

CHAPTER-1

INTRODUCTION

1.1 Background

Among the several modern day institution, banks are perhaps the most important and widely known. There are many view points regarding the origin of the word Bank. Generally, it is said that the word bank is derived from the latin word ‘Bancus’ or the French word ‘Banque’ and Italian word ‘Banco’ which all mean a bench. Previously, Italian goldsmith use to perform the monetary task sitting on the bench. Whatever may be its origin it has become the part and parcel of everyday activity of the present times. In a single language, Bank is an institution, which accepts the deposits from the public and in turns advances loans to persons or corporations in need of them. Generally, the bank refers to those organized institution which are established under the provision of current laws, rules and regulations to perform work related to the currency. Practical Nepali Dictionary (2061) defines it as the institute which accepts deposits and grants loans and the person can withdraw deposited amount at any time. Nepali Encyclopedia takes as bank to those commercial, government or non government institute which accept deposit, provides interest on it, pays when demanded provides loan, Tejarath work etc. In the banking history of Nepal, Nepal Bank Limited is the first bank of Nepal which was established in 1994 B.S. After that, Nepal Rastra Bank, Rastra Banijya Bank, Agriculture Development Bank and Nepal Industrial Development Bank were established. Financial institutions are any organization/institution which is engaged in any type of financial activities. It is classified as banking as banking financial institution and non-banking financial institution. Some of the financial institutions which are practiced in Nepal are finance companies, Employees Provident Fund, Insurance companies and other financial institution such as:- commercial bank, development bank, corporative finance companies, postal saving plan, unit trust, investment companies etc.

Normally, when we talk of a bank, we mean a commercial bank. It is the bank which is engaged in performing the routine banking business of accepting the deposits of public and granting loans. A commercial bank receives money from the depositors and lends it to trade, industry and commerce. When the bank accepts money from the depositors through the various deposits schemes, it allows interest on such deposits. Similarly, when the banker lends money, it charges interest on such borrowings. The difference between the lending rate and borrowing rate is his profit. Commercial bank allows its customers to draw the cheque against their deposits. In addition to the primary function of receiving deposits and lending to others, it undertakes a wide variety of functions to assist the customers by performing agency functions likes: - collections of cheques, bills, dividends, etc on behalf of the customer; payment of insurance premium, subscription, rent, salary etc on the behalf of the customer; transfer of funds, purchase and sales of securities etc. Apart from the agency functions, the banker also provides certain general utility services; like safe custody deposits and safe deposits locker facilities, issuing of traveler's cheque, credit cards, letter of credits and give cheque or vouchers. A commercial bank also acts as a referee and guarantor of its customers to third parties. The examples of commercial bank in Nepal are Nepal Bank Limited, NABIL Bank, and AZZ Grindlay's Bank, Rastra Banijya Bank, Himalayan Bank Limited and so on.

According to Commercial Bank Act 2031 "Commercial banks are those banks, which are established under this act to perform commercial function, exchanging currency accepting the deposit and granting loan except those which are established for specific purpose like co-operative, agricultural, industrial or other."

According to Dictionary of Banking and Finance," Bank which offers banking service to public is commercial bank."

An investor always has an objective to make maximum return from his/her fund at the lowest risks. By investing in a single asset, investor cannot achieve his/her objective. But it is only possible through portfolio. A portfolio is a combination of securities. By the

help of portfolio risk can be diversified. In this context it can be clear through a proverb “do not put 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 be diversified by forming portfolio. Thus the objective of portfolio analysis is to develop a portfolio that has the maximum return whatever be the level of risk the investor deems appropriate. Combination of securities can be made in many ways.

A portfolio is a combination of investment assets. It simply means holding of securities and investment in financial asset i.e. bond, stock. Diversification of financial asset is done while in financial asset while building appropriate portfolio. Various approaches can be followed while doing portfolio. Simple diversification is the random selection of securities that are to be added to a portfolio. It reduces a portfolio’s total diversifiable risk to zero and other undiversifiable risk remains. This approach assumes that an investor can expect a reasonable return for a given level of risk. Diversification across industries means, securities are selected from different industries means, securities are selected from different industries rather than from a single industry to form a portfolio. In the context of Nepalese Financial Market, Nepal Stock Exchange (NEPSE) has categorized the listed securities into 8 sectors that are Commercial banks, Development banks, Finance companies, Insurance companies, Manufacturing and Processing companies, Trading companies, Hotel companies and others. It is better to select the securities in a portfolio from different industries to achieve better diversification. Superfluous diversification is the extended form of simple diversification. In the simple diversification, 10-15 securities are selected for a portfolio while superfluous diversification include more than that of simple diversification. Simple diversification across quality rating categories involves rating of securities available in the market on the basis of default risk by rating agencies. Markowitz diversification is the combining of assets, which are less than perfectly positively correlated in order to reduce portfolio risk.

Portfolio management is concerned with efficient management of portfolio investment in financial assets, including shares, debenture, and bonds of companies/industries. The management may be by professionals, by others or by individuals themselves. The

primary objectives of portfolio are to maximize return and minimizing the risk. The other secondary goals are regular return, stable income, appreciation of capital, ever liquidity, easy marketability, safety of investment, tax benefits and so on. Portfolio investment is an important function of management. The important feature of portfolio is that it reduces the risk and helps in increasing the return through diversification. The standard deviation of the returns on of course, some stocks are riskier than others, and even in years when the overall stock market is up, many individual stock go down. Therefore, putting all your money into one stock is extremely riskier. According to a recent Business Week Article, the single best weapon against risk is diversification.

Portfolio of assets may be less than sum of standard deviation of the return from the individual assets or rate of return on portfolio assets may be higher than sum of rate of return from the individual assets. Generally, all the investors want to get the maximum rate of return having low risk. Portfolio management of financial institutions assets mean allocation of fund to different components of financial institution having different degree of risk and varying rate of return in such way the main goal of financial institution is maximize the return and minimize the risk by selecting a portfolio of securities.

1.2 Focus of the study

The main focus of the study is portfolio management of various commercial banks in Nepal in the investor's view. The study has been taken among 6 commercial banks of Nepal. The study also tries to show from the view point of investors that how the various commercial bank manages their portfolio in different ways. It also analysis the competitive position of given commercial banks in terms of portfolio management through the investor's point of view.

1.3 Statement of problem

Risk can be diversified by investing in portfolio of securities rather than entire wealth in single assets. Investors should be aware of the degree of risk in which they are going to invest. It is the responsibility of the investor to make the rational decision so there should be special knowledge as well as adequate skills to analyze the portfolio in investors.

Due to the economic crisis all over the world, it has badly affected the various areas like: - banking, business, production, trade, employment and so on. In the context of country like Nepal, the opportunities and resources are limited while the banking sectors are mushrooming as well. The investors should be wise enough while investing their fund. Investing in only one industry does not show the wiseness. Hence, selecting the securities from different industries to achieve better diversification and ultimately having the maximum return, Portfolio is the best way. It is studied here, how the investor bestly selects the different industry for better use of portfolio concept so that we can minimize our risk and enjoy the maximum return.

Therefore, the various problems which are discussed in the research are given below:-

1. What is the risk and return of various commercial banks?
2. Can the risk be diversified by investing in portfolio of Nepalese commercial banks?
3. Which commercial bank has the largest degree of financial risk and return?
4. Which commercial bank has the largest degree of financial risk and return on portfolio?
5. What is the risk and return on portfolio of various commercial banks?
6. Can bank diversify the risk by investing in portfolio?
7. What is the liquidity position of several commercial banks?
8. Which commercial bank has better financial performance?

1.4 Objectives of study

Various studies have been done regarding the portfolio management of commercial banks. In the context of portfolio management, the investor tries to seek the maximum return and least risk selecting the best sector to invest their fund. So, the major objectives of the study have been given below:-

1. To examine the risk and return of Nepalese commercial banks through the investor's point of view.
2. To evaluate the performance of Nepalese commercial banks in terms of portfolio risk and return.
3. To examine how the diversification reduces the risk.
4. To compare the banks overall position.

1.5 Significance of the study

In the present context of Nepal, the investment opportunity is somehow growing up. But due to the unstable political situation it is creating pressure to the investors while investing their fund in various sectors. Because of the lack of sufficient knowledge regarding investment the investors are mismanaging their portfolio. What are the statistical tools of portfolio? How the relationships between two assets are measured? Like this the investors should have the various information which is useful for them. This research work will be beneficial to the existing as well as potential investors in future. The study helps in determining the proportion and the selection of asset held in portfolio. It is helpful in making decision regarding the optimal proportion of stock bond mix. Hence, it helps to gain maximum return in long run at low level of risk. This study will also be helpful to researcher, professors, students as well as who are directly or indirectly engaged in the investment sector of the commercial banks.

1.6 Limitation of the study

As every research work has its own limitation. This study will be conducted facing the various limitation and constraints which are given below:-

1. This research will be based on the secondary data like articles, publication, and website of the related organization. Hence, the reality of the study will depend on the secondary sources of data.
2. The study covers the relevant data and information of only the last six years from FY 2004/05 to 2009/10.
3. Among the listed commercial banks only six are selected for the analysis they are Himalayan Bank Limited (HBL), Laxmi Bank Limited (LBL), Nepal Investment Bank Limited (NIBL), Agriculture Development Bank Limited (ADBL), Standard Chartered Bank Limited (SCBL) and Siddhartha Bank Limited (SBL).
4. Time and budget limitation.
5. The study covers only the market portfolio while doing the investment decision.

1.7 Organization of the study

The study covers the five chapters. Each chapter have equal important for the study of the portfolio management in commercial banks of Nepal. The titles of each of the chapters are briefly described as follows:-

Chapter 1

Introduction

The first chapter deal with the background of the study, statement of the problem, focus of the study, objectives of study, significance of the study and limitation of study.

Chapter 2

Review of literature

The second chapter deals with the conceptual framework, review of empirical studies and concluding remarks.

Chapter 3

Research methodology

The third chapter explains the methodology of the research which will be used in the study. It includes research design, population and sample selection, nature and sources of data, method of analysis.

Chapter 4

Data presentation and analysis

The fourth chapter deals with the data presentation and its analysis. For this purpose various techniques are used and important findings are pointed out.

Chapter 5

Summary, conclusion and recommendation

The fifth chapter shows the summary, conclusion and recommendation of the study and helps in decision making purpose.

CHAPTER – 2

REVIEW OF LITERATURE

Review of literature is an examination of the research that has been conducted in a particular field of study. Many researchers have conducted their research on the field of commercial banks. This research deals with the review of literature about "Portfolio Management in Commercial banks of Nepal". The chapter tries to show the review of literature relevant to the portfolio management of different writer. Scientific research must be based on the past knowledge. The previous study cannot be ignored because they provide the foundation to the present study. In other words, those have to be continuity in research. Hence, the purpose of literature review is , thus, to find out what research studies have been conducted in one's chosen field of study and what remains to be done. It provides the foundation for developing a comprehensive theoretical framework from which hypothesis can be developed for testing.

2.1 Conceptual Framework

2.1.1 Investment

An investment is the portion of saving, employed in such a way that its value is preserved and some additional income can be generated at a future date. Thus, investment is the current commitment of the savings that compensate for the time involved, the expected rate of inflation and uncertainty involved. To state in other words, an investment is any vehicle into which funds can be placed with the expectation that they will generate positive return and/ or their value will be preserved or increased. Investment, in its broader sense, means the sacrifice of current rupees for the future rupees. Two different attributes are generally involved time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the amount of reward is generally uncertain.

According to F. Amling, "Investment may be defined as the purchase by an individual or institutional investor of a financial or real asset that produces a return proportional to the risk assumed over some future investment period."

According to Donald E. Fischer and Ronald J. Jordan, "An investment is a commitment of funds made in the expectation of some positive rate of return. If the investment is properly undertaken, the return will be commensurate with the risk the investor assumes."

2.1.2 Investment Process

The investment process involves how an investor should make decisions about what marketable securities to invest in, how extensive the investments should be, and when the investments should be made. A five-step procedure for making these decisions in the basis of investment process is as follows:

1) Set Investment Policy

The first step, setting investment policy, involves determining the investor's objectives and the amount of his or her investable wealth. Investment objectives should be stated in terms of both risk and return. This step in the investment process concludes with the identification of potential categories of financial assets to be included in the portfolio. This identification will be based on, among other things, the investment objectives, amount of investable wealth, and tax status of the investor.

2) Perform Security Analysis

The second step in the investment process is performing security analysis. It involves examining the several individual securities (or group of securities) within which the broad categories of financial assets previously identified. One reason to examine

securities to identify those that seen mispriced. There are many approaches to security analysis. However, technical and fundamental analysis is mostly used.

3) Construct a Portfolio

The third step in the investment process, portfolio construction, involves identifying the specific assets in which to invest and determining how much to invest in each one. The issues of selectivity, timing, and diversification need to be addressed by the investor. There should be clear vision of the strategy, risk bearing capacity and required rate of return before deciding the alternatives of investment.

4) Revise the Portfolio

The forth step in the investment process, portfolio revision, concerns the periodic repetition of the previous three steps. Over time the investor may change his/her investment objectives, which, in turn, would make the currently held portfolio less than optimal. Another reason for revising a portfolio would be if the prices of securities changed.

5) Evaluate the performance of Portfolio

The fifth step in the investment process, portfolio performance evaluation, involves determining periodically how the portfolio is performing in terms of the return earned and also the risk experienced by the investor. Thus, appropriate measures of return and risk as well as relevant standards are needed.

2.1.3 Risk and Return

Most securities available for the investment have uncertain outcomes and are thus risky. While evaluating potential investments in financial assets, the two factors i.e. expected return and risk should be considered while making decision. There is the relationship between expected return and the expected level of associated risk. This risk-return relationship is characterized as being a direct relationship or a positive.

Return

The return is the total gain or loss experienced on an investment over a period of time.

THE SINGLE - PERIOD RATE OF RETURN

Single period return may be defined as the change in value plus any cash distributed expressed as a percentage of the beginning of period investment value. It can be expressed as follows:-

$$\text{Single period rate of return} = \frac{\text{Dividends} + (\text{Ending Price} - \text{Beginning Price})}{\text{Beginning Price}}$$

Expected Rate of Return

The expected return rate of return for any assets is the weighted average rate of return, using probability of each rate of return as the weight. It can be expressed as follows:-

$$\text{Expected value, } E(r) = \sum_{j=1}^n r_j p_j = r_1 p_1 + r_2 p_2 + \dots + r_n p_n$$

Risk

Risk is defined as the changes of financial loss or more formally the variability of the actual return from the expected return associated with a given assets. The greater the variability of return on assets said to be riskier and the more certain the return from an assets, the less the variability and therefore the less risk. Standard deviation is most common statistics indicator of an asset risk, it measures the dispersion around the expected value.

Steps for the calculation of standard deviation:

1. Calculate the expected value :

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

2. Subtract the expected value $E(r)$, from each possible outcome, r .

$$\text{Deviation} = r_j - E(r_j) \text{ or, } r_t - \bar{r}_t$$

3. Square each deviation and multiply it by the probability of occurrence of the applicable state of the economy, and then sum these products to obtain the variance (σ^2)

$$\text{Variance} = \sigma^2 = \sum_{j=1}^n P_j [r_j - E(r_j)]^2$$

4. Take the square root of the variance to obtain the standard deviation.

$$\text{Standard deviation} = \sqrt{\sum_{j=1}^n [r_j - E(r_j)]^2 \times P_j}$$

2.1.4 Portfolio Theory and Diversification

This theory was developed by Harry M. Markowitz. Markowitz's approach begins by assuming that an investor has a given sum of money to invest at the present time. This money will be invested for a particular length of time known as the investor's holding period. At the end of the holding period, the investor will sell the securities that were purchased at the beginning of the period and then will either spend the proceeds on consumption or reinvest the proceeds in various securities (or do some of both).

Generally, investor estimate the expected holding period returns (or expected returns) on the various securities under consideration and then invest in the one with the highest expected return. According to Markowitz, this decision would be generally unwise because the typical investor, although wanting "returns to be high", also wants "returns to be as certain as possible". Thus, in seeking to both maximize expected return and minimize uncertainty (i.e. risk), the investor has to conflicting objectives that must be balanced against each other when making the purchase decision. The Markowitz approach gives full consideration to both of these objectives. The consequences of having these two conflicting objectives are that investors should diversify by purchasing not just one security but several.

This assumption tells that the investors are risk averse, which means they will choose the portfolio with smaller standard deviation. Investors always have the objectives 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. A portfolio is a combination of securities. By the help of portfolio; risk can be diversified. In these contexts, it can be clear through a proverb "do not put 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 the risk cannot be diversified by investing in a single asset. Obviously, risk can be diversified by forming portfolio. Thus, the objectives of the portfolio analysis are to develop a portfolio that has the maximum return. In other words, we can say when securities are combined into a portfolio; the new portfolio will have a lower level of risk than the simple average of the risk of the securities because when some securities are doing poorly, others are doing well. This pattern tends to reduce the extremes in the portfolio's returns, so there is less fluctuation in the portfolio's value.

The various forms of diversification have been given below:-

i. Simple Diversification

Simple diversification is the random selection of securities that are to be added to a portfolio. It is like "not putting all the eggs in one basket or spreading the risk they made the portfolio from randomly selected securities and allocate equal weights". Spreading the portfolio's assets randomly over two or three times as many stocks can not be expected to reduce risk any further. Simple diversification reduces a portfolio's total diversifiable risk to zero and only the undiversifiable risk remains.

ii. Diversification Across Industries

Diversification across industries means, securities are selected from different industries rather than from a single industry to form a portfolio. Under this, securities are taken from many different industries to form portfolio. It is better selecting the securities from different industries to achieve better diversification. But, empirical research has shown that diversifying across industries is not much better than simply selecting securities randomly.

iii. Superfluous diversification

Superfluous diversification is the extended form of simple diversification. 10-15 securities are selected for a portfolio in the simple diversification while superfluous diversification include more than that. But from this diversification no further risks are reduces. It becomes impossible for the investor to manage the assets in his portfolio because the management of a large number of assets requires knowledge of the liquidity of each investment, return; the tax liability and this will become impossible without specialized knowledge. For the investor, it is both difficult and expensive to look after a large number of investments. Switching over investments by often selling and buying assets expecting a high rate of return, involves high transaction cost and more money will be spent in managing diversification. Superfluous diversification may result in inadequate return.

iv. Simple Diversification Across Quality Rating Categories

On the basis of the default risk, the securities which are available in the market are rated by the rating agencies. Under this technique, the portfolio is formed from same quality rating assets. From the various analyses, it is found that the highest quality portfolio of randomly diversified stock was able to achieve lower level of risk than the simply diversified portfolios of lower quality stocks.

v. Markowitz Diversification

It is the combination of assets, which are less than perfectly positively correlated in order to reduce portfolio risk. It can sometimes reduce risk below the undiversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets correlation (or covariance). The lower the correlation between assets, the more that Markowitz diversification will be able to reduce the portfolio's risk.

