# PORTFOLIO ANALYSIS OF INVESTMENT PATTERN OF COMMERCIAL BANKS IN NEPAL

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**Campus Roll No.: 521/058**

**Second Year Symbol No.: 1763/060**

**A Thesis Submitted To:**

**Office of the Dean**

**Faculty of Management**

**Tribhuvan University**

**In partial fulfillment of the requirements for the Degree of**

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

**Kathmandu, Nepal**

**November, 2010**

## RECOMMENDATION

This is to certify that the Thesis

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**PORTFOLIO ANALYSIS OF INVESTMENT PATTERN OF COMMERCIAL BANKS IN NEPAL**

*has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This Project Work is forwarded for examination.*

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| **……** | **……..……** |
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# ACKNOWLEDGEMENTS

First, I would like to thank Tribhuvan University for giving chance to prepare the

Thesis for a partial requirement to the fulfillment of M.B.S. program held under Tribhuvan University.

I express my profound gratitude to my supervisor **Ms. Ruchila Pandey,** for her patient and continuous guidance with valuable comments and kind support for all way through this Project Work.

I also owe an indebtedness to all reputed authors whose writings have provided me the necessary guidance and invaluable materials for the enrichment of my research paper in all possible ways. I would like to express my genuine appreciation to all the staff of Shanker Dev Campus, Central library staff and Security Board library that provided me necessary information & data. Moreover, express my gratitude to the staff of various corporate bodies who bigheartedly made accessible the requisites information.

At last but not the least, my paramount dedication is to my family members who have been uninterrupted source of sustain for me while in during the tribulation of this research work. My special thanks goes to my brother Mr. Ujjwal Ghimire for his incessant prop up and assist on the way of doing this research work.

I have tried to cover all the possible matters that I felt, important to sum up the "Portfolio Analysis Pattern of Commercial banks In Nepal"**.** I am hopeful that this task will be helpful to the students of business studies & to those who want to make further researchers under this topic.

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# Table of Content

**Page No:**

Recommendation

Acknowledgment

List of Abbreviation

**CHAPTER**

**1. REVIEW OF LITERATURE** **1**

1.1 Review of Supportive Text 2

1.1.1 Definition of Investment 3

1.1.2 Source of Investment Uncertainty 3

1.1.3 Investment Alternatives 6

1.1.4 Feature of a Sound Lending and Investment Policy 8

1.1.5 Portfolio Analysis 10

1.1.6 Portfolio Analysis and Diversification 11

1.1.7 Portfolio Risk and Return 13

1.1.8 Correlation Coefficient and Portfolio Risk 17

1.1.9 Portfolio Risk of a Risky and a Risk Free Security 18

1.1.10 Market Portfolio 20

1.1.11 Factor Affecting Investment Portfolio Decision 20

1.2 Review of Legislative Provision 21

1.3 Review of Previous Studies 24

1.3.1 Review from International Context 25

1.3.2 Review of Journals and Articles 30

1.3.4 Review of Unpublished Thesis 34

1.4 Research Gap 44

**Bibliography** **45**

## ABBREVIATIONS

| | |
|---|---|
| A.D. | : Anno Domini |
| A/C | : Account |
| AGM | : Annual General Meeting |
| ATM | : Automatic Teller Machine |
| B.S. | :Bikram Sambat |
| CAPM | : Capital Assets Pricing Model |
| CBs | : Commercial Banks |
| CDs | : Certificate of Deposit |
| Co. | : Company |
| CRR | : Cash Reserve Ratio |
| CV | : Coefficient of Variation |
| EBL | : Everest Bank Limited |
| FY | : Fiscal Year |
| GDP | : Gross Domestic Product |
| Govt. | : Government |
| HBL | : Himalayan Bank Limited |
| i.e. | : That is |
| IFIC | : International Finance Investment and Commercial Bank |
| IMF | : International Monetary Fund |
| JVBs | : Joint Venture Banks |
| LC | : Letter of Credit |
| Ltd. | : Limited |
| Mkt. | : Market |
| MSCI | : Morgan Stanley Capital International |
| NEPSE | : Nepal Stock Exchange |
| NIBL | : Nepal Investment Bank Limited |
| NPAT | : Net Profit After Tax |
| NRB | : Nepal Rastra Bank |
| NYSE | : New York Stock Exchange |
| P&D | : Purchase and Discount |

# CHAPTER-I

## REVIEW OF LITERATURE

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937. The financial scenario has changed with introduction of joint venture banks in 1984. The domestic banks of Nepal, Nepal Bank Ltd. and Rastriya Baniiya Bank could no longer hold monopoly. The number of commercial banks has been increasing so is the investment volume and opportunity in various sectors that extends to agriculture, industry, commercial and social sectors.

