly, NBBL has the highest C.V ratio i.e. 26.82% among three commercial banks. It means the ratio on liquid fund to total deposit of NBBL has lesser consistency. The C.V of BOKL is lowest i.e. 11.74%. It means the ratio on liquid fund to total deposit of BOKL is more consistent among three commercial banks. The EBL has a moderate ratio of variability. The industrial average C.V is 20.89%. The BOKL has lowest C.V ratio than industrial average C.V. So it shows that the liquidity ratio of NBBL is better than others. It has a more variability among three commercial banks.

4.1.4 Return on Total Assets Ratio

This ratio measures the effectiveness of the banks in using its overall resources. It measured in terms of relationship between net profit and total assets. The higher the ratio represents the efficient of the bank utilizing its overall resources and vice-versa. This ratio is calculated by dividing net profit after tax by total assets. This can be stated as:

$$Return\ on\ Total\ Assets = \frac{Net\ Profit\ After\ Tax\ (NPAT)}{Total\ Assets}$$

The net profit after tax represents that profit available to common stockholder and total assets includes the total assets of balance sheet item.

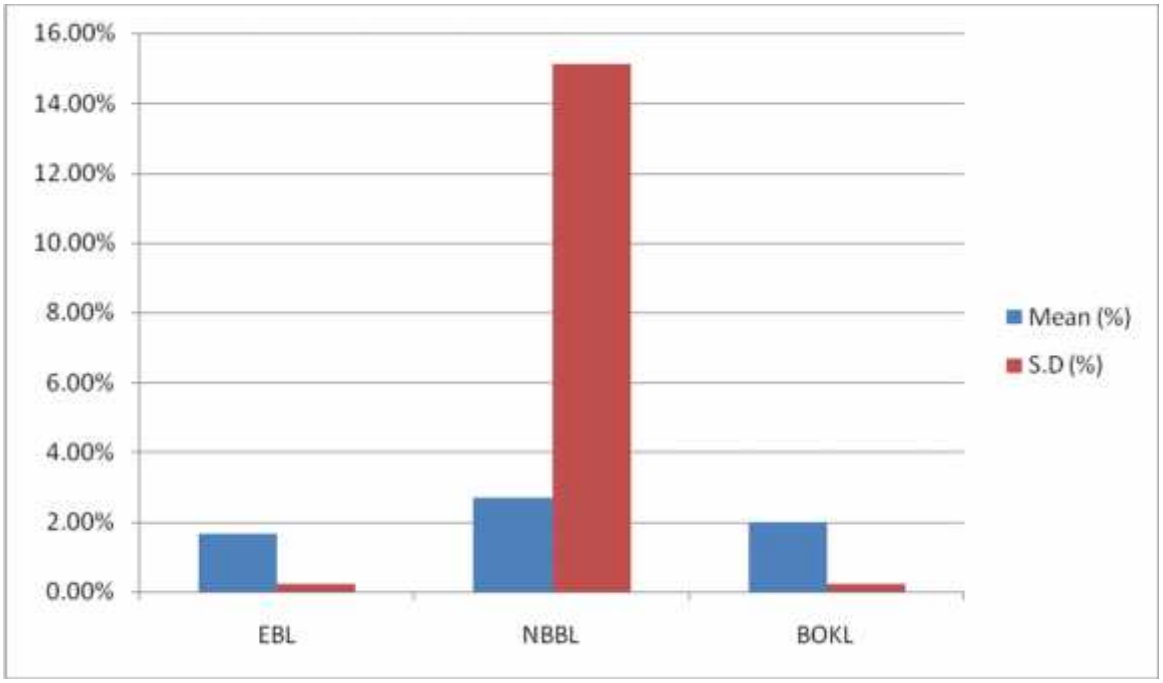
The table shows the ratio of return on total assets of EBL, NBBL and BOKL. (See detail calculation on Annex ('A')

Table No. 4.4

Return on total assets ratio

Particular	EBL	NBBL	BOKL	Industrial Average
Mean %	1.66%	2.70%	1.98%	2.11%
S.D. %	0.21%	15.12%	0.23%	-
C.V %	12.90%	559.59%	11.59%	194.69%

Figure 4.4



Mean, S.D and C.V of Return on Total Assets of Banks

The above table depicts return on total assets ratio of NBBL is the highest return i.e. 2.70% and EBL has the lowest i.e. 1.66% throughout the review period. BOKL has a moderate mean return on total asset ratio. NBBL has a greater return ratio above the industry average return. So the performances of NBBL are good among three commercial

banks. But EBL and BOKL return on total assets mean ratio is lesser than industry average. So it shows that the performance of these banks is the poor position.

Like wise the C.V ratio of BOKL is the lowest i.e. 11.59% among three commercial banks. This indicates that the ROA of BOKL is the most uniform. Similarly, NBBL has the highest C.V ratio i.e. 559.59%. It indicates that the ROA of NBBL is the most fluctuating. The lowest C.V is better than highest C.V. the industrial average C.V ratio is 194.69%. EBL and BOKL have the lowest C.V than industrial average ratio.

From the above description it can be concluded that BOKL is the most effective. EBL is moderate effective and NBBL is least effective to earn a return on total assets.