2.1.5 Risk and Return of Portfolio

With the Markowitz approach to investing, the focus of the investor is on terminal (end-of-period) wealth. That is deciding which portfolio to purchase with his/her initial (beginning-of-period) wealth; the investor should focus on the effect of the various portfolios. This effect is measured by the expected return and standard deviation of each portfolio.

As we know, a portfolio is a collection of securities. The expected return and standard deviation of a portfolio depend on the expected return and standard deviation of each security in the portfolio.

The expected return on a portfolio, $E(r_p)$ is simply the weighted average of the expected returns on the individual assets in the portfolio with the weights being the fraction of the total portfolio invested in each assets.

Here,

Expected return on portfolio

$$E(r_p) = \sum_{j=1}^n W_j \times E(r_j)$$

Where,

$E(r_p)$ = Expected return on portfolio

W_j = Weight of security j

$E(r_j)$ = Expected return on security j

Portfolio risk is measured by a statistical tool standard deviation. It is a function of the proportions invested in the components.

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2Cov_{AB} W_A W_B}$$

Where,

σ_p = Standard deviation of portfolio's return

W_A = Weight of security 'A'

W_B = Weight of security 'B'

σ_A = Standard deviation of security 'A'

σ_B = Standard deviation of security 'B'

Cov_{AB} = Covariance of returns between security A and B.

2.1.6 Portfolio Management Process

Portfolio investment process is the process of buying and selling the order for investment assets such as stock and bond. Portfolio investment process has been described briefly below:-

I. Planning

The aspect of portfolio management is the most important element of proper portfolio investment and speculation. In the planning stage a careful review should be conducted of the mission, financial situation and current capital market conditions.

II. Implementation

This stage consists of the three different decisions. The first decision is to rebalance strategic asset allocation. Another decision is to rebalance the tactical asset allocation and last is security selection. Other decision also can be made by manager if necessary.

III. Monitoring

The last process of portfolio investment is monitoring the portfolio return. There are three stages i.e. investment policy, portfolio performance and action required to control respectively.

2.1.7 Portfolio Selection Models

Markowitz's Portfolio Selection Model

Portfolio selection model was profound by Markowitz (1952). According to this model, every portfolio emphasizes to two things. This is also called modern theory of portfolio management. This model assumes investors are rational and they always wants highest possible return by diversified risk similarity for a given level of expected return investor prefer less risk.

Markowitz model is based on correlation under this theory if portfolio is made by combination if assets which are less than perfectly positive correlated (+1), the risk cannot be minimized. If the assets are perfectly negatively (-1) risk can be minimized.

Investor prefers to select portfolio having the higher level of return at a given level of risk. Therefore, trade off is required between the risk and return of portfolio. To select the optimal portfolio this model used equations which are given below:-

$$E(rp) = W_1E(r_1) + W_2E(r_2) + \dots + W_nE(r_n)$$

Where,

$E(rp)$ = Expected return on portfolio

W_1 = Weight of asset 1

W_2 = Weight of asset 2

$E(r_1)$ = Expected return of asset 1

$E(r_2)$ = Expected return of asset 2

n = Number of assets included in the portfolio

$$\sigma_p = \sqrt{W_1^2\sigma_1^2 + W_2^2\sigma_2^2 + 2Cov_{1,2}W_1W_2}$$

Where,

σ_p = Standard deviation on portfolio

$Cov_{1,2}$ = Covariance between asset 1 and 2

$$= \frac{\sum [r_1 - E(r_1)][r_2 - E(r_2)]}{n}$$

r_1, r_2 = Single period rate of r

n = Number of observations

$P_{1,2}$ = Correlation between asset 1 and 2

$$= \frac{Cov_{1,2}}{\sigma_1 \times \sigma_2}$$

According to this modal expected rate of return on portfolio, standard deviation on portfolio and correlation between assets measures portfolio return, portfolio risk and return between assets respectively.

Sharpe's Capital Assets Pricing Model (CAPM)

Capital assets pricing model (CAPM) was developed 12 years latter by William F. Sharpe (1964). This model assumes all investments are infinitely divisible fractional shares may be purchased in any portfolio or any individual assets. Capital assets are the long term financial assets and CAPM is based on pricing of these assets. CAPM suggests that any investor can create a portfolio of assets that will eliminate all diversifiable risk, the only relevant risk is non diversifiable risk therefore, and the investment decision and pricing of capital assets should be based on the undiversifiable risk. This relationship between an assets return and its systematic risk can be expressed by the CAPM which is also called the Security Market Line (SML).

The equation for the CAPM is given below:-

$$E(r) = RF + [E(r_m) - RF]$$

Where,

$E(r)$ = Expected return on assets

RF = Risk free rate of return

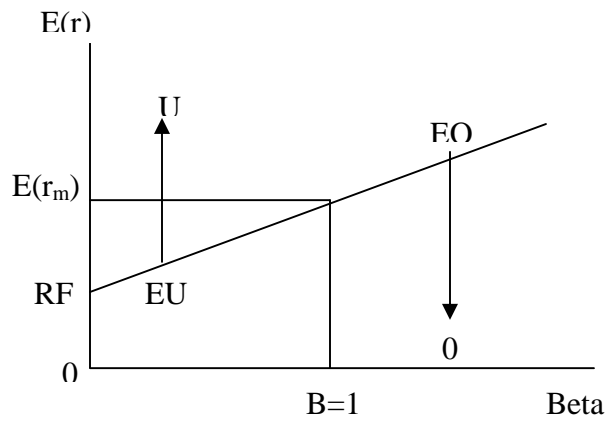
$E(r_m)$ = Expected rate of return on market

= Beta or systematic risk

The CAPM is equilibrium model for measuring the risk and return trade off for all assets including both inefficient portfolios. A graph of the CAPM is given below:-

Figure (2.1)

The CAPM or Security Market Line (SML)



Sources : Jack Clark Francis “Investment Analysis and Management”

In figure (2.1) there are two assets denoted O and U. assets U is under priced because its expected rate of return is too high for the level of systematic risk, it bears assets O is overpriced because its expected rate of return is too low to investor to accept its undiversifiable risk.

2.2 Review of Empirical Studies

Review of empirical studies is reviewing of the major related literature about the portfolio management and relates studies with two different topics studies on risk and return and studies on the portfolio management.

Sharpe (1964) Study

William F. Sharpe studied a capital pricing model. Under this study the total risk can be divided into two main parts first systematic risk and next unsystematic risk. The systematic risk includes changes in the purchasing power of money, fluctuations in interest rates, and other factors that contribute to undiversifiable fluctuations. The portion of total risk that is not explained by an assets characteristic line is called unsystematic risk. Unsystematic risk can be diversified to zero by spreading the investment fund. The main objective of the study is to show the positive relationship between the assets systematic risk and their expected rate of return. To show that this study used security market line (SML) or characteristics line. This study used the given equation to fulfill the given objective.

$$E(r) = R_f + [E(r_m) - R_f]$$

Where,

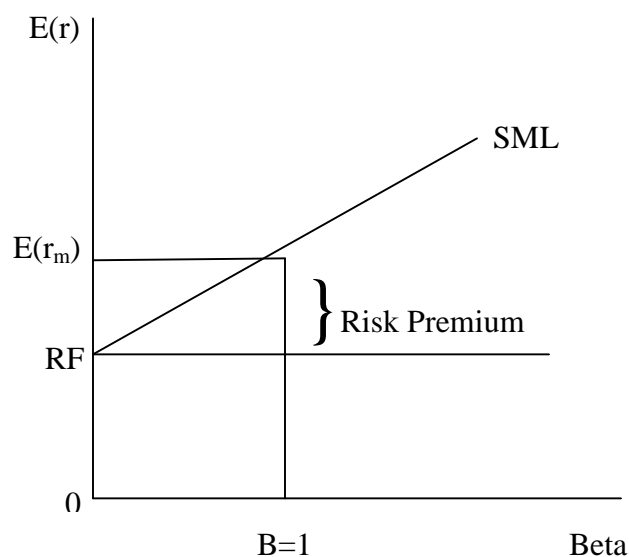
$E(r)$ = Expected rate of return

$E(r_m)$ = Expected rate of return on market

R_f = Risk free rate of return

= Systematic risk

Figure (2.2)
Security Market Line



Sources: Jack Clark Francis “Investment Analysis and Management”

This study found from the given equation and security market line if systematic risk or beta increases the expected rate of return also increases. If systematic risk or beta decreases the expected rate of return decreases. That means there is positive relationship between systematic risk and expected rate of return.

Shapkota (1999) study

The study entitled "Risk and Return Analysis in common stock Investment" with special reference to banking industry is also found relevant with this study. The main objective of the study is to analyze the risk and return of the common stocks in Nepalese stock market. The study is focused on the common stock of commercial banks.

In his findings the study summarized, Bank Industry is the biggest one in terms of market capitalization and turnover. Expected return on the common stocks of Nepal Bank Limited is maximum i.e. 66.99% and common stock of SBI bank ltd. is found minimum. In this regard, common stock of Nepal Bank Ltd. is most risky and common stock of SBI

bank ltd. is least risky. In the context of industries, expected rate of return of finance and insurance industry is found highest expected return of banking industry is 60.83%.

Pandey (2000) Study

The study conducted by Mrs. Pramina Pandey also related with the research study. The main objective of the study was to identify the risk and return situation of the insurance companies common stock which concludes the following things:-

1. Poor education and lack of adequate source of information are the major constrains for the development of stock market in Nepal.
2. Among all the securities common stock is known to be the most risky security.
3. When the risk and return compared to different industries, Finance and Insurance is the best as per highest expected return with higher degree of risk where as trading industry has minimum return and risk.
4. There is no significant difference between the portfolio return of insurance companies stock and overall market portfolio.
5. Market sensitivity is measured by beta coefficient which cannot be reduced by diversification.
6. General public invest their funds in different securities on the basis of expectation and assumption rather than analysis.
7. The proper selection of portfolio approach is better way to get success in stock market.

Paudel (2002) Study

The study by Mr. Narayan Prasad Paudel entitled " Investing in shares of Commercial Banks in Nepal : An Association of Return and Risk Elements " is found to be relevant in the context of the study.

This study conducted with the objective of whether the shares of commercial banks were correctly priced by analyzing the realized rates of returns and the required rates of return using the CAPM.

The study was based on the data of shares of seven sample commercial banks from Mid July 1996 to mid July 2001. For the purpose of analyzing risk characteristics of the shares of those commercial banks, standard deviation, the coefficient of variation, the correlation coefficient between the returns of individual bank's share and the return on market portfolio and the beta coefficient were used. Average return on the 91-day Treasury bill was taken as a proxy of the risk free rate of return.

On the basis of this study, it was found that the shares of BOK offered the highest realized rate of return. It was also found that none of the shares prices were in equilibrium. The prices of the shares of SCBNL, NSBIB, NBBL, EBL and BOK were under priced. Based on the standard deviation of the returns on shares, the shares on EBL could be considered as high- risk security. The standard deviation of the returns on shares of HBL was the lowest one. On the basis of CV, the shares of BOK had the lowest risk per unit of return, the highest being with the shares of NABIL. It was also observed that the systematic risk was negative with the shares of NABIL. Therefore, the total risk on the returns on shares of NABIL was due to company specific characteristics rather than market pervasive. Return on all the shares except NABIL had positive correlation with the returns on market.

Most of the shares appeared to be defensive as beta coefficients are less than one. Only the return on shares of BOK had beta coefficients of greater than one, indicating that the share was more risky than the market.

This study concluded," the shares of commercial banks in Nepal are heavily traded in the stock market and, therefore, these shares play a key role in the determination of stock exchange indicators. All the shares produced higher rate of return than the return on market portfolio. However the risk return characteristics do not seem to be the same for

all the shares reviewed". The study further concludes, " Most of shares fall under the category of defensive stocks, except the shares of Bank of Kathmandu Limited. From the analysis, it appears that none of the shares are correctly priced".

Thapa (2003) Study

A thesis entitled "Analysis of Risk and Return on Common Stock Investment of Insurance Companies" was undertaken by Neelam Thapa. The relevant objective of the study was to analyze the risk and return and other relevant variables that help in making decisions.

The study is based on secondary data of five insurance companies covering five years data commencing from 2053/54 to 2057/58. The major findings of the study were as:-

1. Because of the higher expected return associated with the common stock, Nepalese investors are attracted towards it.
2. The standard deviation which measures the risk of an asset shows that most of the companies are risky. As higher risk must be associated with the higher return, it is so only in the case of Everest Insurance Company and Himalayan General Insurance Company where as United Insurance Company and Premier Insurance Company are providing higher return at lower risk.
3. The beta coefficient, which is the measure of systematic risk, reveals that Nepal Insurance Company has the highest beta and Premier Insurance Company has least beta.

Poudel (2004) Study

Poudel has submitted a research about " Risk and Return Analysis of Common stock of listed companies of Nepal ". The study is based on secondary data and necessary data was taken from the Securities Board Nepal and NEPSE covering 3 years period 2055/56 to 2059/60. Poudel has made this research with ten companies.

The main objectives of Poudel's are given below :-

1. To measure and analyze the risk and return associated with the common stock of the listed companies
2. To examine the movement of market price.
3. To determine the effect of portfolio on risk and return.

The study used market price per share, dividend per share as well as statistical tools to analysis the data in this research work. This study found the various finding but there are some important findings are given below:-

1. The commercial banking industry has the highest value market share while other industry has the lower value of market share.
2. Expected return on common stock of banking and finance sector was higher than other sector.
3. The commercial banking industry's expected rate of return on portfolio is maximum and finance insurance companies have higher expected return on portfolio and remaining other manufacturing and processing has positive expected return on the portfolio.

Gyawali (2005) Study

Gyawali has conducted a research about " Risk and Return analysis on common stock". Gyawali used the secondary data analysis with 5 commercial banks covering 3 years period from 2056/57 to 2060/61.

The major objectives are given below:-

1. To describe the risk, return and other relevant factor that directly affect the investment in common stock.
2. To evaluate the common stock of the listed commercial banks in terms of risk and return to perform sector wise comparison on the basis of the market capitalization.

This study used market price of stock and dividend per share as well as statistical tools to analysis the data. The major findings of Gyawali's study are given below:-

1. Among five commercial banks Standard Chartered Bank and Himalayan Bank are the continuous dividend payer.
2. Among sample banks Nepal Bangladesh Bank Limited has the lowest expected return.
3. Bangladesh Bank is high risky and Standard Chartered Bank is low risky.

Wagner and Lau (1979) Study

Wagner and Lau studied the effect of simple diversification. They divided a sample of 200 NYSE stocks into six sub groups. They constructed portfolio's from each of the sub groups using 1 to 20 randomly selected securities and applying equal weight to each security. The main objective of the study is reduction of risk through diversification.

This study used the given table to summarize some effects of diversification. As the number of securities in the portfolio increases, the standard deviation of the portfolio returns decreases, but at a decreasing rate with the further reductions in risk beings relatively small after about 10 securities is included on the third column of the table correlation with the market shortly.

**Table (2.1)
Reduction of Risk through Diversification**

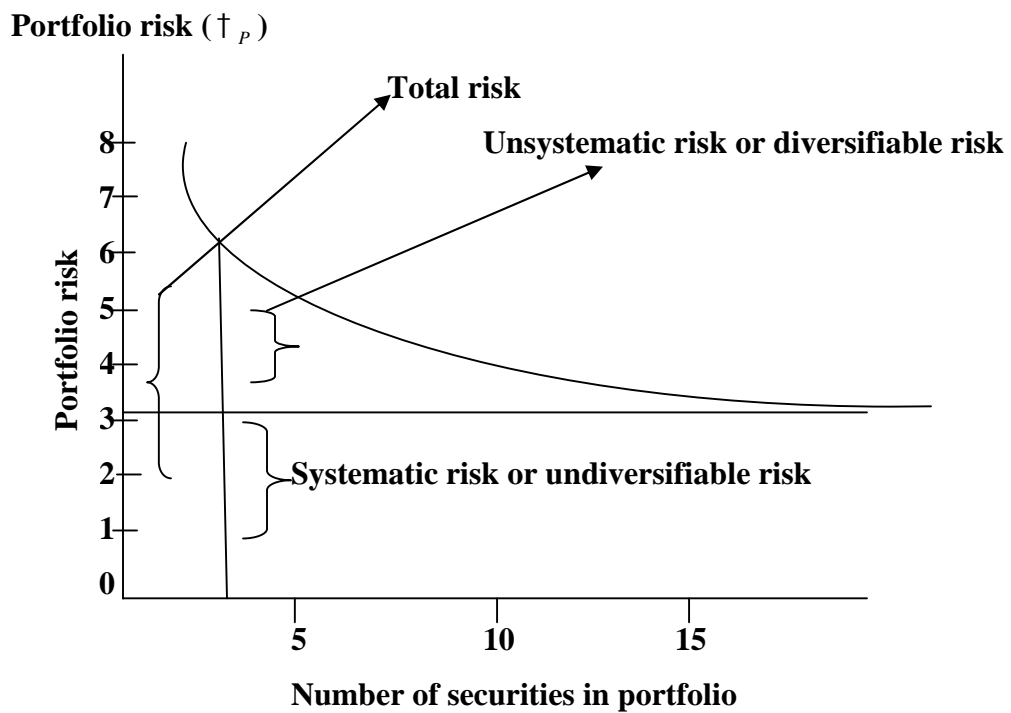
No. of securities in portfolio	Standard deviation of portfolio Returns (p) (percent per month)	Correlation with Return on market Index
1	7	0.54
2	5	0.63
3	4.8	0.75
4	4.6	0.77
5	4.6	0.79
10	4.2	0.85
15	4.0	0.88
20	3.9	0.89

Sources: Jack Clark Francis "Investment analysis and Management"

Based on the table 2.1 when the number of security is 1 standard deviation of portfolio return is 7 and correlation with return on market index is 0.54. when the number of security is 2 standard deviation of portfolio return is 5 and correlation with return on market index is 0.63. In this same way when the number of securities in portfolio are 3, 4, 5,10,15, 20 standard deviation of portfolio returns are 4.8, 4.6, 4.6, 4.2,4.0, 3.9 correlation with return on market index are 0.75, 0.79, 0.85, 0.88, 0.89 respectively. This shows when the number of securities in portfolio increases standard deviation of portfolio decreases and correlation with return on market index increases but in declining way.