As financial intermediary, the commercial banks also play an important role as implementing body for central bank. The monetary structure involves analysis of the behavior of banking system. The variation in the size and composition of bank assets play important role in transmitting the influence of monetary policy to the economy. The composition of bank portfolio, such as, reserve, investment and lending lead the money supply to vary.

Investment portfolio refers to an investment that combines several assets. Investment portfolio is one which the income or profit of the banks depend upon directly. Investment portfolio usually offers the advantage of reducing risk through diversification of risk from risky investment to less risky investment. The objective of portfolio is to develop a portfolio that has the maximum return at whatever level of risk. The investment portfolio is the tool which helps to reduce risk and maximize return. The bank should accept that type of securities which are commercial, durable, marketable stable, transferable and high market price.

Generally the investment of the CBs include the investment on government securities, like treasury bills, development bonds, national saving bonds, foreign government securities, shares on government owned companies and non government companies and investment on debentures, similarly the CBs used their funds as loan and advances. Most of the banks are interested to invest their funds in more liquid and less risky sector. Nepalese CBs don't have their own clear vision towards investment portfolio. The investment planning of the CBs in Nepal heavily depend upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of the central bank. NRB's directives, unsecured climate created by political situation, government policy, and sluggish economic growth etc are the most important problem for banking sectors in investment.

Review of Literature is an essential part of all studies. It is a way to discover what other research in the area of our problem has uncovered. A critical review of the literature helps the researcher to develop a through understanding and insight into previous research works that relates to the present study. It is also avoid investigating

problems that have already been definitely answered. The review of literature accomplishes the following functions:

a. It establishes a point of departure for future research.

b. It avoids needless duplication of costly research effort.

c. It reveals areas of needed research.

Scientific research must be based on past knowledge. The previous studies cannot be ignored because they provide the foundation to the present study.

Literature review is basically a “stock taking” of available literature in one’s field of research. (Wolff and Pant; 2007:38)

During the review of this research, in depth study and theoretical investigation regarding portfolio’s aspects and their present application and potentialities made. Investment “Range of investment held by an investor, company etc.”(Oxford Dictionary; 1994:272) A portfolio simply represents the having their funds in more than one assets. The combination of investment assets is portfolio. Hence, in this chapter, the focus has been made on the review of literature relevant to the investment portfolio analysis of commercial banks in Nepal. For this study, different Journals, Article, Books, Annual reports, and some research paper related with this topic has been reviewed. Therefore, this chapter is arranged into the following order;

1. Review of supportive text.
2. Review of legislative provisions
3. Review of previous studies
4. Review unpublished thesis
5. Research gap

### 1.1 Review of Supportive Text

Review of supportive text provides the fundamental theoretical framework and foundation to the present study. For this various books, research paper, articles etc. dealing with theoretical aspects of investment and portfolio analysis are taken into consideration.

### 1.1.1 Definition of Investment

The word investment sounds very good and attractive that is why every individual in the world is interested in it. In Layman's sense, there is always a return if there is investment. This may be favorable as well as unfavorable to the investor's stand point.

"Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, investing may result in disaster. In general sense; investment means to pay out money to get more. But in the broadest sense, investment means the sacrifice of current money for future more money. Two different attributes are generally involved time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain." (Sharpe, Alexander and Baily; 2003:1) Shrestha (2002) write investment as utilization of saving for something that is expected to produce profit or benefits. Investment is employment of funds with the aim of achieving addition income or growth in value. It involves the commitment of resources that have been saved or put away from current consumption, in the hope that some benefits will acquire in the future. Investment generally involves real assets and financial assets. Real assets investment involves some kinds of tangible assets such as building, land, machinery; factory etc. and financial assets investment are pieces of paper representing an indirect claim to real assets held by someone else. Real assets are generally less liquid than financial assets.

"Investment is the current commitment of funds for a period of time to derive a future flow of funds that will compensate the investing unit for the time funds are committed, for the expected rate of inflation and also for uncertainty involved in the future flow of the funds."(Frank and Reilly; 2004:298-299)

"Investment is any vehicle into which funds can be placed with the expectation that will preserve or increase in value and generated positive returns."(Gitman and Joehnk; 1990:265)

"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."(Amling; 1994:147)

### 1.1.2 Source of Investment Uncertainty

Every investment involves uncertainties that make future investment return risky. Some of the sources of uncertainty that contribute to investment risk are as follows.