4.2 Investment Portfolio Analysis

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

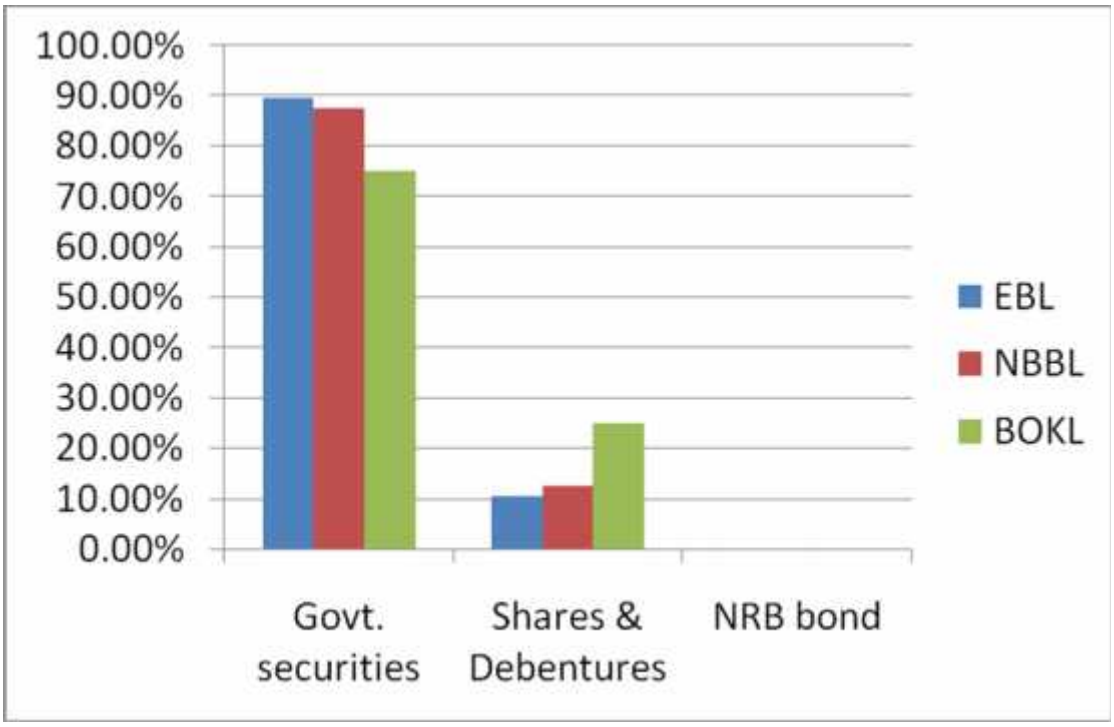
The portfolio of making investment by three commercial banks i.e. EBL, NBBL and BOKL has been analyzed in the table. (See detail calculation on Annex 'B')

Table No. 4.5

Investment Portfolio Analysis

Banks	EBL	NBBL	BOKL
Govt. securities	89.50%	87.53%	75%
Shares & Debentures	10.50%	12.47%	25%
NRB bond	0.00%	0.00%	0.00%

Figure No. 4.5



Investment Portfolio of Banks

The above table shows the average investment portfolio of three commercial banks. EBL is investing 89.5% on government securities, 10.5% of fund on shares and debentures and 0% of its fund in NRB bond. It shows that EBL is investing it's more fund on government securities, some of its fund on share and debenture and not any fund on NRB bond.

NBBL is no investing any fund on NRB bond i.e. 0%. It is investing high amount on government securities i.e. 87.53%. The mean percentage investment on share and debenture is 12.47%.

BOKL is investing 75% of bond on government securities, 25% of bond on share and debenture and not investing of bond on NRB bond i.e. 0%.

4.3 Loan and Advance Portfolio Analysis

Commercial bank provides loans and advance from the money which it receives by way of the person against the personal security of borrowers or against the security of movable and immovable properties. Mainly commercial banks are providing their funds to government enterprise, private sectors and foreign bills purchase and discount.

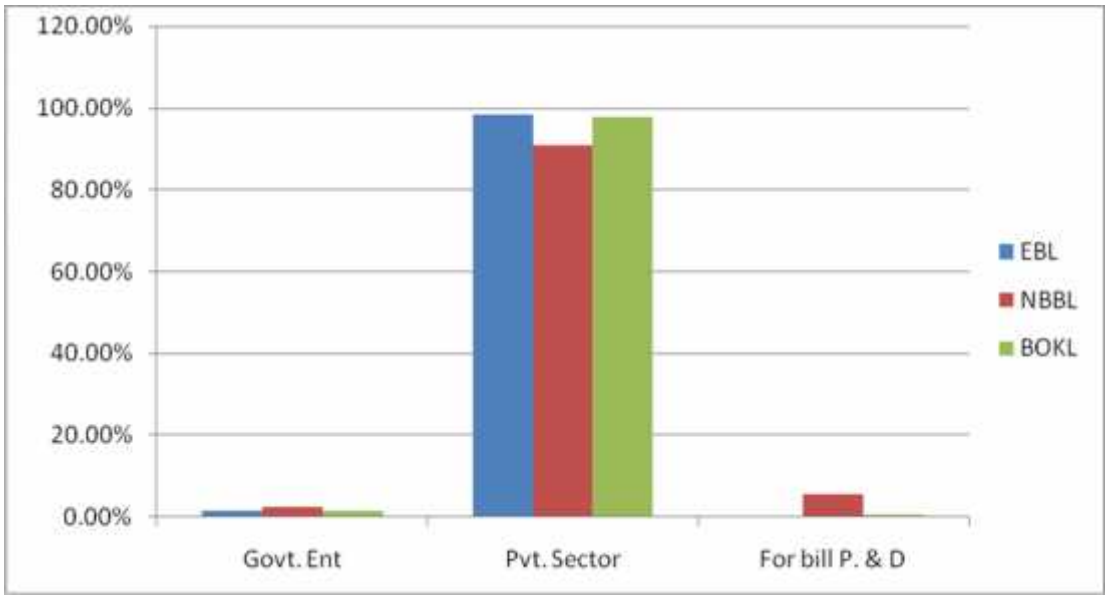
The portfolio of making loans and advance by three commercial banks EBL, NBBL and BOKL has been analyzed in the table. (See detail calculation on Annex 'C')