Figure (2.3)

Reduction of Risk through diversification



Sources: Jack Clark Francis "Investment analysis and Management"

This study found the part that cannot be eliminated is defined as systematic or market related risk and the part that can be reduced through the diversification is defined as Unsystematic risk.

Elton and Gruber (1979) Study

This study named "Expected return, realized return and asset pricing tests" one of the fundamental issues in finance is what the factors are that affect expected return on assets, the sensitivity of expected return to those factors, and the reward for bearing this sensitivity. The data set covers the period from July 1, 1991 through December 31, 1997. The history shows almost all the testing is done realized return as a proxy for expected return. Using realized return, as a proxy for expected return is that unexpected returns are independent, so that observation interval increases they tend to a mean of zero. The purpose of this article is to convince the reader there is a distinction and worth to find out alternative ways to estimate expected returns.

Following preliminary tests are done in the study:

1. A constant risk premium
2. Forward rates and risk premium
3. Factor analysis
4. Changing risk premiums

According to the researcher "realized returns are a very poor measure of expected return and that information surprises highly influences a number of factors in asset pricing model". The empirical use of judgement and factor dependability can be used to draw implication which will govern the great extent the pricing decision fix and accurate.

Upadhyaya (2001) Study

The study "Risk and Return on common stock Investment of Commercial Banks in Nepal" conducted by Mr. Sudeep Upadhyaya. This study has taken 8 commercial banks with covering five years period 1994/95 to 1998/99.

The main objective of the study were to assess the risk associated with the returns on common stock investment of the listed commercial banks on the basis of selective

financial tools to evaluate common stocks of listed commercial banks in terms of risk and returns, and to analyze the volatility of common stocks and other relevant variables as an affecting factor in portfolio construction of common stocks.

This study found the various finding but there are some important findings are given below:-

1. Common stock of Nepal Grindlays Bank Limited is most risky and of SBI is least risky. This proves ' high risk high return'.
2. Regarding the market volatility, EBL's common stock is more volatile which has beta value of 3.941 and NIBL's common stock is least volatile which has beta value of 0.875. Others are also volatile.
3. All the stocks of commercial banks are over priced. NGBL stock has maximum differences of expected rate of return and required rate of return.
4. Most of the Nepalese private investors invest in single security. Some of the investors use their fund in two or more securities. But it is found that they don't make any analysis of portfolio before selecting. They invest their fund in different securities on the basis of expectation and assumption of individual security rather than analysis of the effect of portfolio.
5. Portfolio standard deviation is less than individual standard deviation. So the portfolio approach of investment is better way to get the maximum return.

Acharya (2004) Study

Acharya's thesis on "Risk and Return analysis in common stock investment of some listed companies of Nepal" with the study periods of 3 years i.e. 2055/56 to 2059/60. This study used primary based on secondary sources of 8 comapanies. The main objectives of Acharya's are given below:-

1. To assess the relationship between risk and return.
2. To identify factors responsible for risk and return.

The study used market price per share divided per share and other statistical tools to analysis the data. Acharya has pointed out various finding based on the data and information, which are given below:-

1. On the basis of industry wise comparison commercial banking industry's expected rate of return is maximum while other industry's expected return is lowest among the industries.
2. The beta coefficient in this section of market sensitivity analysis which measures the index of the systematic risk may be used for the ranking of the systematic risk of the different assets. Beta coefficient of these eight sample companies showed mixed results. Five companies are defensive.

Panthi (2004) Study

Panthi has conducted a research about "Analysis of Risk and Return of Common Stock Investment of Commercial Banks of Nepal". This study has taken 5 commercial banks with covering 3 years period 2053/54 to 2057/58. This study was based on secondary data which are taken from NEPSE.

The main objectives of Panthi's study are given below:-

1. To evaluate common stock of listed commercial banks in terms of risk and return.
2. To examine diversification reduce the risk.

Panthi used market price per share divided per share as well as statistical tools to analysis the data in this study. The major findings of Panthi's study are given below:-

1. Diversification of fund by making portfolio can reduce unsystematic risk of the individual security.
2. The stock has high return with respect to the amount of the systematic risk during the study period.

Markowitz (1952) Study

Harry M. Markowitz studied portfolio selected model in 1952. The main objective of the study is to show that the risk can be reduced with the higher level of expected utility than with other risk reduction techniques by diversification. This study deals about the optimal portfolio. Every portfolio emphasizes return and risk. And the investor gives emphasis to two things. There is total risk and it is symbolized by standard deviation.

According to this study the return depends upon three things which are given below:-

1. The number of securities in portfolio
2. Correlation between rates of return of securities
3. Proportion investment in different securities

This study used the expected rate of return on portfolio standard deviation of portfolio and correlation between the securities to show the reduction of risk by diversification of assets. Markowitz found most effective way of reducing risk. That is rational investor will be concerned with the correlation between assets, in addition to the assets expected returns and standard deviation on portfolio.

Kane and Buser (1979) Study

The Edward J. Kane and Stephen a Buser in the title "Portfolio diversification at Commercial bank" deals with how a firm performance a useful function by holding a portfolio of efficiently priced securities.

According to them it is rational for a form to engage in prior found of assets diversification on behalf of its shareholders even when all assets are priced efficiently and available for testing their perceptively empirically, they estimated regression model designed to explain the number of distinct of us treasury and federal agency debt held in a time series of cross section of large US commercial banks. They interpret the systematic pattern of diversification observed for large US commercial banks as evidence that bank

stockholder for a relatively uniform diversification clientele. For firm, marginal benefit from diversification take reductions in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weighted against the explicit and implicit marginal cost of diversification.

The Edward J. Kane and Stephen A. Buser draw following concluding remarks.

1. Even wealthy investors should be sensitive to administrative costs associated with selection, evaluation, managing and continually keeping track of a large number of securities.
2. Either homemade or firm produced diversification reduces the variances of shareholders portfolio return if homemade diversification bears in ordinary high levels of information risk, some benefit of firm produced diversification might not be reproduce able by individual investors acting on their own.
3. Investors with even modest resources, the stock of financial institutions should be relatively less attractive than the stock of that avoided extensive diversification costs by engaging in specialized activities.

Koehn and Anthony (1980) Study

" Regulations of Bank capital and portfolio risk" by Michael Khoen and Anthony M. Santomero in their study examined the portfolio allocation that flows from the portfolio decision of the firm and the effects on bank portfolio risk of a regulatory increase in the minimum capital assets ratio that is acceptable to the supervisory agency. The allocation across asset becomes the choice variable deriving the optimal mean rate of return per unit of the capital and the variance of that return. Therefore, the analysis will be developed in terms of risk and return per unit of capital with no loss in generality. According to them an explicit relationship between the risk of bank portfolio, the amount of bank capital held and the chance of bankruptcy must, therefore, be obtained to evaluate the result of bank capital regulation.

Shrestha (1993) Study

Sunity shrestha expressed her view on research; "Investment planning of commercial banks in Nepal" has remarkable efforts to examine the investment planning of commercial banks in Nepal. The study concludes that bank portfolio (loan and advances) of commercial banks has been influenced by the variable securities rates. This study is directly traced to fiscal policy of government and heavy regulatory procedure of the central bank (NRB). So, the investments are not made in professional manners. Investment planning and operation of commercial banks in Nepal has not been found satisfactory in terms of profitability. To overcome this problem the study has suggested, " commercial bank should take their investment function with the proper business attitude and should perform lending and investment operation efficiently with the proper and analyze of the project.

Bhatta (1995) Study

The study by Mr. Bhatta on the topic of "Assessment of performance of listed companies in Nepal" is based on 10 listed companies' data using five years data from 1990 to 1995. Among the different objectives, the one is to analyse the performance of listed companies in terms of risk and return i.e. expected rate of return and company specific risk, required rate of return and internal rate of return systematic risk and diversification of through portfolio context is related to this study.

This study has summarized the findings as," A highly significant positive correlation has been addressed between risk and return character of the company. Investors expect higher return from those stocks, which associates higher risk. Nepalese capital market is not efficient one. So the stock price does not contain all the information relating to market return and the company itself. Neither investor analyses the overall relevant information. So the market return and risk both may not represent reality. However the analyze based on the available information shows that high prices stocks has higher beta risk than other.

Investors in Nepal have not yet practiced to invest in portfolio of securities. An analysis of two securities portfolio shows that the risk can be totally minimized if the correlation is perfectly negative. In this situation, the risk can be totally diversified but when there is perfectly positive correlation between the returns of the two securities, the risk is undiversifiable. The analysis shows some correlation has negative and some has positive one. Negative correlation between securities returns is preferred for diversification of risk.

The study concluded that the analysis of risk and return shows many companies with higher unsystematic or specific risk. The study has realized the need of expert institution to provide consultancy services to the investors to maximize their wealth through rational investment decision. This study is mainly focused on companies and stock market rather than investors. However, this study has helped for the research of researcher topic.

Shrestha (1996) Study

Sunity shrestha conducted the study in the title "portfolio behavior of commercial banks in Nepal". In this research five commercial banks are taken under the study. Data are collected from the various sources from 1975 to 1990 A.D. The objective of the research was to evaluate the financial performance of the commercial banks, to analyze the investment pattern of commercial banks on securities and loans, to observe the relationship of bank portfolio variables with the national income and other fiscal variable. Among these objectives financial performance of the commercial banks and observe bank portfolio variables is some how related to this research. From the analysis of commercial banks the researcher has made the following of commercial banks:-

1. The general trend of commercial banks asset holding is growing.
2. Spread of foreign banks is relatively higher than that of Nepalese bank.
3. The relationship of banks portfolio variable is found to be best explained by log linear equations.

4. Borrowing of commercial banks from the central bank has been found to be positively affected by the cash reserve requirement, bank rates and treasury bill rate.

Breman and Henry (1997) Study

Breman and Henry conducted a study about international portfolio investment flows in Journal of finance. In this study they construct a portfolio between foreign as well as domestic market and find out that information than foreign investors are able to get quick information than foreign investors and take enough benefits by it. According to them they develop a model of international equity portfolio investment flow based on difference in international endowments between foreign and domestic investors. It is shown that when domestic investors process a cumulative information advantage over foreign investor's periods when the return on foreign assets is high and to sell when the return is low. The study assume that the higher turnover rate than on foreign domestic portfolio and to place testable restriction on the relation between international flow of portfolio investment between exchange risk and international flow of portfolio investment between exchange risk and international flow of portfolio investment between exchange risk and international ignored and analysis period is only single consumption period. The major empirical implication of the model is that purchase foreign equities will be positive a linear function of return on the domestic and foreign equity markets, and that the coefficient of return on the foreign market index will be positive, provided that foreign investors are less well informed about the pay off on there are local investors and provide that the information advantage of local the results of a gradual process of supervision information acquisition rather of periodic large information leakages to locals. The sign of the coefficient of the returns of the domestic market is indeterminate.

Shrestha (1998) Study

Shiba Raj Shrestha in his article "Portfolio management in commercial banks; theory and practice" revealed the portfolio management becomes very important both for individual

as well as institutional investors would like to select a best mix of investment assets subject to the following aspects:

1. Higher return which is comparable with alternative opportunities available according to the risk class of investors.
2. Good liquidity with adequate safety of investment.
3. Certain capital gains.
4. Maximum tax concessions.
5. Flexible investment.
6. Economic, efficient and effective investment mix.

In view of above aspects, Shrestha stated that the investors try to hold a well diversified portfolio that helps to achieve those benefits. Investors want to increase their return by making investment in different sectors with certainty.

However, Shrestha presented approaches to find out the risk of securities depending upon the attitude of investors towards risk, to develop alternative investment strategies for selecting a better portfolio, which will ensure a trade off between risk and return so as to attach the primary objectives of wealth maximization at lowest risk and finally to identify securities for investment to reduce volatility of return and risk.

Shrestha further stated that the commercial banks need competent manpower for continuous research and analysis and proper management information system to get success in portfolio management and customer's confidence. Regarding the portfolio management in Nepalese joint venture banks, he concludes that the portfolio management activities of Nepalese joint venture banks, the study concludes that the portfolio management activities of Nepalese commercial banks at present are in nascent stage. Due to less developed capital instrument in financial market. Lack of proper techniques to run portfolio management activities in the best and successful manner, etc have constrained the portfolio management of most of the joint venture banks.

Joshi (2001) study

Joshi has submitted a thesis "Investors problem in choice of optimum portfolio of stock in Nepal stock exchange". The main objectives of this study was to identify the investor's problems in study was to identify the investor's problems in choice of optimum portfolio of stocks in NEPSE which concluded that portfolio management is a new concept for Nepalese investor. Due to lack of sufficient information internal as well as external. The stock market of Nepal is also in growing stage only. The only one stock exchange location in kathmandu. Traditional cry system for trading stock exchange locate in stock limited number of security broker, lack of opportunity of investment and many other reasons are there, which is acting as barrier of development of NEPSE, due to lack of finance tools only three stock portfolio were constructed and analyzed, investor does not know in which stock to invest how to formulate the portfolio. Even many stock broker doesnot give the information to the investor. Investor are purchasing and selling their stocks mostly on the pressure of broker. Due to lack of sufficient information the decision it needs special knowledge as well as adequate skill to analyze portfolio.

Basnet (2002) Study

The study "Portfolio management of joint venture banks in Nepal" was undertaken by Jagadish Basnet in 2002. The study is somehow related to this research. Among various objectives, the relevant one related with this research was to identify the situation of portfolio management of joint venture banks in Nepal. Furthermore, another relaed specific objective was to evaluate the investment and advances portfolio of joint venture banks. Basnet choose NBBL, HBL, SCBNL and EBL as a sample. The study covered the eight years (F/Y 1994-2001) data in order to achieve the study objectives. The major findings of the study were:-

1. Among the four joint venture banks, NBBL is investing very high amount of its fund in government securities. The share and debenture stool second position in the investment portfolio.

2. The calculate value of beta co- efficient of the Standard and Chartered Bank Nepal limited was 0.37. The bank was less risky asset in the market.
3. HBL, NBBL and EBL all were defensive stocks.
4. The Everest Bank Limited was the highly risky asset in comparison of the other four banks. HBL has very normal risk than market.

The study concluded, "Standard and Chartered Bank Limited is the best and Everest Bank is the least performer among the four join venture banks".

Joshi (2002) Study

Roopak joshi undertook his thesis work entitled "Investors problems in choice of optimum portfolio of stocks in Nepal Stock Exchange" in july 2002.

The main objectives of the study was to find out and analysis the major problem of investor facing regarding the selection of most profitable stocks in NEPSE. Joshi used historical common stocks data in order to achieve the objectives. Joshi reiterated "Portfolio management is a new concept for Nepalese investors". Due to lack of sufficient information, proper investment is not possible. Proper investment needs huge information internal as well as external. The stock market of Nepal is also in growing stage only. The only one stock exchange located in kathmandu. Traditional cry system for trading stocks limited number of securities broker, lack of opportunity of investment and many reasons are there, which are acting as barrier of development of NEPSE.

Joshi further stated that Nepalese investors don't know in which stock to make the investment and how to construct a portfolio. Many brokers are not willing to provide information to the investors. Investors are trading the securities mostly under the pressure of brokers.

Bhatta (2003) Study

Dipesh bhatta undertook the study "Portfolio management of listed finance companies in Nepal". The study of Bhatta is a new concept in portfolio management of Nepalese companies.

Under the study, the main objectives was to study and analyze the existing situation of portfolio management of listed finance companies of Nepal. The study used secondary as well as primary data through opinion survey. The study period is 7 year from 1997 to 2002. The study used 20 percent samples and analyzed data in order to fulfill the set objectives.

After analyzing the secondary data, the study conduced, "Expected market return is lower in comparison to market risk, so market is highly risky place to invest". Moreover, the study found all the listed six finance companies stock are under priced. So investors need to buy these stocks. In most of cases, portfolio management of listed finance companies in Nepal is not systematically organized. The process of determining the division of a corporate investor's portfolio among available classes is heavily based on experience. To reduce portfolio risk, most industries techniques. The major objectives of portfolio management are to minimize the risk. Generally, 2.5 years time horizon is appropriate for portfolio in most cases. In Nepalese stock market; it is found that passive portfolio strategy is more suitable than active strategy to achieve the better results. Majority of the corporate investors depends on the fundamental analysis than technical analysis for portfolio securities. Corporate investors revise their portfolio time to time using their experience.

Khania (2003) Study

Khania has studies on "Investment Portfolio Analysis of Joint Venture Banks ". The study is based on five joint venture banks and they are NABIL, SCBNL, HBL, NBBL and EBL. The general study of the present study is to identify the current situation of investment portfolio of Joint venture banks in Nepal. The objectives are to analyze the risk and return ratio of commercial banks, to evaluate the financial performance of joint

venture banks and portfolio structure of Nabil bank for investment between loan investments. Investments in real fixed assets and investment in financial assets. The major finding of the analysis is Nabil is investing the highest amount of funds on NRB bond as compare to other joint venture banks i.e. 3 percent. Beta coefficient of HBL is lowest among all the banks so the systematic risk of HBL is low. The coefficient of correlation between the loans and advances in private sector and portfolio return of joint venture banks come out to be $r_{xy} = -0.6$ therefore it indicates that there is negatives correlation between loans and advances in private sector and portfolio return of five joining venture banks in Nepal.

Peter (2003) Study

Peter Crab's study is based on systematic risk with capital assets pricing model (CAPM). The CAPM states that the expected return on asset is the sum of the return on risk free asset and the return commensurate with the assets market risk. There are many assumptions underlying the CAPM which are beyond this study but the basic premise is that investor hold diversified portfolios of all market securities and the return on a given investment is determined by the risk free rate and the assets co-variance with the market portfolio.

This study found the greater the beta, the more sensitive are the returns on the stock to changes in the returns on the market as a whole.