### i. Interest rate risk

It is the potential variability of return caused by changes in the market interest rates. Present value of investment moves inversely with changes in the market interest rate i.e. if market interest rise then the investment's present value will fall.

PV of investment $\alpha = \frac{1}{InterestRate}$

Thus, the investment rate risk affects the prices of securities like stocks, bonds, real estate, gold, puts, calls, and other investments as well.

### ii. Purchasing power risk (Inflation risk)

It is the variability of return an investor suffers because of inflation. The rate of inflation is measured by consumer price index.

Rate of inflation = $\frac{CPI_t - CPI_{t-1}}{CPI_{t-1}}$

Where,

$CPI_t$ = consumer price index in period t.

$CPI_{t-1}$ = consumer price index in period t-1.

When inflation takes place, financial assets such as stocks, bonds, etc. may lose their ability to command the same amount of real goods and services they did in the past.

### iii. Market Risk

It is the risk that arises from the variability in market returns resulting from alternating bull and bear market forces. When a security index rises fairly consistently from low point, this upwards trend is called a bull market and when the security index declines from peak point to the next trough is called bear market. During bearish period the price of the stocks falls but in the bullish market that usually rise more than enough to compensate for the bear market lose. So, the alternating bull and bear market forces create a perennial source of investment risk.

### iv. Default Risk

Default risk is that portion of investment's total risk that resulting from changes in the financial integrity of the investment. In other words, default risk is the variability of return that investors experience as a result of changes in the credit worthiness of a firm in which they invested. Investors losses from default risk usually result from the securities prices falling as the financial integrity of a firm weaken. So, by the time bankruptcy occurs, the market prices of the firm's securities will already have declined to near zero.

### v. Liquidity Risk

It is variability of return which results from price discounts given or sales commission paid in order to sell the asset with out delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs but liquid assets are not readily marketable. Hence, liquid assets required large price discounts and sales commissions in order to affect a quick sell.

### vi. Call-ability Risk

The portion of a security's total variability of return that derives from the possibility that the issue may be called is the call-ability risk. Call-ability risk commands a risk premium that comes in the form of a slightly higher average rate of return.

### vii. Convertibility Risk

It is that portion of the total risk of return from a convertible bond or a convertible preferred stock that reflects the possibility that the investment may be converted into the issuer's common stock.

### viii. Political Risk

It is the risk that caused by changing in the political environment that affect the asset's market value. Political risks arise from the exploitation of a politically weak group for the benefit of a politically strong group, with the effects of various to improve their relative position increasing the variability of return from the affected asset. Regardless of whether the change that causes political risk is sought by political or by economic interests, the resulting variability of return is called political risk.

**ix.Industry Risk**

Industry risk is the variability of return caused by events that affect the products and firms that make up an industry. The stage of the industry's life cycle, international tariffs, quotas, taxes, labor union problems, environmental restrictions, raw materials availability and similar factors interact and affect al the firms in an industry simultaneously. As a result of these commonalities the prices of the securities issued by competing firms tend to rise and fall together.

Total Risk = Interest rate risk + Purchasing power risk +Market risk + Management risk + Default risk + Liquidity risk + Call-ability risk + Convertibility risk + Taxability risk + Political risk + Industry risk + Other risk factors.

### 1.1.3 Investment Alternatives

"In the market, a wide range of investment alternatives are available to an individual investor."(Cheney and Moses; 1995:8) Traditionally, there are various investment alternatives like, common stocks, preferred stock and bank as financial assets. But with the increase in financial market concept and principles, a lot of other financial alternatives have mesh roomed. Commercial bankers, investment bankers and brokers provide the financial manager with detailed information on each of the forms of investment listed. The financial manager should keep up to date on these characteristics and follow the principle of making investment selections that maturities yields and risks appropriate to the firm.

Many alternative investments also have minimum investments and fee structure compared to mutual funds and ETFS. While they are subject to less regulation, they also have less opportunity to publish verifiable performance data and advertise to potential investors.

Alternative investments are favored mainly because their returns have a low correlation with those of standard asset classes. Because of this, many large institutional funds such as pensions and private endowments have begun to allocate a small portion (typically less than 10%) of their portfolios to alternative investments.