Table No. 4.6

Loan and Advance Portfolio Analysis

Banks	Govt. enterprise	Pvt. sector	For bill P.& D
EBL	1.43%	98.32%	0.25%
NBBL	2.65%	90.86%	5.65%
BOKL	1.65%	97.85%	0.50%

Figure No. 4.6



Loan and advance Portfolio Analysis of Banks

The above table shows the average loans and advance portfolio of three commercial banks. EBL is providing very high amount of its loans and advance in private sectors. The mean percentage of loans and advance granted to the private sectors is 98.32%. EBL is providing very low amount of its loans and advance on government enterprises and bills purchased and discount. The mean percentage of loans and advance to the government enterprises and bills purchased and discount are 1.43% & 0.25% respectively.

NBBL is granting a very high amount of loans and advance in private sector. The mean percentage of loans and advance to the private sector is 90.86%. NBBL has given second priority to bills purchased and discount. The mean percentage of loans and advance to the bill purchased and discount is 5.65%. it is providing loans and advance to government enterprises, of which mean percentage ratio is 2.65% of its total loans and advance.

BOKL is providing very high amount of its loans and advance to the private sector which is 97.85%. BOKL has given second priority to govt. enterprises. The mean percentage of loans and advance to the govt. enterprises is 1.65%. it is providing loans and advance on bills purchased and discount which mean percentage is 0.50% of total loans and advances.

4.4 Analysis of Common Stocks Risk and Returns of Commercial Banks

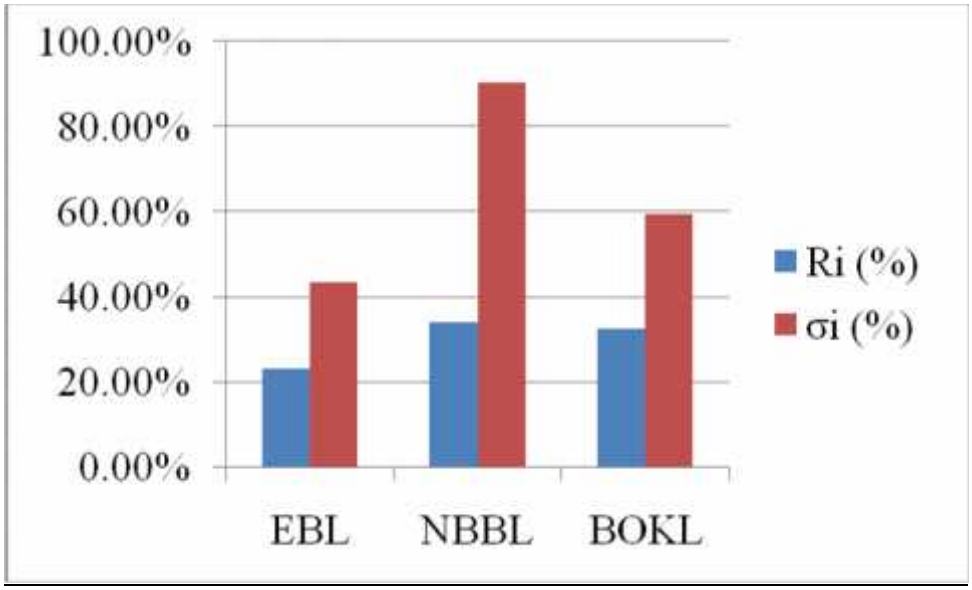
The single period return, expected rate of return and variance of commercial banks are shown in the table. (See detail calculation on Annex 'D')

Table No. 4.7

Analysis of Common Stocks Risk and Returns of Commercial Banks

Commercial Bank	Ri (%)	σi (%)	σi² (%)
EBL	23.00%	43.36%	1880.09%
NBBL	33.80%	90.42%	8175.78%
BOKL	32.37%	59.34%	3521.24%

Figure No. 4.7



Expected Rate of Return and Variance of Banks

Above table shows that NBBL has the highest expected return i.e. 33.80% and EBL has the lowest expected return i.e. 23% among three commercial banks. BOKL has the expected return of 32.37%. According to return we can say that NBBL stock is comparatively better than others and BOKL stands at second position and its expected return is 32.37%. EBL is last position its expected return is 23%.

Likewise the risk pattern of the NBBL has the highest risk (S.D) i.e. 90.42% and EBL has lowest risk i.e. 43.36%.BOKL has a risk (S.D) of 59.34%. According to risk, we can say that the holding a NBBL stock is the most risky and holding a stock of EBL is not more risky than among three commercial banks. Holding a stock of BOKL is moderate risky.

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

4.4.1 Analysis of Market Risk and Return

Market risk (standard deviation) and return are the most important factors to analyze the risk and return of individual stocks. For estimating the market parameters companies listed in NEPSE are taken into consideration up to now there are 176 companies listed in NEPSE. Overall market movement is represented by market index (i.e. NEPSE index).

Market return, standard deviation and market variance are shown in table. (See detail calculation on Annex 'D')

Table No. 4.8

Analysis of Market Risk and Return

Expected return on market	18.83%
Standard deviation of market	42.01%
Variance of market	1764.84%

The market expected return is 18.83%. It has a standard deviation of 42.01%. The return of market at year 2063/64 is high. After then the market return is in negative at year 2065/66 and 2066/67 respectively.