Chhetry (2003) Study

Chhetry has submitted a thesis " A study of application of portfolio theory in financial institutions of Nepal " for the fulfillment of master's degree. The study is based on the secondary data analysis. Necessary data was taken from the NEPSE (1995- 1999). Chhetry has made this research with the fifteen financial institutions.

The main objectives of Chhetry's research work were shown below:-

1. To examine the application of portfolio theory in financial institution of Nepal.
2. To examine whether the risk can be diversified by investing in portfolio of assets.
3. To examine the differentiation of riskness inherent in any single asset held in portfolio from the riskness of that held in isolation.

The study used statically as well as ratio analysis to analysis the data in this research work to fulfill this study's objectives. The study pointed out various findings based on the analysis of data and information. There are some major findings are given below:-

1. The portfolio risks of fifteen financial institutions were diversified.
2. The portfolio of risk of fifteen financial institutions was less than the average risk of the fifteen financial institutions
3. The relationship between the risk and return was negative for insurance and finance company where as Banking industry shows the positive relationship between the risk and return.

Mustafa (2003) Study

Mustafa has conducted a research about "Portfolio Management of listed joint venture banks in Nepal ". The study period is of 7 year from the 1994/95 to 2000/01. This study used the secondary data analysis with four joint venture banks. The main objectives of Mustafa's are given below:-

1. To examine the riskness of Nepalese joint venture banks.
2. To analysis the risk return ratio of commercial banks.
3. To evaluate the financial performance of joint venture banks.

This study used the statistical tools to analysis the data in this research work to fulfill the above objectives. This study found various finding based on the analysis of data. There are few major findings which are given below:-

1. The mean investment of joint ratios of Everest Bank Limited is higher among the other banks.
2. Everest Bank Limited is the highest risky among the four joint venture banks.
3. Standard Chartered Bank Nepal Limited is the best among the sample banks.

Shrestha (2004) Study

Hari pal lal shrestha has studies on "Optimal portfolio investment in Nepal ". The main theme of this study is to analyze rationalities of portfolio theory in context of Nepalese Security Market. Always investor tries best to make sure return is not cent percent sure or investment will not ruin. The study mainly focused on the specific sector of market currently listing in NEPSE for last 6 years and this study mainly based on the different categories. This study is based on secondary data as well as primary data of 6 years collected by small survey of 25 investors main objectives of this study are to find out and analyze the major problem of investor regarding the selection of optimal portfolio, by developing the understanding for the portfolio investment. This study tries to analyze the risk and return market sensitivity, composition of risk and pricing status of securities, and to suggest the measure for the improvement of investment rationalities. The investor should be aware of risk and return. This research helps the investors to find out the degree of risk associated with the stock systematic and unsystematic risk estimation of stock.

Shrestha (2004) Study

"Portfolio management of commercial banks in Nepal" by Anurodha shrestha meets the stated objectives of the study descriptive cumulative analytical research design has been adopted. According to him all the historical closing stock prices of banks, percentage of cash and stock divided, and NEPSE index for the seven years (1997 to 2003) including the market capitalization of the banks for 2003 are enumerated. The objectives of the research were to evaluate common stock and beta for analysis of systematic risk with common stock prices and identify the range for true beta true alpha of listed commercial

bank under present study in terms of risk and return. The study findings are presented under different sub headings such as investment, risk and return analysis optimal portfolios etc. The study summarized that the investment in single assets is extremely volatile. Construction of portfolio can be diversifying such volatility to some extent. Using the tools developed by Sharpe, Treynor and Jensen, stocks of the banks in terms of risk and return associated to the stocks have been evaluated in this study. Researcher found that majority of the risk adverse investors find minimum variance portfolio yielding optimal satisfaction. Single index model of shape has however; identified only three stocks are applicable for the construction of the optimal portfolio using. The model, stocks of SBI, HBL and SCBL with respective weights of 3, 68 and 29 percent respectively are required for constructions of the optimal portfolio and the return derived from the same is 58.98 percent with standard deviation of the returns of 61.65 percent.

Acharya (2007) Study

Kalpana Acharya has studies on "Portfolio Management in Financial Institutions of Nepal". The study period is from 1999/2000 to 2000/2004. The study is based on the secondary data. This study uses the sample of various selected commercial banks, financial companies and insurance companies. The objectives of this research work have been briefly given below:-

1. To examine the risk and return of Nepalese Financial Institutions.
2. To evaluate the financial performance in terms of portfolio risk and return of Nepalese financial Institutions.
3. To examine the risk can be diversified by investing portfolio.

The study used the various statistical tools for the analysis of the data in the research work for achieving its objectives. The study found various finding based on the analysis of data. Some of the major findings of this research work have been given below:-

1. Annapurna Finance Company has better financial performance on the basis of the return of assets.

2. Ace Finance Company has highest return with highest risk on the basis of the return on equity.
3. on the basis of return on equity, as the number of securities increased the standard deviation or risk decreased.

Concluding Remarks

The overall theme of the review of literature has been concluded in given paragraph. A major purpose of investment is to get a return or income on the fund invested. Each asset expected return, risk along with the expected return, risk along with expected return, and risk for other assets and their interrelationship, are important inputs in portfolio selection. In order to construct efficient portfolios the investor must be able to quantity the portfolio's expected return and risk. In Nepalese context, many Nepalese private investors placed their wealth in a single investment. It is because of proper awareness about the portfolio. The main objective of portfolio analysis is to develop a portfolio that has the maximum return at specified degree of risk. Diversification is the one important means that control portfolio risk. Therefore analyzing risk and control return on portfolio and diversification context is necessary.

Harry M. Markowitz (1952) found that the investor wants to take higher expected return with lower risk by diversification. William F. Sharpe (1964) found there is positive relation between asset systematic risk and their expected rate of return. William F. Sharpe (1966) index of portfolio performance measures the risk premium per unit of systematic risk. Michael C. Jensen's (1969) study found higher the realized rate of return then required rate return better portfolio performance measure. Wagner and Lau's (1971) study found diversification can reduce the unsystematic risk. According to Bawa, Vijaya S. , Edwin J. Elton and Martin J. Gruber (1979) realized returns are a very poor measures of expected return and that information surprises highly influence a number of factors in asset pricing model. Edward J. Kane and Stephen A. Buser's (1979) study includes diversification reduces the variance of shareholders portfolio return. Michael Koehn and

M. Santomero Anthony (1980) found the relationship between the risk of bank portfolio, the amount of bank capital held and the chance of bankruptcy must, therefore, be obtained to evaluate the result of bank capital regulation. According to Sunity Shrestha (1993) Investment planning and operation of commercial banks of Nepal has not found satisfactory in terms of profitability. Gopal bhatta (1995) found some correlation negative and some has positive one. Negative correlation between securities returns in preferred for diversification of risk. Sunity shrestha's (1996) study found spread of Nepalese bank. Breman and Henary's (1997) found domestic investors take enough benefit by portfolio then foreign investors. Shiba raj shrestha's (1998) study suggests portfolio management is the best alternative in investing joint venture banks. J.B. Sapkota's (1999) study found finance and insurance sector has highest expected return. Pratima Pandey's (2000) study concludes that among all securities common stock is known to be the most risky security. Dipesh Joshi's (2001) study concludes due to lack of opportunity no. of broker, and many other reason are barrier in selecting optimal portfolio. Narayan Prasad Poudel (2002) found most of the shares fall under the category of defensive stocks, except the shares of Bank of Kathmandu Limited and it appears that none of the shares are correctly priced. Jagdish Basnet's (2002) study suggest SCBL is the best and EBL is least performer among sample Joint Venture Banks. Rupak Joshi's (2002) study indexes of many brokers are barrier of Nepalese investors because they are not willing to provide information to them. Dipesh Bhatta (2003) study found corporate investors depends on fundamental analysis then technical analysis for portfolio securities selection. Kalpana Khania's (2003) study concludes there is negative correlation between portfolio return of five joint venture banks in Nepal. Peter R. Crabb's (2003) study found there is positive relationship between beta and return on stock. Keshab Chetry's (2003) study found portfolio risk of fifteen financial institutions diversified. Shekh Gulab Mustafa's (2003) study found EBL has higher return with higher risk among four sample banks. Neelam Thapa's (2003) study indexes of due to higher expected return investor are attracted towards the common stock. Tejendra Prasad Poudel's (2004) study concludes that the commercial banking and finance sector has maximum portfolio expected rate of return than other sectors. Ramu Panthi's (2004) study found the stock has high return with respect to the amount of the systematic risk. Navaraj Acharya's (2004) study suggests banking sector has highest

expected rate of return than other sector. Anurodh shrestha's (2004) study index of construction can diversify the risk. Haripati Lal Shrestha's (2004) study concludes that the measure problem of investor in Nepal is awareness of portfolio risk, return. Rama Gyawali's (2005) study found SCBL, and HBL are regular dividend payer.

There are various researchers already conducted on portfolio management, which shows the risk, and return analysis of commercial banks as well as other financial sector identified by the review of literature has justified the need of the study. Many changes have taken place in Nepal and outside the country after completion of previous studies. Considering the above mentioned studies in the context of Nepal, it has now become necessary to find out whether their findings are still valid or not. Thus, the study “Portfolio Management in Commercial Banks of Nepal has been taken for the study.”

CHAPTER-3

RESEARCH METHODOLOGY

Research methodology is formal, systematic and intensive process of carrying on a scientific analysis. It is a method of solving the scientific problem which consists of problem identification, hypothesis formulation, observation, analysis and conclusion. Methodology is the research method used to examine the objectives. Research methodology is a way to systematically solve the research problem. It describes the method, process, tool and techniques which are used in data analysis and preparation of the report. It is the careful investigation especially through the search for new fact in any branch for knowledge the appropriate research methodology. Following methodology has been used to achieve the objectives of the study.

3.1 Research Design

By research design we mean an overall framework or plan for the activities to be undertaken during the course of a research study. It is like the blue print or plan of study. The study research design serves us a framework for the study, guiding the collection and analysis of the data, the research instruments to be utilized and the sampling plan to be followed. Specially speaking, research design describes the general plan for collecting, analyzing and evaluating data after identifying:

- What the researcher wants to know?
- What has to be dealt with in order to obtain the required information?

The research design is an organized approach and not a collection of loose, unrelated parts. It is conceptual framework or structure within which the whole research is to be carried out. It is integrated system that guides the researcher in formulating, implementing and controlling the study. In short, Research design is the arrangement of collections for collection and analysis of data. Useful research design can produce the answers to the proposed research questions. The research design is thus an integrated frame that guides the researcher in planning and executing the research works.

3.2 Population and Sample

Sample is the selection of number of individuals for a study in such a way that the individuals represent the larger group from which they are selected. Population is the group of interest to the researcher. The good sample is determined by the generalizability of the result of the research. At present there are 28 commercial banks in Nepal. Out of them only 6 commercial bank will be taken as sample. These samples are related upto 6years transaction period from 2003A.D to 2008A.D.

The sample organizations are as follows:-

- Himalayan Bank Limited
- Laxmi Bank Limited
- Nepal Investment Bank Limited
- Agriculture Development Bank Limited
- Standard Chartered Bank Limited
- Siddhartha Bank Limited

3.3 Sources of Data

The study will be mainly based on the secondary data. The secondary data will be gathered merely from the review of documents, both published and unpublished data.

The sources of data collection will be as follows:-

- Annual report of selected commercial banks.
- Final account of the selected banks.
- Website of Nepal Rastra Bank.
- Other various sources of collecting of data like:- booklets, journals, various books, research studies, articles.

Thus, the study will be based on the secondary data to fulfill the above mentioned objectives which will cover the six years of period from FY2004/05 to 2009/10.

3.4 Method of Analysis

In this course of analysis, collected data are analyzed by using different financial and statistical techniques. As per the topic requirement in this study, the collected data will be analyzed by using the various financial as well as statistical tools which are given below:-

3.4.1 Ratio Analysis

Financial ratios are the basic tools of financial analysis. The operational and financial problems of an organization can be ascertained by examining the behavior of these ratios. These financial ratios help us to find the symptoms of problems.

a) Liquidity Measurement Ratio:

Liquidity ratios measure a corporation's ability to meet its maturing short-term obligations. The short-term creditors are concerned with the corporation's ability to meet its current obligations and they are therefore interested mainly in liquidity ratios. The greater the coverage of liquid assets to current liabilities the better as it is a clear signal that a company can pay its debts that are coming due in the near future and still fund its ongoing operations. On the other hand, a company with a low coverage rate should raise a red flag for investors, as it may be a sign that the company may have difficulty in meeting its running operations, as well as meeting its obligations. The more liquidity tends to be higher possibility of misuse.

On the other hand, too little liquidity may lead to severe cash problems which can result in inability to pay debts in time.

➤ Current Ratio

Current ratio is a popular financial ratio used to test a company's liquidity by deriving the proportion of current assets available to cover current liabilities. The ratio is used to ascertain whether a company's short term assets are readily available to pay off its current liabilities. It is the most widely used measures of liquidity position of an enterprise. A good current ratio may mean a good umbrella for creditors against the rainy day, but to the management it reflects bad financial planning or presence of idle assets or over capitalization. Higher the current ratio, the better is the liquidity position. It can be calculated as follows:-

$$\text{Current Ratio} = \frac{\text{CurrentAssets}}{\text{CurrentLiabilities}}$$

➤ Quick Ratio

Quick ratio or Acid-test ratio is a liquidity indicator that further refines the current ratios by measuring the amount of the most-liquid current assets. It is more conservative than the current ratio because it excludes inventory and prepaid expenses, which are more difficult to turn into cash. The basic assumption of quick ratio is that inventory is generally the less-liquid current assets, should therefore, be ignored. By excluding inventory, the quick ratio focuses on the more liquid assets of a company. The basics and use of this ratio are similar to the current ratio in that it gives users an idea of the ability of a company to meet its short-term liabilities with its short-term assets. It can be calculated as follows:-

$$\text{Quick ratio} = \frac{\text{Cash \& Equivalent} + \text{short - term Investment} + \text{Accounts Receivable}}{\text{Current Liabilities}}$$

b) Profitability Indicator Ratios:

Profitability ratio measures the corporate profitability and financial performance. These ratios, much like the operational performance ratios, give users a good understanding of how well the company utilized its resources in generating the profit and the shareholder value. The long-term profitability of a company is vital for both the survivability of the company as well as the benefit by the shareholders. These ratios can give insight into the all-important “profit”.

➤ Return on Assets

This ratio indicates how profitable a company is relative to its total assets. Return on assets ratio shows how well management is employing the company’s total assets to make a profit. The need for investment in current and non-current assets varies greatly among the companies. Capital-intensive businesses are going to be more asset heavy than the technology or service businesses. In the case of capital-intensive businesses, which

have to carry a relatively large asset base, will calculate their ROA based on a large number in the denominator of this ratio. Conversely, non-capital-intensive businesses will be generally favored with a relatively high ROA because of a low denominator number. Higher is the return, the more efficient management is in utilizing its assets. It can be calculated as follows:-

$$\text{Return on Assets} = \frac{\text{NetIncome}}{\text{AverageTotalAssets}}$$

➤ **Return on Equity**

Return on equity indicates how profitable a company is by comparing its net income to its average shareholders' equity. The return on equity ratio measures how much the shareholders earned for their investment in the company. Higher the ratio percentage, the more efficient management is in utilizing its equity base and the better relation is to investors. The ROE ratio is an important measure of a company's earnings performance. It tells common shareholders how effectively their money is being employed.

Investors need to be aware that a disproportionate amount of debt in a company's capital structure would translate into a smaller equity base. Thus, a small amount of net income (the numerator) could still produce a high ROE off a modest equity base (the denominator). A high, or low, ROE needs to be interpreted in the context of a company's debt-equity relationship. It can be calculated as follows:-

$$\text{Return on Equity} = \frac{\text{NetIncome}}{\text{AverageShareholders' Equity}}$$

3.4.2 Statistical Tools

The various statistical tools used in this study are given below:-

a) Arithmetic Mean

The most popular and widely used measure of central tendency is the arithmetic mean. It is also called simply "the mean". Arithmetic mean is the sum of all the observations divided by the number of observations. In such cases all the items are equally important. It can be calculated as follows:-

$$\text{Arithmetic mean } \bar{X} = \frac{X_1 + X_2 + X_3 + \dots \dots \dots X_n}{N}$$

$$\bar{X} = \frac{\sum X}{N}$$

Where,

\bar{X} = Arithmetic mean

$\sum X$ = the sum of observations

n = no. of observations

b) Standard Deviation

Standard deviation is the most common statistical indicator of an asset risk; it measures the dispersion around the expected value. It is the square root of the sum of the square differences between each return and arithmetic mean, divided by total number of period. It can be calculated as follows:-

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

c) Coefficient of Variation

Coefficient of variation is defined as the standard deviation divided by the mean of expected return. It is used to standardize the risk per unit of return i.e. measure the risk per rupee. The coefficient of variation should be used to compare investments when both the standard deviations and the expected values differ. The higher the coefficient of variation the higher the risk. It can be calculated as follows:-

$$\text{Coefficient of variation (C.V.)} = \frac{\dagger}{\bar{X}}$$

Where,

\dagger = standard deviation of rate

\bar{X} = mean rate of return

Bar diagram

There are various types of diagrams. Bar diagrams are dimensional diagrams that represent the data by means of bars or rectangles of equal width. The length of the bar represents the given figures and the width may be of any size.

a) Simple bar diagram

It is the most popular and simplest bar diagram. It consists of bars or rectangles of equal width. The lengths of the bar represent the different values of a variable. The bars may be vertical or horizontal. Generally, vertical bars are used because they are more attractive and easy to compare.

b) Multiple bar diagram

Multiple bar diagram is used to present two or more sets of related data. The method for drawing them are similar to that of a simple bar diagram. The different bars of each set are placed together and different colors or shades are used to distinguish bars of one type from the other.

3.5 Limitation of study

Every research work has its own limitation. The study has been conducted facing the various limitation and constraints which are given below:-

- a) This research is based on the secondary data like:- articles, publication and website of the related organization. Hence, the reality of the study depends on the secondary sources of data.
- b) The study covers the relevant data and information of only the last 6 years from FY 2004/05 to 2009/10.
- c) Time and budget limitation.
- d) The study covers only the market portfolio while doing investment decision.
- e) Among the listed commercial banks only 6 are selected for the analysis. They are Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

CHAPTER-4

PRESENTATION AND ANALYSIS OF DATA

The main objective of the study is to analysis the portfolio management in commercial banks of Nepal. To fulfill this objectives the course of research methodology has been attempted to follow which is explained in the forth chapter.