4.4.2 Analysis of Market Sensitivity

Market sensitivity looks how sensitive are stocks returns 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 stocks return with the average

market return. It measures of volatility of a 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 returns to changes in the market return. It is known as systematic or beta risk. The terms beta is popularly used to measure the sensitivity of assets return to the changes in the market return. Beta coefficient of market (β_m) is always equal to 1.

Analysis of co-variance between market return and stock i return COV (r_i, r_m), correlation between market return and stock i returns ρ_{im}, and beta coefficient of market and stock e β_{im}.

(See detail calculation on Annex 'E')

We know,

$$cov(ri, rm) = \frac{\Sigma(Ri - \overline{Ri})(Rm - \overline{Rm})}{N}$$

Covariance between market return and return of EBL stocks

$$cov(re, rm) = \frac{\Sigma(Re - \overline{Re})(Rm - \overline{Rm})}{N} = \frac{8735.83}{5}$$

$$= 1747.17$$

Covariance between market return and market of NBBL stock

$$cov(rj, rm) = \frac{\Sigma(Rj - \overline{Rj})(Rm - \overline{Rm})}{N} = \frac{18270.42}{5}$$

$$= 3654.08$$

Covariance between market return and return of BOKL stocks

$$cov(rb,rm) = \frac{\Sigma(Rb - \overline{Rb})(Rm - \overline{Rm})}{N} = \frac{10755.24}{5} = 2151.05$$

Seeing the above result it can be concluded that two variable 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 returns.

Again,

We know,

$$\rho im = \frac{cov(ri,rm)}{\sigma i,\sigma m} \ (See\ also\ Annex\ 'E'\ for\ detail\ calculation)$$

Correlation between market return and return on EBL stocks

$$\rho em = \frac{cov(re,rm)}{\sigma e,\sigma m} = \frac{1747.17}{43.36x42.01} = 0.96$$

Correlation between market return and return of NBBL stocks

$$\rho jm = \frac{cov(rj,rm)}{\sigma j,\sigma m} = \frac{3654.08}{90.42x42.01} = 0.96$$

Correlation between market return and return of BOKL stocks

$$\rho bm = \frac{cov(rb,rm)}{\sigma b,\sigma m} = \frac{2151.05}{59.34x42.01} = 0.86$$

The above calculation shows all the returns of commercial banks are positively correlated with returns of market because all values are nearly equal to +l. highest positive correlated with return of market are the return EBL and NBBL are the same value of correlation which have the value of +0.96. The BOKL has the correlation value of + 0.86. it means the return of commercial banks are highly related with the market returns. If the market return had decreased the return of commercial had also decreased, if market return was increased the return of commercial banks was also increased.

Again,

We know,

$$\beta im = \frac{cov(ri, rm)}{\sigma m^2}$$

Beta coefficient of market and stock of EBL

$$\beta em = \frac{cov(re, rm)}{\sigma m^2} = \frac{1747.17}{1764.84}$$

$$= 0.99$$

Beta coefficient of market and stock of NBBL

$$\beta jm = \frac{cov(rj, rm)}{\sigma m^2} = \frac{3654.08}{1764.84}$$

$$= 2.07$$

Beta coefficient of market and stock of BOKL

$$\beta bm = \frac{cov(rb, rm)}{\sigma m^2} = \frac{2151.05}{1764.84}$$

$$= 1.22$$

The above calculation shows that NBBL has the highest beta i.e. 2.07 and EBL has lowest beta i.e. 0.99 among three commercial banks. Other bank NBBL has a beta of 1.22. Two commercial banks have a beta greater than 1. The beta greater than 1 indicates that stocks returns are more volatile than the market returns. Stock return will increase (or decrease) by more than 1% for every percentage increase (or decrease) in market return. The stock returns are highly sensitive to market fluctuation and are considered to be aggressive.

Here the stock returns of NBBL is more volatile and stock of EBL is less volatile among three commercial banks but stock of these banks are considered as aggressive assets.

4.5 Analysis of Diversifiable and Undiversifible Risk

Calculation of diversifiable and undiversifiable risk

Table No. 4.9

Analysis of Diversifiable and Undiversifiable Risk

Commercial banks	Total risk (σ_i^2)	Undiversifiable risk	Diversifiable risk	Coefficient of determination
EBL	1880.09	1729.72	150.37	0.9216
NBBL	8175.78	7562.16	613.62	0.9216
BOKL	3521.24	2626.79	894.45	0.7396

The above table shows that the total risk of NBBL is the highest i.e. 8175.78 % and the total risk of EBL is the lowest i.e. 1880.09 % among three commercial banks. BOKL has a total risk of 3521.24%.

The coefficient of determination shows the proportion of undiversified (systematic) risk in total risk. Higher the undiversified (systematic) risk higher will be the coefficient of determination and vice-versa.

Stock of EBL and NBBL has the same and highest portion of undiversified (systematic) risk i.e. 0.9216% on total risk; remaining 0.0784% is diversified (unsystematic) risk. Only 0.0784% of risk can be diversified by the construction of optimum portfolio. Likewise the stock of BOKL has the lowest portion of un-diversified (systematic) risk i.e. 0.7396 % on total risk and remaining 0.2604% is diversifiable (unsystematic) risk portion. Only 0.2604% of risk can be diversified by construction of optimum 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, the higher required rate of return will lower the intrinsic value of stock. CAPM theory helps for pricing implications of common stocks.

The relationship between an asset returns and its systematic risk can be expressed by the CAPM, which is also called the security market line (SML). SML 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 $(R_i) = R_f + (R_m - R_f)\beta_i$

$= 13.5 + (18.83 - 13.5)\beta_i$

Where,

R_i = Risk free rate of return

R_m = Expected return on market portfolio

B_i = Beta or systematic risk index of assets i

$= 13.5 + 5.33\beta_i$…… (I)

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

Table No. 4.10

CAPM Equation/SML

Commercial bank	R_F(%)	Risk premium	β_i	R_i(%)	$\overline{R}_i$(%)	Valuation
EBL	13.5	5.33	0.99	18.78	23	$R_e < \overline{R}_e$, under priced
NBBL	13.5	5.33	2.07	24.53	33.80	$R_j < \overline{R}_j$,under priced
BOKL	13.5	5.33	1.22	20	32.37	$R_b < \overline{R}_b$, under priced

Source: R_f taken from NRB quarterly economic bulletin. R_f is average of treasury bills rate (364 days) of past 5 years of TB.

From the above calculation the required rate of return NBBL is the highest i.e. 24.53% and its beta is also highest i.e. 2.07 and the required rate of return of EBL stock is lowest i.e. 18.78% and its beta is the lowest i.e. 0.99 among three commercial banks. BOKL has a required rate of return of 20%. It means higher the beta higher will be the required rate of return and vice-versa, so required rate of return depends on beta of assets.

The all banks stocks required rate of return is less than expected rate of return, so all of the stocks 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 stocks. According to the theory 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 investors, that if he should invest in which banks securities? Which banks securities is more risky to comparing with each other. Construction of portfolio or making an investment in more than one asset which are negatively correlated can reduce unsystematic risk without losing 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 its return. The analysis is based on two asset portfolio risk free assets i.e. government securities & risky assets i.e. share and debenture. Risk free assets are denoted by (f) and risky assets are denoted by 'n' portfolio of risky assets is also known as market portfolio.

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

Where,

W_m = Weight of market portfolio or risky assets

W_{rf} = Weight of risk free assets

R_f = Risk free assets

$\overline{R}_m$ = Expected return on market portfolio

Total risk for two-security portfolio

$$\sigma p = \sqrt{W^2_{RF}\sigma^2_{RF} + W^2_m + 2\rho_{RF,km}\sigma_{RF}\sigma_m W_{RF} W_m}$$

$$\sigma_p = \sqrt{W^2_{RF} \times 0 + W^2_m\sigma^2_m + 2\rho_{RF,m} \times 0\sigma_m W_{RF} W_m}$$

$$\sigma_p = \sqrt{W^2_m\sigma^2_m}$$

$$\therefore \sigma_p = W_m\sigma_m$$

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

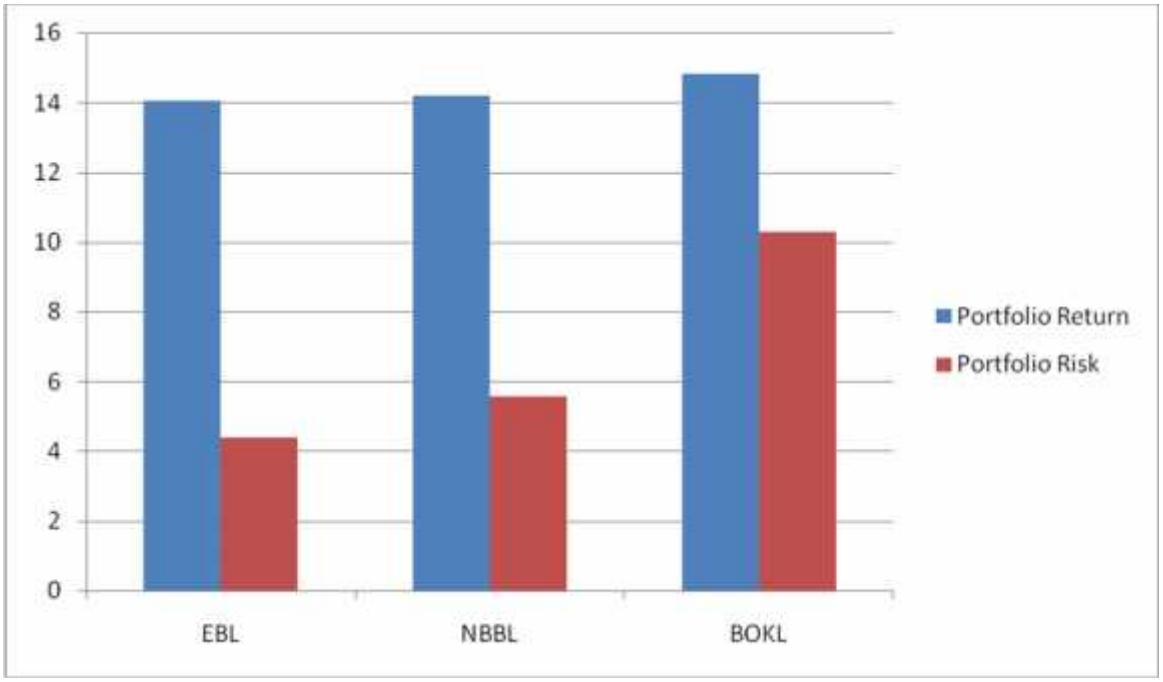
Calculation of portfolio risk and return of concern banks are shown on table. (See detail calculation on Annex 'F')

Table No. 4.11

Portfolio Risk and Return

Commercial bank	R_F (%)	$\overline{R}_M$ (%)	W_{RF} (%)	W_M (%)	R_P (%)	σ_P (%)
EBL	13.5	18.83	89.56	10.44	14.06	4.39
NBBL	13.5	18.83	86.77	13.23	14.21	5.56
BOKL	13.5	18.83	75.49	24.51	14.81	10.30

Figure No. 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 13.5% (it is calculated by $\sum R_F/n$ and expected return on market is 18.83%). BOKL has the highest portfolio return i.e. 14.81% and EBL has

the lowest portfolio return i.e. 14.06% among three commercial banks. Because BOKL is investing 24.51% of its total investment in risky assets and remaining 75.49% of its total investment on risk free assets, also it has the highest total risk on portfolio (σ_p) i.e. 10.30% higher the return will be higher the risk. Likewise EBL has invested only 10.44% of its total investment in risky assets and remaining 89.56% of its total investment in risk free assets so it has the lowest portfolio return and it has also the lowest portfolio risk (σ_p) i.e. 4.39% among three commercial banks. NBBL has a portfolio return of 14.21%. it has invested 13.23% of total investment on risky asset and remaining 86.77% of total investment on risk free asset. It has also portfolio risk (σ_p) of 5.56%.