In this chapter, the collected data are analyzed and interpreted as the stated methodology in the different aspects of various selected banks. The data has been collected from various sources. The study analyzes the descriptive as well as analytical. The first part deals with the financial performance of Nepalese Commercial Banks that shows mean, standard deviation and coefficient of variation under current ratio, quick ratio, return on assets and return on equity. The second part deals with the portfolio analysis which presents the portfolio risk and return as well as correlation between the firms on the basis of Current ratio, Quick ratio, Return on assets and Return on equity. And the third part deals with the diversification of risk which shows risk can be reduced through the diversification.

4.1 Financial Performance of Nepalese Commercial Banks

This part presents the ratio analysis. Financial ratios are the basic tools of financial analysis. The operational and financial problems of an organization can be ascertained by examining the behavior of these ratios. These financial ratios help to find the symptoms of problems. Ratio analysis is a powerful financial tool for the financial analysis of an institution. It expresses the financial strength in firm's ratio. Different parties use different ratios depending upon the the purpose in view. It is the process of establishing the significant relationship between the items of financial statement to performance and financial position of firm. In this chapter only mean, standard deviation and coefficient of variation were calculated under various stated financial tools and analyzes the financial performance of Nepalese Commercial Banks.

a) Current Ratio

The ratio is determined by dividing the current assets by current liabilities. Current ratio is popular financial ratio used to test a company's liquidity by deriving the proportion of current assets available to cover current liabilities. It ascertain whether a company's short term assets are readily available to pay off its current liabilities. The higher the current ratio, the better is the liquidity position.

This part shows the risk and return analysis of various stated commercial banks with respect to current ratio. The return is measured by arithmetic mean (\bar{x}), standard deviation (\dagger) is measured for total risk and coefficient of variation is calculated for risk per unit which are presented under this topic.

The table 4.1 below shows the risk and return on the basis of current ratio under the commercial banks like Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.1
Risk and Return on the basis of Current ratio (%) under Commercial banks

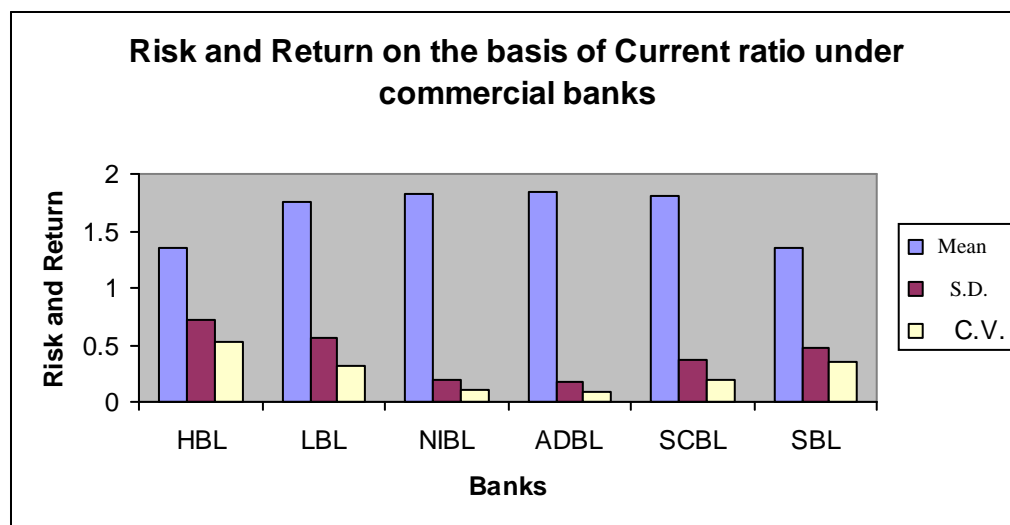
Year	HBL	LBL	NIBL	ADBL	SCBL	SBL
2004/05	2.5	0.7	2	1.9	1	0.91
2005/06	1.5	1.8	1.5	1.6	2	0.99
2006/07	2	2.5	2	1.8	2.1	0.81
2007/08	1	2	1.7	1.7	2	1.5
2008/09	0.51	2	1.8	2	1.9	1.9
2009/10	0.61	1.5	2	2.1	1.9	2
\bar{X}	1.35	1.75	1.83	1.85	1.81	1.35
\dagger	0.72	0.56	0.19	0.17	0.37	0.48
C.V.	0.53	0.32	0.10	0.09	0.19	0.35

The above table 4.1 shows that there is inverse relationship between their mean return and coefficient of variation of HBL and ADBL. The mean return of ADBL is 1.85 percent which is the highest return then others while coefficient of variation and standard deviation is 0.09 and 0.17 percent respectively which are lower than others. This shows that the ADBL has better financial performance on the basis of current ratio. The HBL has the mean return of 1.35 percent which is below others where the coefficient of variation and standard deviation of HBL is 0.53 and 0.72 percent respectively which are higher than others. So, HBL has lower financial performance. The mean return of LBL, NIBL, SCBL and SBL are 1.75, 1.83, 1.9 and 1.35 percent respectively. The standard deviation of LBL, NIBL, SCBL and SBL are 0.56, 0.19, 0.19 and 0.48 percent respectively. The coefficient of variation of LBL, NIBL, SCBL and SBL are 0.32, 0.10, 0.1 and 0.35 respectively. These shows the proportion of lower the return lower the risk and higher the return higher the risk is justified.

Risk and Return on the basis of current ratio under different selected commercial bank like Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited are presented in figure 4.1

Figure 4.1

Risk and Return on the basis of Current ratio under commercial banks



The figure 4.1 clears that the mean return of HBL is 1.35 percent which is below than others where coefficient of variation and standard deviation of HBL is 0.53 and 0.72 percent both are higher than others. This represent that HBL has lower financial performance on the basis of current ratio. The ADBL has the highest mean return of 1.85 percent which is the highest return than others. The coefficient of variation and standard deviation of ADBL is 0.09 and 0.17 respectively which is lower than others. Hence, ADBL has better financial performance on the basis of current ratio among selected banks. This shows that there is inverse relationship between their mean return and coefficient of variation of HBL and ADBL. The mean return of LBL, NIBL, SCBL and SBL are 1.75, 1.83, 1.81 and 1.35 respectively. The standard deviation of LBL, NIBL, SCBL and SBL are 0.56, 0.19, 0.37 and 0.48 respectively. So, the figure 4.1 shows higher the risk higher the return and lower the risks lower the return.

b) Quick ratio

Quick ratio is calculated by dividing the quick assets by current liabilities. It is a liquidity indicator that further refines the assets ratio by measuring the amount of the most liquid current assets. The quick ratio is more conservative than the current ratio because it excludes inventory and prepaid expenses which are more difficult to turn into cash. By excluding inventory, the quick ratio focuses on the more liquid assets of the company. The basics and use of this ratio are similar to the current ratio in that it gives user an idea of the ability of the company to meet its short term liabilities with its short term assets. A quick ratio of 1:1 is generally considered an acceptable standard.

The table 4.2 shows the risk and return on the basis of quick ratio under the selected commercial banks such as:- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.2**Risk and Return on the basis of Quick ratio (%) under Commercial banks**

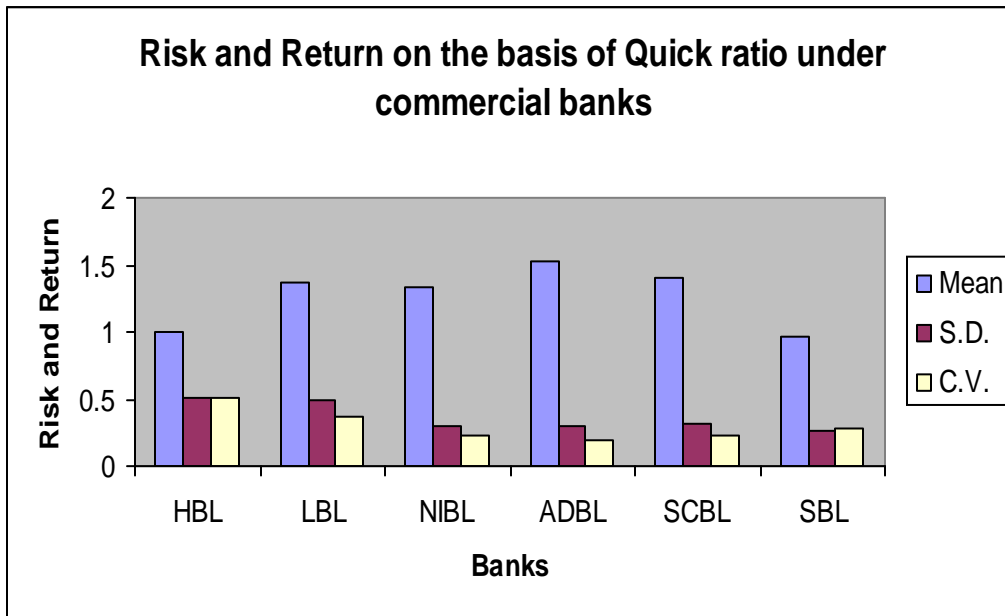
Year	HBL	LBL	NIBL	ADBL	SCBL	SBL
2004/05	2	0.5	1.8	1.5	1	0.80
2005/06	1	1.1	1.2	1.2	1.8	0.75
2006/07	1.1	2	1	1.5	1.7	0.70
2007/08	0.9	1.8	1	1.2	1.5	1
2008/09	0.43	1.5	1.5	1.8	1.4	1.5
2009/10	0.59	1.3	1.5	2	1	1
\bar{X}	1	1.37	1.33	1.53	1.4	0.96
†	0.51	0.49	0.29	0.29	0.31	0.27
C.V.	0.51	0.36	0.22	0.19	0.22	0.28

The table 4.2 shows the inverse relationship between the mean return and coefficient of variation of HBL and ADBL. The ADBL has the highest mean return i.e. 1.53 percent while coefficient of variation and standard deviation is 0.19 and 0.29 percent respectively which are lower than others. From this we see that ADBL has better financial performance on the basis of quick ratio. The HBL has the mean return of 1 percent which is lower than the other where coefficient of variation and standard deviation of HBL is 0.51 and 0.51 percent respectively which are higher than others. So, HBL has lower financial performance. The mean return of LBL, NIBL, SCBL and SBL are 1.37, 1.33, 1.4 and 0.96 respectively. The coefficient of variation of LBL, NIBL, SCBL and SBL are 0.36, 0.22, 0.22 and 0.28 percent respectively. The above table shows that the lower the return lower the risk and higher the return higher the risk.

Risk and Return on the basis of quick ratio under various selected commercial banks are like Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited are presented in figure 4.2

Figure 4.2

Risk and Return on the basis of Quick ratio under commercial banks



The figure 4.2 clears that the mean return of HBL is 1 percent that is below than others where coefficient of variation and standard deviation of HBL is 0.51 and 0.51 percent both are higher than others. Hence, this shows that the HBL has lower financial performance on the basis of quick ratio. The ADBL has the highest mean return of 1.53 percent which is highest return as compared to others. The coefficient of variation and standard deviation of ADBL is 0.19 and 0.29 respectively which is lower than other. Hence, ADBL has better financial performance on the basis of quick ratio among selected commercial banks. It shows the inverse relationship between the mean return and coefficient of variation of HBL and ADBL. The mean return of LBL, NIBL, SCBL and SBL are 1.37, 1.33, 1.4 and 0.96 percent respectively. The coefficient of variation of LBL, NIBL, SCBL and SBL are 0.36, 0.22, 0.22 and 0.28 percent respectively. The figure 4.2 shows higher the risk higher the return and lower the risk lower the return.

c) Return on Assets Ratio

The ratio is determined by dividing net profit after tax by total asset. The ratio measured the profitability with respect to the total assets invested in commercial banks. The higher ratio usually indicates efficiency in utilizing its overall resources and vice versa. This part shows risk and return analysis of selected banks with respect to return on assets.

The table 4.3 below shows the risk and return on the basis of return on asset under commercial banks like :- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.3

Risk and Return on the basis of Return of asset (%) under Commercial banks

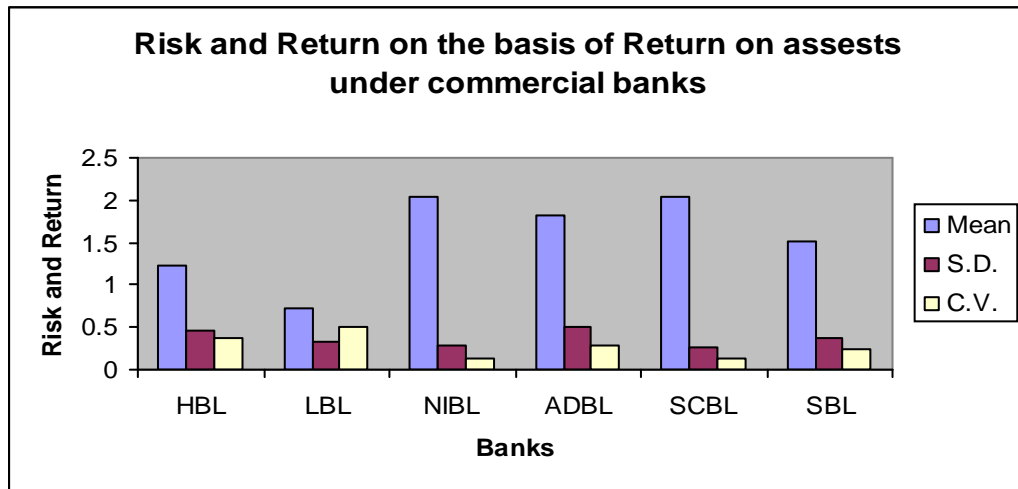
Year	HBL	LBL	NIBL	ADBL	SCBL	SBL
2004/05	1.25	0.98	2.14	1.05	2.33	1.99
2005/06	2	0.17	1.54	1.25	2.15	1.75
2006/07	1.05	0.58	2	2	1.99	1.05
2007/08	0.5	0.64	2.5	1.9	1.50	1.15
2008/09	1.50	1.25	2.1	2.5	2	1.89
2009/10	1.08	0.72	1.9	2.23	2.28	1.30
\bar{X}	1.23	0.72	2.03	1.82	2.04	1.52
†	0.46	0.33	0.29	0.51	0.27	0.37
C.V.	0.37	0.50	0.14	0.28	0.13	0.24

The above table 4.3 shows that there is inverse relationship between the mean return and coefficient of variation of LBL and SCBL. The mean return of SCBL is 2.04 percent which is the highest return than others while coefficient of variation and standard deviation is 0.13 and 0.27 percent respectively which are lower than others. This shows that SCBL has better financial performance on the basis of return on asset ratio. The LBL has the mean return of 0.72 percent which is below than others where coefficient of

variation is 0.50 percent which is highest than others. So, LBL has lower financial performance. The mean return of HBL, NIBL, ADBL and SBL are 1.23, 2.03, 1.82 and 1.52 percent respectively. The standard deviation of HBL, NIBL, ADBL and SBL are 0.46, 0.29, 0.51 and 0.37 percent respectively. The coefficient of variation of HBL, NIBL, ADBL and SBL are 0.37, 0.14, 0.28 and 0.24 percent respectively. This shows the proportion of lower the return lower the risk and higher the return higher the risk is justified.

Risk and Return on the basis of return on assets under the various selected commercial banks like Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited are presented in figure 4.3

Figure 4.3
Risk and Return on the basis of Return on assets under commercial banks



The figure 4.3 clears that the mean return of LBL is 0.72 percent which is below than others where coefficient of variation is 0.50 percent which is higher than others. This represent that LBL has lower financial performance on the basis of return of assets. The SCBL has the highest mean return of 2.04 percent which is the highest return than other banks. The coefficient of variation and standard deviation of SCBL is 0.13 and 0.27

respectively which is lower than other. Hence, SCBL has better financial performance on the basis of return on assets among selected commercial banks. This shows that there is inverse relationship between their mean return and coefficient of variation of LBL and SCBL. The mean return return of HBL, NIBL, ADBL and SBL are 1.23, 2.03, 1.82 and 1.52 respectively. The standard deviation of HBL, NIBL, ADBL and SBL are 0.46, 0.29, 0.51 and 0.37 respectively.

d) Return on Equity Ratio

The ratio is calculated by dividing net profit available to shareholders equity. It measures how much the shareholders earned for their investment in the company. The higher the ratio percentage, the more efficient management is in utilizing its equity base and the better return is to investors. Return on equity is an important measure of a company's earnings performance. It tells the common shareholders how effectively their money is being employed. For the comparison, Peer company, industry and overall market comparisons are appropriate.