So from above it can be concluded that higher the investment in risk free assets (government securities) lower will be the risk and lower the return also, but if higher the investment in risky asset (share and debenture) higher will be the risk and higher will be the return.

4.7 Portfolio Performance Measure

Sharpe's portfolio performance measure

Portfolio performance evaluation on the basis of return only 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 sharpe index of portfolio performance. This measure also known as the reward-to-variability ratio is used to rank the performance of investment funds. It can be symbolically

$$Sp = \frac{Risk\ premium}{Total\ risk} = \frac{\bar{r}p - rf}{\sigma p}$$

Where,

Sp = Sharpe index of portfolio performance of portfolio

$\bar{r}_p$ = Average return on portfolio

r_f = Risk free rate of return

σ_p = Standard deviation of portfolio

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

Portfolio performance measure by using sharpe's measure

Table No. 4.12

Sharpe's Portfolio Performance Measure

Commercial bank	r_f (%)	$\bar{r}_p$ (%)	σ_p (%)	Sp	Ranking
EBL	13.5	14.06	4.39	0.1276	Π
NBBL	13.5	14.21	5.56	0.1277	I
BOKL	13.5	14.81	10.30	0.1272	ΙΙΙ

The above table shows that S_p of stock of NBBL is the slightly highest i.e. o.1277 and S_p of stock of BOKL is worst i.e. o.1272. Stock of EBL is i.e. o.1276 among three 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 EBL, NBBL and BOKL during year 2062/63-2066/67 and forecast the trend of loans and investment and total deposit of next 5 years.

Loan and advance included loan provided to government enterprises, private sector and foreign bills purchase and discount. Investment included investment in government securities, shares debenture and NRB bond. The deposits consist fixed, current, saving, call and other deposit.

Table No. 4.13

Position of total loan & investment and total deposit of EBL

(In million)

Year	Total loans and investment	Total deposit	Ratio (%)
2062/63	14337.57	13802.44	103.88
2063/64	19067.81	18186.25	104.85
2064/65	23897.59	23976.30	99.67
2065/66	30419.64	33322.95	91.29
2066/67	33166.31	36932.31	89.80
		Average ratio	97.90%

The above table shows the EBL total deposit reached Rs 36932.31 million in years 2066/67 from Rs 13802.44 million in years 2062/63 likewise loans and investment of EBL also reached Rs 33166.31 million in years 2066/67 from Rs 14337.57 million in years 2062/63. Its mean percentage ratio of total loan and investment to total deposit is 97.90%.

Table No. 4.14

Position of total loan & investment and total deposit of NBBL

(In million)

Year	Total loans and investment	Total deposit	Ratio (%)
2062/63	9122.08	13015.14	70.09
2063/64	5443.57	9385.95	58.00
2064/65	6847.71	10883.65	62.92
2065/66	8927.37	9997.70	89.29
2066/67	10047.43	10384.00	96.76
		Average ratio	75.41%

The above table show the NBBL total deposit reached Rs 10384 million in years 2066/67 from Rs 13015.14 million in years 2062/63. Likewise loan and investment of NBBL also reached Rs 10047.43 million in years 2066/67 from Rs 9122.08 million in year 2062/63. Its mean percentage ratio of total loans and investment to total deposit is 75.41%.

Table No. 4.15

Position of total loan & investment and total deposit of BOKL

(In million)

Year	Total loan and investment	Total deposit	Ratio (%)
2062/63	10866.83	10485.36	103.64
2063/64	12689.29	12388.93	102.42
2064/65	15954.55	15833.74	100.76
2065/66	17732.08	18083.98	98.05
2066/67	20313.50	20315.83	100
		Average ratio	100.97%

The above table show the BOKL total deposit reached Rs 20315.83 million in years 2066/67 from Rs 10485.36 million in years 2062/63. Likewise loans and investment of BOKL also reached Rs 20313.50 million from Rs 10866.83 million in years 2062/63. Its mean percentage ratio of total loans and investment to total deposit is 100.97%.

From the above description it can be said that the BOKL is utilizing its more collected fund on loans & advance and investment which mean percentage ratio is 100.97%. It is the highest average ratio among three commercial banks. Likewise the second position average ratio is 97.90% of EBL. NBBL on third position it has an average ratio of 75.41%.

The total deposit trend and total loans & advance and investment trend forecasting of EBL, NBBL and BOKL for coming next five years from 2067/68-2072/73 are shown below.(calculation of straight line trend are shown in annex 'G')

Table No. 4.16

Trend value (Y=a+bx) of loans and investment to total deposit ratio of EBL

(In million)

Year	Total loans and investment Y=24177.78+4900.93x	Total deposit Y=25244.05+6139.64x	Ratio (%)
2067/68	38880.57	43662.97	89.05
2068/69	43781.5	49802.61	87.91
2069/70	48682.43	55942.25	87.02
2070/71	53583.36	62081.89	86.31
2071/72	58484.29	68221.53	85.73

EBL loans and investment have been increasing by Rs 4900.93 million per year and expected to reach Rs 58484.29 million at the end of year 2071/72.similarly EBL total deposit have been increasing by Rs 6139.64 million per year and expected to reach Rs 68221.53 million at the end of year 2071/72. The ratio of loan and investment to total deposit of EBL at the end of year 2071/72 is 85.73%.

Table No. 4.17

Trend value (Y=a+bx) of loans and investment to total deposit ratio of NBBL

(In million)

Year	Total loan and investment Y=8077.63+533.45x	Total deposit Y=10733.29−495.05x	Ratio (%)
2067/68	9677.98	9248.14	104.65
2068/69	10211.43	8753.09	116.66
2069/70	10744.88	8258.04	130.11
2070/71	11278.33	7762.99	145.28
2071/72	11811.78	7267.94	162.52

NBBL loans and investment have been increasing by Rs 533.45 million per year. It is expected to reach Rs 11811.78 million at the end of year 2071/72. Similarly NBBL total deposits have been decreasing by Rs 495.05 million per year. It is expected to reach Rs 7267.94 million at the end of year 2071/72. The ratio of loan and investment to total deposit of NBBL at the end of year 2071/72 is 162.52%.

Table No. 4.18

Trend value (Y=a+bx) of loans and investment to total deposit ratio of BOKL

(In million)

Year	Total loans and investment Y=15511.25+2393.61x	Total deposit Y=15421.57+2535.60x	Ratio (%)
2067/68	22692.08	23028.37	98.54
2068/69	25085.69	25563.97	98.13
2069/70	27479.3	28099.57	97.79
2070/71	29872.91	30635.17	97.51
2071/72	32266.52	33170.77	97.27

BOKL loan and investment have been increasing by Rs 2393.61 million per year and expected to reach Rs 32266.52 million at the end of year 2071/72. Similarly BOKL total deposit have been increasing by Rs 2535.60 million per year and expected to reach Rs 33170.77 million at the end of year 2071/72. The ratio of loan and investment to total deposit of BOKL at the end of year 2071/72 will be 97.27%.

From above description it can be concluded that NBBL will be utilizing it's more collected fund on loan and investment among three commercial banks, not only the deposit NBBL will utilize its other collected fund on loan and investment. The ratio of loan and investment to total deposit of NBBL at the end of year 2071/72 is 162.52%. it means if 100% of loan and investment is from collected deposit then 62.52% of loan and investment is from other sources of collected fund.

The BOKL deposit utilization position on loan and investment at the end of the year is 97.27% which are in moderate position among three sample banks. Deposit utilization position on loan and investment ratio of EBL is the lowest i.e. 85.73% at the end of year 2071/72 among three commercial banks.

4.9 Hypothesis Testing

The hypothesis is based on the test of significance for difference of mean (student's t test)

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 banking industry is equal to market return.

Level of significance (α) = 20%, 10%, 5%, 2% & 1%

Test statistic: The test assume significance 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,

$\bar{x}_1 = Arthametic\ mean\ of\ first\ sample = 9.05\%$

$\bar{x}_2 = Arthametic\ mean\ of\ second\ sample = 18.83\%$

$n_1 = n_2 = sample\ size = 5$

$\therefore /T_{cal}/ - /-0.34/ = 0.34$

Critical region: T_{tab} value at 20%, 10%, 5%, 2% &1% level of significance for two tail test at 5+5–2= 8 degree of freedom is 1.397, 1.860, 2.306, 2.896 & 3.355 respectively.

Decision: $T_{cal} < T_{tab}$ at 20%, 10%, 5%, 2%, 1% level of significance for two tail test at 8 degree of freedom. So, null hypothesis is accepted. It means, the average return on the share of banking industry is equal to market return.

4.10 Major Finding of Study

- The industrial mean ratio of investment to total deposit is 20.44%. The bank EBL and BOKL have a greater ratio above industrial mean ratio. But NBBL bank has lower investment to total deposit ratio than industrial mean ratio. It shows that EBL and BOKL have effectively mobilizing its deposit on investment to generate the return. But NBBL bank are investing its deposit in lower ratio than average industry ratio.
- The industrial mean ratio of loans & advance to total deposit is 70.09%. EBL and BOKL have a greater ratio above industrial average ratio. NBBL has lower ratio than industrial mean ratio. So it shows that EBL and BOKL have invested larger amount of its deposit fund in loan and advance among the banks.
- The industrial mean ratio of liquid fund to total deposit is 15.31%. The EBL and NBBL have a greater ratio above industrial mean ratio. But BOKL has lower ratio than industrial mean ratio. It shows that EBL and NBBL have a good liquidity position. BOKL has a lower ratio than industrial mean ratio. It shows that the BOKL has a poor liquidity position.