Risk and return on the basis of return on equity of commercial banks such as Himalayan Bank Limited, laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited are presented in table 4.4

Table 4.4**Risk and Return on the basis of Return On Equity (%) of commercial banks**

Year	HBL	LBL	NIBL	ADBL	SCBL	SBL
2004/05	37.9	22.26	33.44	38.68	17.71	16.32
2005/06	38.95	5.24	27.41	38.74	12.02	15
2006/07	27.38	7.29	23.69	38.79	10.91	14.12
2007/08	19.95	8.55	31.67	37.03	18.30	19.68
2008/09	19.87	9.71	30.73	35.95	20.94	25.12
2009/10	20	15	32.14	36.12	19.02	23.29
\bar{X}	27.34	11.34	29.85	37.55	16.48	18.92
†	8.27	5.75	3.32	1.23	3.7	4.15
C.V	0.3	0.51	0.11	0.03	0.22	0.22

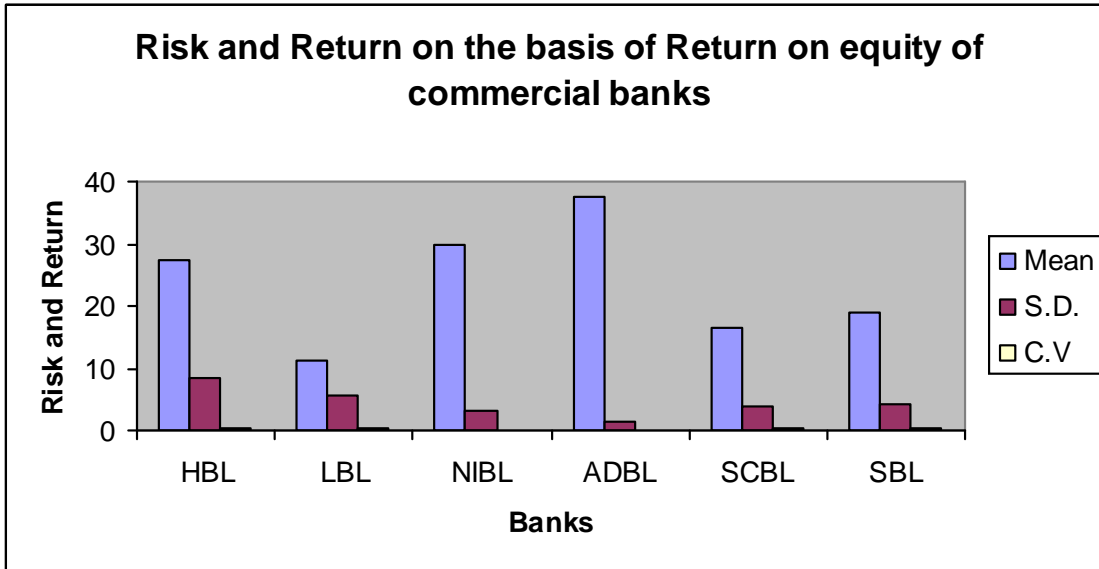
From the above table 4.4, it has been seen that the ADBL has better financial performance because it has the highest mean return of 37.55 percentage with the lowest standard deviation and coefficient of variation of 1.23 and 0.03 percentage respectively. While LBL has the lowest mean of 11.34 percentage with the highest standard deviation and coefficient of variation of 5.75 and 0.51 percent respectively. That presents the ADBL and LBL has inverse relationship between mean return and coefficient of variation. Likewise, the mean return of HBL, NIBL, SCBL and SBL are 27.34, 29.85, 16.48 and 18.92 respectively. The standard deviation of HBL, NIBL, SCBL and SBL are 8.27, 3.32, 3.7 and 4.15 percentages respectively. The coefficient of variation of HBL, NIBL, SCBL and SBL are 0.3, 0.11, 0.22 and 0.22 respectively. Among these banks, NIBL has the better financial performance because it has the mean return with the low coefficient of variation in comparison to others banks.

Figure 4.4 shows the risk and return on the basis of Return on Equity of selected commercial banks, they are Himalayan Bank Limited, Laxmi Bank Limited, Nepal

Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Figure 4.4

Risk and Return on the basis of Return on equity of commercial basis



According to the figure 4.4, ADBL has the highest mean return of 37.55 percentages with the lowest standard deviation and the coefficient of variation 1.23 and 0.03 respectively. While LBL has the highest coefficient of variation of 0.51 percentages with the lowest mean return of 11.34 percentages. This shows that LBL has the lower financial performance and ADBL has the better financial performance which reveals that LBL and ADBL have inverse relationship between mean return and coefficient of variation. The mean return of HBL, NIBL, SCBL and SBL are 27.34, 29.85, 16.48 and 18.92 respectively. The coefficient of variation of HBL, NIBL, SCBL and SBL are 0.3, 0.11, 0.22 and 0.22 respectively.

4.2 Portfolio Analysis

Portfolio analysis includes the portfolio risk comparison with weighted average risk and portfolio return. It also includes correlation between the firms. In this topic correlation, respective weight portfolio standard deviation and portfolio mean return on the basis of current ratio, quick ratio, return on assets and return on equity are calculated under the different commercial banks chooses for the study.

a) Portfolio Risk and Return on the basis of Current Ratio

The given table 4.5 represents the portfolio risk and return on the basis of current ratio under the sample commercial banks.

Table 4.5

Portfolio Risk and Return on the basis of Current Ratio under commercial banks

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.34	41,59	1.55	1.59	0.64	0.36
HBL and NIBL	0.24	0.5,99.5	1.59	1.83	0.46	0.19
HBL and ADBL	-0.37	12,88	1.6	1.79	0.44	0.14
HBL and SCBL	-0.58	30,70	1.58	1.67	0.54	0.22
HBL and SBL	-0.92	40,60	1.35	1.35	0.60	0.12
LBL and NIBL	-0.23	15,85	1.79	1.82	0.37	0.16
LBL and ADBL	-0.29	14,86	1.8	1.84	0.36	0.14
LBL and SCBL	0.90	-67,167	1.78	1.85	0.46	0.32
LBL and SBL	0.032	42,58	1.55	1.52	0.52	0.37
NIBL and ADBL	0.72	30,70	1.84	1.84	0.18	0.16
NIBL and SCBL	-0.39	72,28	1.82	1.82	0.28	0.14
NIBL and SBL	0.05	88,12	1.59	1.77	0.33	0.18
ADBL and SCBL	-0.25	77,23	1.83	1.84	0.27	0.14
ADBL and SBL	0.65	116,-16	1.6	1.93	0.32	0.16
SCBL and SBL	0.25	67,33	1.58	1.66	0.42	0.33

The portfolio result presented in table 4.5 indicates the combination of selected commercial banks on the basis of the current ratio. The combination of banks such as:- HBL and NIBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SBL, ADBL and SBL, SCBL and SBL show the positive correlation of 0.24, 0.90, 0.032, 0.72, 0.05, 0.65 and 0.25 respectively. While the other combination of banks such as :- HBL and LBL, HBL and ADBL, HBL and SCBL, HBL and SBL, LBL and ADBL, NIBL and SCBL, ADBL and SCBL shows the negative correlation of -0.34, -0.37, -0.58, -0.92, -0.23, -0.29, -0.39 and -0.25 respectively.

The portfolio return increased than the average return in the combination of banks such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL, SCBL and SBL. Other combination of banks such as:- LBL and SBL have decreased the portfolio return than the average return.

The portfolio risks of all the combination of banks are less than the average risk. In case of the portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated banks in comparison of positive correlated firms. Thus, the portfolio risk can be diversified by investing in those assets which have strong negative correlated.

b) Portfolio Risk and Return on the basis of Quick Ratio

The given table 4.6 represents the portfolio risk and return on the basis of quick ratio under the sample commercial banks.

Table 4.6**Portfolio Risk and Return on the basis of Quick Ratio under commercial banks**

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.60	49,51	1.185	1.19	0.5	0.22
HBL and NIBL	0.34	14,86	1.165	1.28	0.4	0.28
HBL and ADBL	-0.39	31,69	1.265	1.37	0.4	0.2
HBL and SCBL	-0.23	31,69	1.2	1.28	0.41	0.24
HBL and SBL	-0.62	31,69	0.98	0.97	0.39	0.15
LBL and NIBL	-0.84	36,64	1.35	1.34	0.39	0.10
LBL and ADBL	-0.05	27,73	1.45	1.49	0.39	0.24
LBL and SCBL	0.55	8,92	1.385	1.40	0.4	0.31
LBL and SBL	0.15	20,80	1.165	1.04	0.38	0.25
NIBL and ADBL	0.54	50,50	1.43	1.43	0.29	0.25
NIBL and SCBL	-0.82	52,48	1.36	1.36	0.3	0.09
NIBL and SBL	0.26	45,55	1.145	1.12	0.28	0.22
ADBL and SCBL	-0.65	52,48	1.465	1.47	0.3	0.13
ADBL and SBL	0.50	43,57	1.245	1.21	0.28	0.24
SCBL and SBL	-0.22	44,56	1.18	1.15	0.29	0.18

The portfolio result presented in table 4.6 indicate the combination of firms such as:- HBL and LBL, HBL and ADBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and ADBL, NIBL and SCBL, ADBL and SCBL, SCBL and SBL show the negative correlation of -0.60, -0.39, -0.23, -0.62, -0.84, -0.05, -0.82, -0.65 and -0.22 respectively. Where all other combination of firms such as:- HBL and NIBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SBL, ADBL and SBL show the positive correlation of 0.34, 0.55, 0.15, 0.54, 0.26 and 0.50 respectively on the basis of the quick ratio.

The portfolio return increased than average return in the combination of firms such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and ADBL, LBL and SCBL, ADBL and SCBL. And other combination of firms such as:- HBL and

SBL, LBL and NIBL, LBL and SBL, NIBL and SBL, ADBL and SBL, SCBL and SBL has the decreased portfolio return than average return on the basis of the quick ratio.

The portfolio risk of all the combination of firms is less than the average risk. In case of the portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated firms in the comparison of the positive correlated firms. Thus, the portfolio risk can be diversified by investing in those assets which have strong negative correlated.

c) Portfolio Risk and Return on the basis of Return on assets ratio

The given table 4.7 represents the portfolio risk and return on the basis of return on assets ratio under the sample commercial banks.

Table 4.7

Portfolio Risk and Return on the basis of Return on assets ratio under commercial banks

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.21	37,63	0.975	0.909	0.395	0.24
HBL and NIBL	-0.84	36,64	1.63	1.742	0.375	0.10
HBL and ADBL	-0.30	54,46	1.525	1.501	0.485	0.29
HBL and SCBL	0.60	-1,101	1.635	2.05	0.365	0.27
HBL and SBL	0.66	20,80	1.375	1.46	0.415	0.36
LBL and NIBL	0.53	37,63	1.375	1.545	0.31	0.27
LBL and ADBL	0.44	84,16	1.27	0.90	0.42	0.32
LBL and SCBL	0.08	39,61	1.38	1.525	0.30	0.22
LBL and SBL	0.39	59,41	1.12	1.05	0.35	0.29
NIBL and ADBL	0.25	82,18	1.925	1.99	0.40	0.28
NIBL and SCBL	-0.66	48,52	2.035	2.035	0.28	0.12
NIBL and SBL	-0.26	60,40	1.775	1.826	0.33	0.20
ADBL and SCBL	-0.32	28,72	1.93	1.978	0.39	0.20
ADBL and SBL	-0.39	39,61	1.67	1.637	0.44	0.23
SCBL and SBL	0.53	81,19	1.78	1.941	0.32	0.27

The table 4.7 reveals that the combination of firms such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, NIBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL presents the negative correlation of -0.21, -0.84, -0.30, -0.66, -0.26, -0.32 and -0.39 respectively while other combination of firms such as:- HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, SCBL and SBL presents the positive correlation of 0.60, 0.66, 0.53, 0.44, 0.08, 0.39, 0.25 and 0.53 respectively under the basis of return on assets ratio.

The portfolio return increased than the average return in the combination of firms such as:- HBL and NIBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and SCBL, NIBL and ADBL, NIBL and SBL, ADBL and SCBL, SCBL and SBL. And other combination of firms such as:- HBL and LBL, HBL and ADBL, LBL and ADBL, LBL and SBL, ADBL and SBL have decreased portfolio return than the average return.

The portfolio risk of all the combination of firms is less than the average risk. In case of the portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated firms in the comparison of the positive correlated firms. Thus, the portfolio risk can be diversified by investing in those assets which have strong negative correlated.

d) Portfolio Risk and Return on the basis of Return on equity ratio

The given table 4.7 represents the portfolio risk and return on the basis of return on equity ratio under the sample commercial banks.

Table 4.8**Portfolio Risk and Return on the basis of Return on equity under commercial banks**

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	0.18	29,71	19.34	15.98	7.01	5.09
HBL and NIBL	-0.17	18,82	28.595	29.398	5.795	2.9
HBL and ADBL	0.84	-13,113	32.445	38.877	4.75	0.76
HBL and SCBL	-0.57	27,73	21.91	19.41	5.985	2.33
HBL and SBL	-0.76	31,69	23.13	21.53	6.21	1.9
LBL and NIBL	0.71	-15,115	20.595	32.627	4.535	3.26
LBL and ADBL	-0.02	5,95	24.445	36.24	3.49	1.20
LBL and SCBL	0.47	14,86	13.91	15.76	4.725	3.63
LBL and SBL	0.13	32,68	15.13	16.494	4.95	3.56
NIBL and ADBL	-0.49	21,79	33.7	35.933	2.275	0.88
NIBL and SCBL	0.86	86,14	23.165	27.978	3.51	3.31
NIBL and SBL	0.57	75,25	24.385	27.118	3.735	3.19
ADBL and SCBL	-0.82	77,23	27.015	32.704	2.465	0.55
ADBL and SBL	-0.97	77,23	28.235	33.265	2.69	0.24
SCBL and SBL	0.88	95,5	17.7	16.602	3.925	3.7

The portfolio result presented in the table 4.8 indicate the combination of firms such as:- HBL and NIBL, HBL and SCBL, HBL and SBL, LBL and ADBL, NIBL and ADBL, ADBL and SCBL, ADBL and SBL and show the negative correlation of -0.17, -0.57, -0.76, -0.02, -0.49, -0.82 and -0.97 respectively. Where as other combination of firms such as:- HBL and LBL, HBL and ADBL, LBL and NIBL, LBL and SCBL, LBL and SBL, NIBL and SCBL, NIBL and SBL, SCBL and SBL shows the positive correlation of 0.18, 0.84, 0.71, 0.47, 0.13, 0.86, 0.57 and 0.88 respectively under the basis of return on equity ratio.

The portfolio return increased than the average return in the combination of firms such as:- HBL and NIBL, HBL and ADBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL and other combination of firms such as:- HBL and LBL, HBL

and SCBL, HBL and SBL, SCBL and SBL have the decreased portfolio return than the average return on the basis of the return on equity ratio.

The portfolio risk of all the combination of firms is less than the average risk. In case of the portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated firms in the comparison of the positive correlated firms. Thus, the portfolio risk can be diversified by investing in those assets which have strong negative correlated.

4.3 Diversification of Risk

Diversification is the random selection of securities that are to be added to a portfolio. It helps to reduce portfolio's total diversifiable risk to zero and only the undiversifiable risk remains. The topic diversification of risk includes that risk can be diversified by investing in portfolio of assets. This part consists of the sections that is fully devoted to analysis of diversification of risk under various selected commercial banks on the basis of current ratio, quick ratio, return on assets and return on equity.

a) Diversification of Risk on the basis of Current Ratio

This section shows the diversification of risk on the basis of current ratio. The table 4.9 below clearly reveals the diversification of risk on the basis of current ratio under the combination of various selected commercial bank such as:- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.9

Diversification of Risk on the basis of Current Ratio of commercial banks

Combination of firms	Average risk (%)	Portfolio risk (%)	Percentage reduction in portfolio risk
HBL and LBL	0.64	0.36	43.75
HBL and NIBL	0.46	0.19	58.69
HBL and ADBL	0.44	0.14	68.18
HBL and SCBL	0.54	0.22	59.26
HBL and SBL	0.60	0.12	80
LBL and NIBL	0.37	0.16	56.76
LBL and ADBL	0.36	0.14	61.11
LBL and SCBL	0.46	0.32	30.43
LBL and SBL	0.52	0.37	28.84
NIBL and ADBL	0.18	0.16	11.11
NIBL and SCBL	0.28	0.14	50
NIBL and SBL	0.33	0.18	45.45
ADBL and SCBL	0.27	0.14	48.15
ADBL and SBL	0.32	0.16	50
SCBL and SBL	0.42	0.33	21.14

The above table 4.9 shows the percentage reduction in portfolio risk of the several combinations of firms. The percentage reduction in portfolio risk of combination of firms such as: - HBL and NIBL, HBL and ADBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and ADBL, NIBL and SCBL, ADBL and SBL are 58.69, 68.18, 59.26, 80, 56.76, 61.11, 50 and 50 percentage respectively and these combination of firms are able to reduce 50 percent and more than 50 percentage risk.

While other combination of firms such as:- HBL and LBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SBL, ADBL and SCBL, SCBL and SBL are 43.75, 30.43, 28.84, 11.11, 45.45, 48.15 and 21.14 percent respectively which are below 50 percent portfolio risk. It indicates that the risk can be diversified by investing in portfolio of the firm under the several banks.

b) Diversification of Risk on the basis of Quick Ratio

This section shows the diversification of risk on the basis of quick ratio. The table 4.10 below clearly reveals the diversification of risk on the basis of quick ratio under the combination of various sample commercial banks such as:- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.10

Diversification of Risk on the basis of Quick Ratio of commercial banks

Combination of firms	Average risk (%)	Portfolio risk (%)	Percentage reduction in portfolio risk
HBL and LBL	0.5	0.22	56
HBL and NIBL	0.4	0.28	30
HBL and ADBL	0.4	0.2	50
HBL and SCBL	0.41	0.24	41.46
HBL and SBL	0.39	0.15	61.54
LBL and NIBL	0.39	0.10	74.36
LBL and ADBL	0.39	0.24	38.46
LBL and SCBL	0.4	0.31	22.50
LBL and SBL	0.38	0.25	34.21
NIBL and ADBL	0.29	0.25	13.79
NIBL and SCBL	0.3	0.09	70
NIBL and SBL	0.28	0.22	21.43
ADBL and SCBL	0.3	0.13	56.67
ADBL and SBL	0.28	0.24	14.29
SCBL and SBL	0.29	0.18	37.93

The above table 4.10 shows the percentage reduction in portfolio risk of the several combinations of firms. The percentage reduction in portfolio risk of combination of firms such as: - HBL and LBL, HBL and ADBL, HBL and SBL, LBL and NIBL, NIBL and SCBL, ADBL and SCBL are 56, 50, 61.54, 74.36, 70 and 56.67 percentages respectively. It shows that the forty percent the combination of the above firms are able to reduce 50 percent and more than 50 percentage risk. While other combination of firms such as: -

HBL and NIBL, HBL and SCBL, LBL and ADBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SBL, ADBL and SBL, SCBL and SBL has 30, 41.46, 38.46, 22.50, 34.21, 13.79, 21.43, 14.29 and 37.93 percent respectively which are below 50 percent portfolio risk. It indicates that the risk can be diversified by investing in portfolio of the firm under the several banks.

c) Diversification of Risk on the basis of Return on Assets

This section shows the diversification of risk on the basis of Return on Assets. The table 4.11 below clearly reveals the diversification of risk on the basis of Return on Assets under the combination of various selected commercial banks such as:- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.11

Diversification of Risk on the basis of Return on Assets of commercial banks

Combination of firms	Average risk (%)	Portfolio risk (%)	Percentage reduction in portfolio risk
HBL and LBL	0.395	0.24	39.24
HBL and NIBL	0.375	0.10	73.33
HBL and ADBL	0.485	0.29	40.21
HBL and SCBL	0.365	0.27	26.03
HBL and SBL	0.415	0.36	13.25
LBL and NIBL	0.31	0.27	12.9
LBL and ADBL	0.42	0.32	23.81
LBL and SCBL	0.30	0.22	26.67
LBL and SBL	0.35	0.29	17.14
NIBL and ADBL	0.40	0.28	30
NIBL and SCBL	0.28	0.12	57.14
NIBL and SBL	0.33	0.20	39.39
ADBL and SCBL	0.39	0.20	48.72
ADBL and SBL	0.44	0.23	47.73
SCBL and SBL	0.32	0.27	15.62

The above table 4.11 shows the percentage reduction in portfolio risk of the several combinations of firms. The table represents that only the two combination of firms such as:- HBL and NIBL, NIBL and SCBL has above 50 percent i.e. 73.33 and 57.14 percentage reduction in portfolio risk. Other all combination of firms has below 50 percent reduction in portfolio risk they are:- HBL and LBL, HBL and ADBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL, SCBL and ADBL with 39.24 , 40.21, 26.03, 13.25, 12.9, 23.81, 26.67, 17.14, 30, 39.39, 48.72, 47.73, 15.62 respectively. Hence, this shows that the risk can be diversified by investing in portfolio of the firm under the several banks.

d) Diversification of Risk on the basis of Return on Equity

This part shows the diversification of the risk on the basis of return on equity. The table 4.12 below clearly reveals the diversification of risk on the basis of return on equity under the combination of various selected commercial bank such as:- Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited.

Table 4.12**Diversification of Risk on the basis of Return on Equity of commercial banks**

Combination of firms	Average risk (%)	Portfolio risk (%)	Percentage reduction in portfolio risk
HBL and LBL	7.01	5.09	27.39
HBL and NIBL	5.795	2.9	50
HBL and ADBL	4.75	0.76	84
HBL and SCBL	5.985	2.33	61.07
HBL and SBL	6.21	1.9	69.4
LBL and NIBL	4.535	3.26	28.11
LBL and ADBL	3.49	1.20	65.62
LBL and SCBL	4.725	3.63	23.17
LBL and SBL	4.95	8.56	28.08
NIBL and ADBL	2.275	0.88	61.32
NIBL and SCBL	3.51	3.31	5.7
NIBL and SBL	3.735	3.19	14.59
ADBL and SCBL	2.465	0.55	77.69
ADBL and SBL	2.69	0.24	91.08
SCBL and SBL	3.925	3.7	5.73

The above table 4.12 shows the percentage reduction in portfolio risk of the combination of the various firms. It represents that the risk can be reduced through the diversification by investing in the portfolio. It shows that more than the half of the combination of firms such as:- HBL and NIBL, HBL and ADBL, HBL and SCBL, HBL and SBL, LBL and ADBL, NIBL and ADBL, ADBL and SCBL, ADBL and SBL has the 50, 84, 61.07, 69.4, 65.62, 61.32, 77.69 and 91.08 percentage reduction in portfolio risk respectively. Other all combination of firms has below 50 percent portfolio risk such as:- HBL and LBL, LBL and NIBL, LBL and SCBL, LBL and SBL, NIBL and SCBL, NIBL and SBL, SCBL and SBL has 27.39, 28.11, 23.17, 28.08, 5.7, 14.59, 5.73 percentage reduction in portfolio risk respectively. Hence, it clears that the risk can be diversified by investing in the portfolio of the firms under the various banks.

4.4 Major finding of the study

The presentation and analysis of data provides the clear picture in the terms of the financial strength and weakness of the banks. The major findings of the analysis are given below:-

a) On the basis of Current Ratio

1) ADBL has the highest mean return and HBL has the lowest mean return. And ADBL has the lowest risk while HBL has the highest risk. Hence, this shows that ADBL has the better financial performance on the basis of the current ratio among the selected commercial banks.

2) The portfolio return increased than the average return in the combination of banks such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL, SCBL and SBL. Other combination of banks such as:- LBL and SBL have decreased portfolio return than the average return.

3) The portfolio risks of all the combination of banks are less than the average risk. In case of portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated banks in comparison of positive correlated firms.

4) The combination of HBL and SBL has diversified more risk i.e. 80 percent among all the combination of the firms under the various selected commercial banks.

b) On the basis of Quick Ratio

1) ADBL has the highest mean return and HBL has the lowest mean return. And ADBL has the lowest risk while HBL has the highest risk. Hence, this shows that ADBL has

better financial performance on the basis of quick ratio among the selected commercial banks.

2) The portfolio return increased than the average return in the combination of firms such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and ADBL, LBL and SCBL, ADBL and SCBL. And other combination of firms such as:- HBL and SBL, LBL and NIBL, LBL and SBL, NIBL and SBL, ADBL and SBL, SCBL and SBL has decreased portfolio return than the average return.

3) The portfolio risks of all the combination of banks are less than the average risk. In case of portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated banks in comparison of positive correlated firms.

4) The combination of LBL and NIBL as well as NIBL and SCBL has diversified more risk i.e. 74.36 and 70 percent respectively among all the combination of the firm under the various selected commercial banks.

c) On the basis of the Return On Assets Ratio

1) SCBL has the highest mean return and LBL has the lowest mean return. And SCBL has the lowest risk while LBL has the highest risk. Hence, this shows that there is inverse relationship between the mean return and coefficient of variation of LBL and SCBL. Thus, this shows that SCBL has the better financial performance on the basis of return on asset ratio among the various selected commercial banks.

2) The portfolio return increased than the average return in the combination of firms such as:- HBL and NIBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and SCBL, NIBL and ADBL, NIBL and SBL, ADBL and SCBL, SCBL and SBL. While other combination of firms such as:- HBL and LBL, HBL and ADBL, LBL and ADBL, LBL and SBL, ADBL and SBL have decreased portfolio return than the average return.

3) The portfolio risks of all the combination of banks are less than the average risk. In case of portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated banks in comparison of positive correlated firms.

4) The combination of HBL and NIBL has diversified more risk i.e. 73.33 percent among all the combination of the firm under various selected commercial banks.

d) On the basis of Return On Equity Ratio

1) ADBL has the highest mean return with the lowest risk while LBL has the lowest mean return with the highest risk. This represents that ADBL and LBL has the inverse relationship between mean return and coefficient of variation. Thus, it is clear that among the various selected commercial banks, ADBL has the better financial performance because it has the higher mean return with the low coefficient of variation in comparison to other banks

2) The portfolio return increased than the average return in the combination of firms such as:- HBL and NIBL, HBL and ADBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, LBL and SBL, NIBL and ADBL, NIBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL. While other combination of firms such as:- HBL and LBL, HBL and SCBL, HBL and SBL, SCBL and SBL have decreased portfolio return than the average return.

3) The portfolio risks of all the combination of banks are less than the average risk. In case of portfolio risk diversified, portfolio risk is highly diversified in strongly negative correlated banks in comparison of positive correlated firms.

4) The combination of firms such as:- ADBL and SBL, HBL and ADBL, ADBL and SCBL has diversified more risk i.e. 91.08, 84, 77.69 percentage respectively among all the combination of the firms under the various selected commercial banks.

CHAPTER-5

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Bank is considered as the backbone for a country to develop the national economy. In a simple language, Bank is an institution which accepts the deposit from the public and in turn advances loans to person or corporations in need of them. Generally, the bank refers to those organized institutions which are established under the provision of current laws, rules and regulations to perform work related to the currency. Talking about the history of bank, an institutional banking system came into the existence in Nepal only in the 19th century. Nepal Bank Limited was the first bank of Nepal which was established on 1994 B.S., it focuses on income generating and profit maximization. As it was only one commercial bank has to look after the economic condition of the country. Only having one bank, Nepal Bank Limited was not sufficient to look all the sector of country. So, in 2013 B.S. another bank “Nepal Rastra Bank” was established as the central bank of the country. Similarly the 2nd commercial bank, Rastriya Banijya Bank was established on 2022 B.S. under the Rastra Banijya Bank Act 2021. This act has been revised as the commercial bank act 2031 B.S. “Accepting the deposits, granting loan and performing the commercial banking functions are the main motto of commercial bank”.

An investor always has an objective to make maximum return from his/her fund at the lowest risk. By investing in a single asset, investor cannot achieve his/her objective; it is only possible through portfolio. With the help of portfolio, risk can be diversified. In this context, it can be cleared from the proverb “ donot put all the eggs in one basket”. A portfolio is a combination of investment assets. It simply means holding of securities and investment in financial assets like bond, stock and so on. Various approaches can be followed while doing portfolio such as:- Simple diversification, Diversification across

industries, Superfluous diversification, Simple diversification across quality rating categories and Markowitz diversification.

Portfolio management is the concerned with efficient management of portfolio investment in financial assets like :- shares, debentures, bonds of companies and industries. Maximizing the return and minimizing the risk is the primary goal of portfolio. The important feature of portfolio is that it reduce the risk and helps in increasing the return through the diversification. The single best weapon against risk is diversification. All the investors want to get the maximum rate of return having low level of risk. Portfolio management means allocation of fund of different components having different degree of risk and varying rate of return in such a way that the main goal is to maximize the return and minimize the risk by selecting of portfolio of securities/assets.

On the basis of these assumptions that the risk can be diversified by investing in portfolio of assets and there is positive relationship between risk and return. Some models such as: - Portfolio selection modal, Capital assets pricing model have emerged but still there is lack of knowledge about the diversification of portfolio risk and the relationship between risk and return.

The study was concluded for the analysis of the portfolio management in the commercial bank of Nepal. For this purpose, six commercial banks such as: - Himalayan Bank Limited, Laxmi Bank Limited, Nepal Investment Bank Limited, Agriculture Development Bank Limited, Standard Chartered Bank Limited and Siddhartha Bank Limited were selected for the study based on 6 years data from 2004/05 to 2009/10.

The main objective of the study is analysis of financial performance in terms of portfolio risk and return in Nepalese Commercial Banks. The other objectives are as follows:-

1. To examine the risk and return of Nepalese commercial banks through the investors point of view.

2. To evaluate the performance of Nepalese commercial banks in terms of portfolio risk and return.
3. To examine how the diversification reduces the risk.

This study has used both the ratio analysis as well as statistical tools. In the ratio analysis Current ratio, Quick ratio, Return on assets (ROA) and Return on equity (ROE). The other statistical tools used in this study are arithmetic mean, standard deviation and coefficient of variation. To calculate the profitability ratios and other measures published financial statement of the sample companies were obtained from the Nepal stock exchange through internet website www.nepalstock.com and security board of Nepal. The financial statement of the year 2004/05 to 2009/10.

Although this study is descriptive as well as analytical, under these assumption this study involves risk and return of different selected commercial banks, portfolio risk and return of different selected commercial bank and diversification of risk of different selected commercial banks. Risk and return of different commercial bank present single asset risk and return of arithmetic mean, standard deviation and coefficient of variation. Portfolio risk and return presents two or more than two assets portfolio risk and return by investing in portfolio. Diversification of risk presents as the numbers of securities increases the portfolio risk decreases.

Major findings of the study

The presentation and analysis of data provides the clear picture in terms of financial strength and weakness of the bank. The major findings of the analysis are as given below:-

a) On the basis of Current Ratio

1. Among the selected banks, ADBL has the highest return with the lowest risk. While the HBL has the lowest return with the highest risk per unit. It means ADBL has the better financial performance on the basis of the current ratio.
2. The portfolio return increased than the average return in the combination of banks such as:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, NIBL and SBL, ADBL and SBL, SCBL and SBL.
3. The portfolio risks of all the combination of banks are less than the average risk. Portfolio risk is diversified by investing in those assets which have strong negative correlated.
4. The combination of HBL and SDBL has diversified more risk than other combination of the firm under the various selected commercial banks.

b) On the basis of Quick Ratio

1. Among the various selected commercial banks, ADBL has the highest mean return with the lowest risk. While HBL has the lowest mean return with the highest risk. This shows that the ADBL has better financial performance on the basis of quick ratio.
2. The combination of firms like:- HBL and LBL, HBL and NIBL, HBL and ADBL, HBL and SCBL, LBL and ADBL, LBL and SCBL, ADBL and SCBL has the increased portfolio return than the average return.

3. The portfolio risk is highly diversified in strong negative correlated firms in comparison of positive correlated firms. The portfolio risks of all the combination of banks are less than the average risk.
4. The combination of LBL and NIBL as well as NIBL and SCBL has diversified more risk than other combination of the firm under various selected commercial banks.

c) On the basis of Return On Assets Ratio

1. Among the various selected commercial banks, SCBL has the highest mean return with the lowest risk. While LBL has the highest risk with the lowest mean return. This shows that SCBL has the better financial performance on the basis of return on assets ratio.
2. The combination of firms like: - HBL and NIBL, HBL and SCBL, HBL and SBL, LBL and NIBL, LBL and SCBL, NIBL and ADBL, NIBL and SBL, ADBL and SCBL, SCBL and SBL have the increased portfolio return than the average return.
3. The portfolio risk is highly diversified in strong negative correlated firm in comparison of positive correlated firms. The portfolio risks of all the combination of banks are less than the average risk.
4. The combination of HBL and NIBL has diversified more risk than other combination of the firm under the various selected commercial banks.

d) On the basis of Return On Equity Ratio

1. Among the various selected commercial banks, ADBL has the highest mean return with the lowest risk. While LBL has the lowest mean return with the

highest risk. This presents that ADBL has the better financial performance on the basis of return on equity ratio.

2. The combination of firms like :- HBL and NIBL, HBL and ADBL, LBL and NIBL, LBL and ADBL, LBL and SCBL, NIBL and ADBL, NIBL and SCBL, NIBL and SBL, ADBL and SCBL, ADBL and SBL has the increased portfolio return than the average return.
3. The portfolio risk is the highly diversified in the strong negative correlated firm in comparison of positive correlated firms. The portfolio risks of all the combination of banks are less than the average risk.
4. The combination of banks like ADBL and SBL, HBL and ADBL, ADBL and SCBL has diversified more risk than other combination of the firms under various selected commercial banks.

Conclusion

From the above study, we are able to draw the certain conclusion from the result of portfolio analysis. The first important conclusion is that the portfolio risk of 6 selected commercial banks are found to be diversified. The portfolio risk is less than the average risk of 6 selected commercial banks based on the current ratio, quick ratio, return on assets and return on equity. This shows that the portfolio of risk is diversified under current ratio, quick ratio, return on asset and return on equity. The correlation coefficient of risk and return of the firm under selected commercial banks is negatively correlated each into portfolio ratios of current ratio, quick ratio, return on assets and return on equity.

From the above result of portfolio analysis, it can be observed that the portfolio management in case of randomly selected commercial banks are positive. In other words, in case of Nepal commercial banks, the portfolio risk can be diversified. It

is one of the positive factors in case of Nepal's Capital Market. Though the capital market of Nepal is not so develop, the portfolio risk is diversified.

5.2 Recommendations

Based on the analysis of data major findings and conclusions of the study the following suggestions and recommendations are prescribed to improve the present financial portfolio position on Nepalese commercial banks.

1. The current ratio HBL is lowest among the six selected banks. So, HBL is recommended to increase its current ratio.
2. On the basis of quick ratio, HBL has the lowest quick ratio among the selected commercial banks. Hence, it is recommended that HBL should increase its quick asset so as to increase its quick ratio.
3. The return on the basis of return on assets, LBL has the lowest return on assets among the six selected commercial banks. So, LBL is recommended to increase the net profit to get the best performance.
4. On the basis of return on equity, LBL has the lowest return on equity among the six selected commercial banks. So, LBL has is recommended to manage its share capital, shareholders reserve and increase net profit to achieve the best financial performance.
5. To the various banks one of the major weakness are inefficient management systems, low productive, lack of transparency and slow decision making because of that caused low return with high risk. Hence, such types of financial institutions are recommended to change their policy and strategy to make quick decision.

6. This study suggests constructing an efficient portfolio to minimize risk and get sustainable future expected returns. Investors have to choose those assets which have higher returns, minimum proportion of systematic risk, negative correlation to make an efficient portfolio among the securities in the market.
7. Investors need to diversify their fund to reduce risk. Proper construction of a portfolio will reduce considerable potential loss which can be defined in terms of risk. But portfolio construction is a dynamic job because an efficient portfolio depends on market movement or socio portfolio change. For the portfolio construction, select the firm that has higher return with negative correlated firm.

5.3 Future Guidelines

After presenting the summary and conclusions, major findings and recommendations, it is essential to provide some suggestions for the future researcher. Although this study is concerned with the portfolio management, it may be appropriate to provide a package of suggestions, which will be more helpful to improve existing conditions, which are as follows :-

1. In case of addition of more years, more data, the result will be better.
2. To get greater insight into the effect of portfolio management, the number of companies should be increased.
3. Laws, regulations and advanced technology should be followed for the better financial performance.
4. With the use of different methods of analysis, a more satisfactory result will be obtained.

5. Study of international companies would be better.
6. Regularly evaluate the financial strength of the firms in order to identify the possible risk in coming days.
7. To maintain the regular profitability position. Banks are recommended to utilize their risky assets and shareholders in order to fund to gain the highest profit margin and also to utilize the resources more efficiently. Banks should try to reduce its unnecessary expenses for being more profitable.
8. Best liquidity position of the banks must be identifying for the quality of current assets and current liabilities to develop its own current ratio. Because the liquidity position affects the internal as well as external factors such as:- prevalent interest rates, supply and demand position of loans, saving for investment situations, central bank requirements.
9. Bank should add better training to its staff and research department so that they should be able to study different aspect of management and supply practical suggestion for the development and operation of banks.
10. Bank should encourage each and every level of customers for the deposit, borrowing and to use their other services as well. However, banks are suggested to invite the higher foreign investment for their sustainable financial status as well as commercial development. Bank should avoid the weakness by applying the appropriate financial policy, which will be help to maintain their status in terms of financial performance in future.