- The industrial average mean ratio of return on total asset is 2.11%. The ratio of EBL and BOKL are the lowest than industrial average mean ratio. It shows that performance of EBL and BOKL are the worst among three commercial banks.
- EBL has invested its more funds on government securities (i.e. risk free assets) and lesser fund on share & debenture (i.e. risky asset) among three commercial banks. BOKL has invested lesser amount of government securities (i.e. risk free asset) and larger amount on share & debenture (i.e. risky asset). None of the banks amount has invested on NRB bond.
- All of the commercial banks are granting very high amount of its loan & advance to private sector. Second priority to granting a loan & advance of all banks is govt. sector and all of banks have granted very low loan and advance to foreign bills purchase and discount.
- NBBL stock has the highest expected return i.e. 33.80% and EBL has the lowest expected return i.e. 23%. BOKL stock has the expected return of 32.37%. The market expected return is 18.83%. The risk (S.D) NBBL is the highest i.e. 90.42% and EBL has the lowest risk i.e. 43.36%. The BOKL has a risk of 59.34%. The market risk (S.D) is 42.01%. So it shows that the higher the risk, higher the return and vice versa.
- All of the returns of commercial banks are positively correlated with returns of market because all values are nearly equal to +1. EBL and NBBL stock return have equal highly positive correlated and BOKL stock return is least positively correlated with return of market. NBBL and BOKL have a beta greater than 1 i.e. 2.07 and 1.22 respectively. EBL has a nearly equal beta i.e. 0.99. So stock returns of NBBL are more volatile and stock return of EBL is less volatile among three commercial banks.
- Total risks of NBBL& EBL stock are highest and total risk of BOKL stock is lowest among three commercial banks. EBL and NBBL stock have 92.16% of undiversifiable risk and remaining 7.84% of its risk on total risk is diversifiable risk. BOKL has a 73.96% of undiversifiable risk and remaining 26.04% diversifiable risk on total risk.

- The required rate of return of NBBL is the highest i.e. 24.53% and EBL stock is the lowest i.e. 18.78%. Other BOKL bank has a required rate of return of 20%. All banks stocks required rate of return are less than expected rate of return, so all the stock are underpriced.
- BOKL has the highest portfolio return i.e. 14.81% and it has the highest portfolio risk i.e. 10.30%. EBL has the lowest portfolio return i.e. 14.06% and it has the lowest portfolio risk i.e. 4.39%. NBBL has a portfolio return of 14.21% and portfolio risk of 5.56%.
- The performance measure shows that stock of NBBL is the slightly highest i.e. o.1277 and S_p of stock of BOKL is worst i.e. o.1272. Stock of EBL is i.e. o.1276 among three commercial banks.
- BOKL is utilizing its more collected fund on loans & advance and investment which mean percentage ratio is 100.97%. It is the highest average ratio among three commercial banks. NBBL is in last position on its average of utilizing the deposit to loans & advance and investment is 75.41%.
- NBBL has utilized it's more collected fund on loan and investment among three commercial banks, not only the deposit 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 2071/72 is 162.52%. Deposit utilization position on loan and investment ratio of EBL is the lowest i.e. 85.73% at the end of year 2071/72.
- The hypothesis is based on the test of significance of banking industry returns and market return has been formulated to test whether return on common stock of banking industry is equal to market return or not. Thus over 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 return.

CHAPTER-5

5. SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter summarizes the whole study. Summary of the study has been mentioned in the first section. The second section reflects the conclusion drawn from the study. The third part is recommendation, to erase the weakness draw backs of concern banks and portfolio investment on the basis of finding and conclusion of the study.

5.1 Summary

The investment decision is one of the major functions of financial management. It depends 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 returns 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 risk at the given rate of return.

Portfolio management is one of the challenging tasks for every financial institution. Know a days there is very high competition in banking industry but very less opportunity to make an investment. Without proper management of portfolio, any institution can not compete effectively in market. Portfolio management of banks assets basically means allocation of fund to different components of banking assets having different degrees of risks and varying rates of returns 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 alternatives to earn profit. Uncertainty of profit creates risk to an investor, so every investor has to diversify their investment in different sector to minimize risk. Diversification of asset on different sectors lowers 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 and return on common stock investment, level of portfolio risk and return of commercial banks investment. The study is focused on the portfolio analysis of listed three commercial banks investment. While making an analysis and interpreting the data on portfolio, carious 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 of secondary nature. From this study it is found that those investors 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 NBBL is least consistence among banks. Likewise loan and advance to total deposit ratio shows that EBL and BOKL have been investing larger amount and NBBL is investing lesser amount of its deposit fund on loan and advance. Investment and loan & advance directly effect on banks liquidity position so liquid fund to total deposit ratio shows that banks which has invested lowest amount of deposit fund on investment and loan and advances have a good liquidity position and vice versa. So NBBL has well and BOKL 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 & debenture) and risk free asset (government securities). Among three commercial banks EBL has invested its highest fund on risk free asset and lowest amount on risky asset. BOKL 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.
- NBBL common stock has the highest expected returns and the highest risk also. EBL common stock has the lowest expected return and the lowest risk also. According to risk, it can be said that holding a stock of NBBL is the most risky and holding a stock of EBL 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 and EBL 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 EBL 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 & lower will be the risk also, but if higher the investment in risky asset (i.e. share and debenture) 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 EBL, NBBL & BOKL during the year 2062/63-2066/67 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 NBBL 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 NBBL is the lowest among the banks. Utilization of collected fund on investment generates more return to the banks, so NBBL 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. NBBL has to increase its investment to total deposit ratio by 2.83% to meet the industrial average.
- NBBL is investing lowest amount of its deposit funds on loans and advances among banks. So NBBL has to increase its loans and advances ratio to meet industrial average by 15% which will definitely help bank to earn profit and improve its performance.
- The liquidity position of BOKL is the lowest among the banks so BOKL 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 EBL is providing very high amount of its loans and advances to private sector 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 NBBL has a greater expected return and greater risk. It has a greater C.V. also it is because of NBBL returns, is least consistent it has a greater fluctuation on its return. So to reduce its risk and reduce its C.V. NBBL return should have stability.
- The common stock returns of commercial banks are highly sensitive to market. They are highly positively correlated to the market. So, market condition should be analyzed.
- Expected rate of return is greater than required rate of return of all bank's stock. So all of the stocks are under priced, 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 dynamics job. Because efficient portfolio depends on market movements. For construction of portfolio, select the stocks that have 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.

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