Annex 'A'

Calculation of mean, standard deviation, coefficient of variation, correlation of coefficients, optimal weight, portfolio risk and return under Current Ratio

Arithmetic mean of HBL

$$\begin{aligned}(\bar{X}_{HBL}) &= \frac{\sum x}{N} \\ &= \frac{2.5+1.5+2+1+0.51+0.61}{6} \\ &= 1.35\end{aligned}$$

Standard Deviation of HBL

$$\begin{aligned}(\dagger_{HBL}) &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\ &= \sqrt{0.5238} \\ &= 0.72\end{aligned}$$

Coefficient of Variation of HBL

$$\begin{aligned}(\text{C.V.}_{HBL}) &= \frac{\dagger}{\bar{X}} \\ &= \frac{0.72}{1.35} \\ &= 0.53\end{aligned}$$

Correlation Coefficient between HBL and LBL

$$P_{12} = \frac{COV_{HBL,LBL}}{\dagger_{HBL} \times \dagger_{LBL}}$$

Here,

$$COV_{HBL,LBL} = \frac{\sum [X_{HBL} - \bar{X}_{HBL}][X_{LBL} - \bar{X}_{LBL}]}{N}$$

Again,

$$\begin{aligned} P_{12} &= \frac{-0.825}{0.72 \times 0.56} \\ &= -0.34 \end{aligned}$$

Optimal weight of HBL and LBL

$$\begin{aligned} W_{HBL} &= \frac{\sigma_{LBL}^2 - Cov_{HBL,LBL}}{\sigma_{HBL}^2 + \sigma_{LBL}^2 - 2 \times Cov_{HBL,LBL}} \\ &= \frac{0.56^2 - (-0.1375)}{0.72^2 + 0.56^2 - (2 \times -0.1375)} \\ &= 0.41 \end{aligned}$$

$$\begin{aligned} W_{LBL} &= 1 - 0.41 \\ &= 0.59 \end{aligned}$$

Portfolio return of HBL and LBL

$$\begin{aligned} R_p &= W_{HBL} \times \bar{X}_{HBL} + W_{LBL} \times \bar{X}_{LBL} \\ &= 0.41 \times 1.35 + 0.59 \times 1.75 \\ &= 1.586 \end{aligned}$$

Portfolio risk of HBL and LBL

$$\begin{aligned} \sigma_p &= \sqrt{W_{HBL}^2 \times \sigma_{HBL}^2 + W_{LBL}^2 \times \sigma_{LBL}^2 + 2 \times Cov_{HBL,LBL} \times W_{HBL} \times W_{LBL}} \\ &= \sqrt{0.41^2 \times 0.72^2 + 0.59^2 \times 0.56^2 + 2 \times (-0.1375) \times 0.41 \times 0.59} \\ &= 0.36 \end{aligned}$$

List of mean standard deviation and coefficient of variation

S.N.	Name of banks	Current ratio						Mean	S.D.	C.V.
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10			
1	HBL	2.5	1.5	2	1	0.51	0.61	1.35	0.72	0.53
2	LBL	0.7	1.8	2.5	2	2	1.5	1.75	0.56	0.32
3	NIBL	2	1.5	2	1.7	1.8	2	1.83	0.19	0.10
4	ADBL	1.9	1.6	1.8	1.7	2	2.1	1.85	0.17	0.09
5	SCBL	1	2	2.1	2	1.9	1.9	1.81	0.37	0.19
6	SBL	0.91	0.99	0.81	1.5	1.9	2	1.35	0.48	0.35

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.34	41,59	1.55	1.59	0.64	0.36
HBL and NIBL	0.24	0.5,99.5	1.59	1.83	0.46	0.19
HBL and ADBL	-0.37	12,88	1.6	1.79	0.44	0.14
HBL and SCBL	-0.58	30,70	1.58	1.67	0.54	0.22
HBL and SBL	-0.92	40,60	1.35	1.35	0.60	0.12
LBL and NIBL	-0.23	15,85	1.79	1.82	0.37	0.16
LBL and ADBL	-0.29	14,86	1.8	1.84	0.36	0.14
LBL and SCBL	0.90	-67,167	1.78	1.85	0.46	0.32
LBL and SBL	0.032	42,58	1.55	1.52	0.52	0.37
NIBL and ADBL	0.72	30,70	1.84	1.84	0.18	0.16
NIBL and SCBL	-0.39	72,28	1.82	1.82	0.28	0.14
NIBL and SBL	0.05	88,12	1.59	1.77	0.33	0.18
ADBL and SCBL	-0.25	77,23	1.83	1.84	0.27	0.14
ADBL and SBL	0.65	116,-16	1.6	1.93	0.32	0.16

SCPI and SBI	0.25	67.22	1.58	1.66	0.42	0.33
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List of variables used in portfolio analysis

Annex 'B'

Calculation of mean, standard deviation, coefficient of variation, correlation of coefficients, optimal weight, portfolio risk and return under Quick Ratio

Arithmetic mean of HBL

$$\begin{aligned}
 (\bar{X}_{HBL}) &= \frac{\sum x}{N} \\
 &= \frac{2+1+1.1+0.9+0.43+0.59}{6} \\
 &= 1
 \end{aligned}$$

Standard Deviation of HBL

$$\begin{aligned}
 (\dagger_{HBL}) &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\
 &= \sqrt{0.25557} \\
 &= 0.51
 \end{aligned}$$

Coefficient of Variation of HBL

$$\begin{aligned}
 (C.V._{HBL}) &= \frac{\dagger}{\bar{X}} \\
 &= \frac{0.51}{1} \\
 &= 0.51
 \end{aligned}$$

Correlation Coefficient between HBL and LBL

$$P_{12} = \frac{COV_{HBL,LBL}}{\dagger_{HBL} \times \dagger_{LBL}}$$

Here,

$$\text{Cov}_{HBL,LBL} = \frac{\sum [X_{HBL} - \bar{X}_{HBL}][X_{LBL} - \bar{X}_{LBL}]}{N}$$

Again,

$$\begin{aligned} P_{12} &= \frac{-0.8954}{0.51 \times 0.49} \\ &= -0.60 \end{aligned}$$

Optimal weight of HBL and LBL

$$\begin{aligned} W_{HBL} &= \frac{\dagger_{LBL}^2 - \text{Cov}_{HBL,LBL}}{\dagger_{HBL}^2 + \dagger_{LBL}^2 - 2 \times \text{Cov}_{HBL,LBL}} \\ &= \frac{0.49^2 - (-0.149233)}{0.51^2 + 0.49^2 - (2 \times -0.149233)} \\ &= 0.49 \end{aligned}$$

$$\begin{aligned} W_{LBL} &= 1 - 0.49 \\ &= 0.51 \end{aligned}$$

Portfolio return of HBL and LBL

$$\begin{aligned} R_P &= W_{HBL} \times \bar{X}_{HBL} + W_{LBL} \times \bar{X}_{LBL} \\ &= 0.49 \times 1 + 0.51 \times 1.37 \\ &= 1.1887 \end{aligned}$$

Portfolio risk of HBL and LBL

$$\begin{aligned} \dagger_P &= \sqrt{W_{HBL}^2 \times \dagger_{HBL}^2 + W_{LBL}^2 \times \dagger_{LBL}^2 + 2 \times \text{Cov}_{HBL,LBL} \times W_{HBL} \times W_{LBL}} \\ &= \sqrt{0.49^2 \times 0.51^2 + 0.51^2 \times 0.49^2 + 2 \times (-0.149233) \times 0.49 \times 0.51} \\ &= 0.22 \end{aligned}$$

List of mean standard deviation and coefficient of variation

S.N.	Name of banks	Current ratio						Mean	S.D.	C.V.
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10			
1	HBL	2	1	1.1	0.9	0.43	0.59	1	0.51	0.51
2	LBL	0.5	1.1	2	1.8	1.5	1.3	1.37	0.49	0.36
3	NIBL	1.8	1.2	1	1	1.5	1.5	1.33	0.29	0.22
4	ADBL	1.5	1.2	1.5	1.2	1.8	2	1.53	0.29	0.19
5	SCBL	1	1.8	1.7	1.5	1.4	1	1.4	0.31	0.22
6	SBL	0.80	0.75	0.70	1	1.5	1	0.96	0.27	0.28

List of variables used in portfolio analysis

Combination of firms	Correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.60	49,51	1.185	1.19	0.5	0.22
HBL and NIBL	0.34	14,86	1.165	1.28	0.4	0.28
HBL and ADBL	-0.39	31,69	1.265	1.37	0.4	0.2
HBL and SCBL	-0.23	31,69	1.2	1.28	0.41	0.24
HBL and SBL	-0.62	31,69	0.98	0.97	0.39	0.15
LBL and NIBL	-0.84	36,64	1.35	1.34	0.39	0.10
LBL and ADBL	-0.05	27,73	1.45	1.49	0.39	0.24
LBL and SCBL	0.55	8,92	1.385	1.40	0.4	0.31
LBL and SBL	0.15	20,80	1.165	1.04	0.38	0.25
NIBL and ADBL	0.54	50,50	1.43	1.43	0.29	0.25
NIBL and SCBL	-0.82	52,48	1.36	1.36	0.3	0.09
NIBL and SBL	0.26	45,55	1.145	1.12	0.28	0.22
ADBL and SCBL	-0.65	52,48	1.465	1.47	0.3	0.13

ADB and SBL	0.50	43,57	1.245	1.21	0.28	0.24
SCBL and SBL	-0.22	44,56	1.18	1.15	0.29	0.18

Annex 'C'

Calculation of mean, standard deviation, coefficient of variation, correlation of coefficients, optimal weight, portfolio risk and return under Return on Assets Ratio

Arithmetic mean of HBL

$$\begin{aligned}
 (\bar{X}_{HBL}) &= \frac{\sum x}{N} \\
 &= \frac{1.25 + 2 + 1.05 + 0.5 + 1.50 + 1.08}{6} \\
 &= 1.23
 \end{aligned}$$

Standard Deviation of HBL

$$\begin{aligned}
 (\dagger_{HBL}) &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\
 &= \sqrt{0.20901} \\
 &= 0.46
 \end{aligned}$$

Coefficient of Variation of HBL

$$\begin{aligned}
 (C.V._{HBL}) &= \frac{\dagger}{\bar{X}} \\
 &= \frac{0.46}{1.23} \\
 &= 0.374
 \end{aligned}$$

Correlation Coefficient between HBL and LBL

$$P_{12} = \frac{Cov_{HBL,LBL}}{\dagger_{HBL} \times \dagger_{LBL}}$$

Here,

$$\text{Cov}_{HBL,LBL} = \frac{\sum [X_{HBL} - \bar{X}_{HBL}][X_{LBL} - \bar{X}_{LBL}]}{N}$$

Again,

$$\begin{aligned} P_{12} &= \frac{-0.1916}{0.46 \times 0.33} \\ &= -0.21 \end{aligned}$$

Optimal weight of HBL and LBL

$$\begin{aligned} W_{HBL} &= \frac{\dagger_{LBL}^2 - \text{Cov}_{HBL,LBL}}{\dagger_{HBL}^2 + \dagger_{LBL}^2 - 2 \times \text{Cov}_{HBL,LBL}} \\ &= \frac{0.33^2 - (-0.031933)}{0.46^2 + 0.33^2 - (2 \times -0.031933)} \\ &= 0.37 \end{aligned}$$

$$\begin{aligned} W_{LBL} &= 1 - 0.37 \\ &= 0.63 \end{aligned}$$

Portfolio return of HBL and LBL

$$\begin{aligned} R_p &= W_{HBL} \times \bar{X}_{HBL} + W_{LBL} \times \bar{X}_{LBL} \\ &= 0.37 \times 1.23 + 0.63 \times 0.72 \\ &= 0.909 \end{aligned}$$

Portfolio risk of HBL and LBL

$$\begin{aligned} \dagger_P &= \sqrt{W_{HBL}^2 \times \dagger_{HBL}^2 + W_{LBL}^2 \times \dagger_{LBL}^2 + 2 \times \text{Cov}_{HBL,LBL} \times W_{HBL} \times W_{LBL}} \\ &= \sqrt{0.37^2 \times 0.46^2 + 0.63^2 \times 0.33^2 + 2 \times (-0.031933) \times 0.37 \times 0.63} \\ &= 0.24 \end{aligned}$$

List of mean standard deviation and coefficient of variation

S.N.	Name of banks	Current ratio						Mean	S.D.	C.V.
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10			
1	HBL	1.25	2	1.05	0.5	1.50	1.08	1.23	0.46	0.37
2	LBL	0.98	0.17	0.58	0.64	1.25	0.72	0.72	0.33	0.50
3	NIBL	2.14	1.54	2	2.5	2.1	1.9	2.03	0.29	0.14
4	ADBL	1.05	1.25	2	1.9	2.5	2.23	1.82	0.51	0.28
5	SCBL	2.33	2.15	1.99	1.50	2	2.28	2.04	0.27	0.13
6	SBL	1.99	1.75	1.05	1.15	1.89	1.30	1.52	0.37	0.24

List of variables used in portfolio analysis

Combination of firms	correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	-0.21	37,63	0.975	0.909	0.395	0.24
HBL and NIBL	-0.84	36,64	1.63	1.742	0.375	0.10
HBL and ADBL	-0.30	54,46	1.525	1.501	0.485	0.29
HBL and SCBL	0.60	-1,101	1.635	2.05	0.365	0.27
HBL and SBL	0.66	20,80	1.375	1.46	0.415	0.36
LBL and NIBL	0.53	37,63	1.375	1.545	0.31	0.27
LBL and ADBL	0.44	84,16	1.27	0.90	0.42	0.32
LBL and SCBL	0.08	39,61	1.38	1.525	0.30	0.22
LBL and SBL	0.39	59,41	1.12	1.05	0.35	0.29
NIBL and ADBL	0.25	82,18	1.925	1.99	0.40	0.28
NIBL and SCBL	-0.66	48,52	2.035	2.035	0.28	0.12
NIBL and SBL	-0.26	60,40	1.775	1.826	0.33	0.20
ADBL and SCBL	-0.32	28,72	1.93	1.978	0.39	0.20

ADBL and SBL	-0.39	39,61	1.67	1.637	0.44	0.23
SCBL and SBL	0.53	81,19	1.78	1.941	0.32	0.27

Annex 'D'

Calculation of mean, standard deviation, coefficient of variation, correlation of coefficients, optimal weight, portfolio risk and return under Return on Equity Ratio

Arithmetic mean of HBL

$$\begin{aligned}
 (\bar{X}_{HBL}) &= \frac{\sum x}{N} \\
 &= \frac{37.9 + 38.95 + 27.38 + 19.95 + 19.87 + 20}{6} \\
 &= 27.34
 \end{aligned}$$

Standard Deviation of HBL

$$\begin{aligned}
 (\dagger_{HBL}) &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\
 &= \sqrt{68.43262} \\
 &= 8.27
 \end{aligned}$$

Coefficient of Variation of HBL

$$\begin{aligned}
 (\text{C.V.}_{HBL}) &= \frac{\dagger}{\bar{X}} \\
 &= \frac{8.27}{27.34} \\
 &= 0.3
 \end{aligned}$$

Correlation Coefficient between HBL and LBL

$$P_{12} = \frac{COV_{HBL,LBL}}{\dagger_{HBL} \times \dagger_{LBL}}$$

Here,

$$\text{Cov}_{HBL,LBL} = \frac{\sum [X_{HBL} - \bar{X}_{HBL}][X_{LBL} - \bar{X}_{LBL}]}{N}$$

Again,

$$\begin{aligned} P_{12} &= \frac{50.262}{8.27 \times 5.75} \\ &= 0.1762 \end{aligned}$$

Optimal weight of HBL and LBL

$$\begin{aligned} W_{HBL} &= \frac{\dagger_{LBL}^2 - \text{Cov}_{HBL,LBL}}{\dagger_{HBL}^2 + \dagger_{LBL}^2 - 2 \times \text{Cov}_{HBL,LBL}} \\ &= \frac{5.75^2 - 8.377}{8.27^2 + 5.75^2 - (2 \times 8.377)} \\ &= 0.29 \end{aligned}$$

$$\begin{aligned} W_{LBL} &= 1 - 0.29 \\ &= 0.71 \end{aligned}$$

Portfolio return of HBL and LBL

$$\begin{aligned} R_p &= W_{HBL} \times \bar{X}_{HBL} + W_{LBL} \times \bar{X}_{LBL} \\ &= 0.29 \times 27.34 + 0.71 \times 11.34 \\ &= 15.98 \end{aligned}$$

Portfolio risk of HBL and LBL

$$\begin{aligned} \dagger_p &= \sqrt{W_{HBL}^2 \times \dagger_{HBL}^2 + W_{LBL}^2 \times \dagger_{LBL}^2 + 2 \times \text{Cov}_{HBL,LBL} \times W_{HBL} \times W_{LBL}} \\ &= \sqrt{0.29^2 \times 8.27^2 + 0.71^2 \times 5.75^2 + 2 \times 8.377 \times 0.29 \times 0.71} \\ &= 5.09 \end{aligned}$$

List of mean standard deviation and coefficient of variation

S.N.	Name of banks	Current ratio						Mean	S.D.	C.V.
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10			
1	HBL	37.9	38.95	27.38	19.95	19.87	20	27.34	8.27	0.3
2	LBL	22.26	5.24	7.29	8.55	9.71	15	11.34	5.75	0.51
3	NIBL	33.44	27.41	23.69	31.67	30.73	32.14	29.85	3.32	0.11
4	ADBL	38.68	38.74	38.79	37.03	35.95	36.12	37.55	1.23	0.03
5	SCBL	17.71	12.02	10.91	18.30	20.94	19.02	16.48	3.7	0.22
6	SBL	16.32	15	14.12	19.68	25.12	23.29	18.92	4.15	0.22

List of variables used in portfolio analysis

Combination of firms	correlation	Respective weight (%)	Average return (%)	Portfolio return (%)	Average risk (%)	Portfolio risk (%)
HBL and LBL	0.18	29,71	19.34	15.98	7.01	5.09
HBL and NIBL	-0.17	18,82	28.595	29.398	5.795	2.9
HBL and ADBL	0.84	-13,113	32.445	38.877	4.75	0.76
HBL and SCBL	-0.57	27,73	21.91	19.41	5.985	2.33
HBL and SBL	-0.76	31,69	23.13	21.53	6.21	1.9
LBL and NIBL	0.71	-15,115	20.595	32.627	4.535	3.26
LBL and ADBL	-0.02	5,95	24.445	36.24	3.49	1.20
LBL and SCBL	0.47	14,86	13.91	15.76	4.725	3.63
LBL and SBL	0.13	32,68	15.13	16.494	4.95	3.56
NIBL and ADBL	-0.49	21,79	33.7	35.933	2.275	0.88
NIBL and SCBL	0.86	86,14	23.165	27.978	3.51	3.31
NIBL and SBL	0.57	75,25	24.385	27.118	3.735	3.19
ADBL and SCBL	-0.82	77,23	27.015	32.704	2.465	0.55
ADBL and SBL	-0.97	77,23	28.235	33.265	2.69	0.24
SCBL and SBL	0.88	95,5	17.7	16.602	3.925	3.7

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