While the small investor may be shut out of some alternative investment opportunities, real estate and commodities such as precious metals are widely available.(source:http://www.investopedia.com, Oct, 2010)

There are various alternatives for investors as well as financial institutions. They are as follows:

**1. Equity Securities**

a) Common Stock b) Preferred Stock

**2. Debt Securities**

a) Short term debt securities

i. Negotiable certificate of deposit ii. Commercial paper

iii. Banker's acceptance iv. Treasury bills

b) Intermediate and long term debt securities

i. Treasury notes ii. Treasury bonds

iii. Saving bonds iv. Agency securities

v. Municipal securities vi. Corporate bonds

**3. Derivative Securities**

a) Options b) Commodity future c) Financial future

d) Options on future e) Rights f) Warrants

**4. Hybrid Securities**

a) Convertible preferred b) Convertible bonds

**5. Real Assets**

a) Precious metals b) Real estate c) Collectibles

**6. International Investment**

a) Multinational corporations

b) Foreign stocks traded on a local exchange

c) American depository Receipts

**7. Other Investment alternatives**

a) Pension funds b) Mutual funds c) Closed end companies

### 1.1.4 Feature of a Sound Lending and Investment Policy

The income and profit of the bank depends upon its lending procedures, lending policy and investment of its funds in different securities. The greater the credit created by the banks, the higher will be the profitability. A sound lending and investment policy is not only prerequisite for banks profitability, but also crucially significant for the promotion of commercial savings of a backward country like Nepal.

Many authors have given some necessities or some of the main characteristics for sound lending and investment policies, which must be considered by the commercial banks;

**i. Safety and Security**

The bank should never invest its funds in those securities, which are too volatile i.e. which are subject to too much depreciation and fluctuations because a little difference may cause a great loss. It must not invest its funds into speculative businessman who may be bankrupt at once and who may earn millions in a minute also. Security means adequate collateral having good value. This can be easily sold off if required at any point of time. The bank should accept that type of securities, which are commercial, durable and marketable having fair market value. For this purpose 'MAST' should be applied while reaching an investment decision, where MAST stands for,

M = Marketability

A = Ascertain ability

S = Stability

T = Transferability

**ii. Profitability**

A commercial bank can maximize its volume of wealth through maximization of return on their investments and lending. So, they must invest their funds where they can gain maximum profit. The profit of commercial banks depends on the interest rate, volume of loan, its time period and nature of investment in different securities.

**iii. Liquidity**

Liquidity is the ability of the firm to satisfy its short-term obligations as they come due. Generally, people used to deposit their earnings in the different accounts of the banks, having confidence that the bank will repay their money on demand. In order to

maintain the confidence to the depositors, the bank must always be ready to meet current or short-term obligations when they become due for repayment.

**iv. Purpose of Loan**

In the viewpoint of security, a banker should always know that why a customer is in need have loan. If a borrower misuses the loan granted by the bank, he can never repay therefore in order to avoid this situation each and every bank should demand all the essential detailed information about the scheme of project or activities. The Bank should closely monitor the end used of the money granted as a loan to its customer.

**v. Diversification**

"A bank should not lay all its eggs on the same basket." This quotation is very important to the bank and it should always be careful not to grant loan in only one sector. To minimize risk, a bank must diversify its investment on different sectors. Diversification of loan helps to sustain loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other companies. In this way the loss can be minimized or recovered. The concept of diversification is gradually emerging in the context of Nepalese commercial banks thus they are started to grant loan to Small and Medium size enterprises in order to minimize the concentration risk.

**vi. Tangibility**

A commercial bank should prefer tangible security to an intangible one. Though it may be considered that tangible property doesn't yield an income apart from intangible securities, which have lost their value due to price level inflation.

**vii. Legality**

Illegal issued securities may cause problems to the investors. Therefore, all commercial banks should follow the directives of NRB, Ministry of Finance and other relevant organization at the time of mobilizing funds.

**viii. National Interest**

In additional to its own profitability the bank should also consider the national interest. Even though the bank cannot get maximum return from such investment, it should carry out its obligation towards the society and the country. The bank is required to invest on such sectors as per the government and Nepal Rastra Bank's instruction. Investment on government bonds, deprived sector lending are the examples so such investments. But during research period many banks are found

shortfall in deprived sector lending as prescribed by NRB which is 3% of total loan portfolio.

### 1.1.5 Portfolio Analysis

"A portfolio is a bundle of combination of individual assets or securities." (Pandey, 1997:329) If investor holds a well diversified portfolio, then his concern should be the expected return and risk of portfolio rather than individual assets or securities. The portfolio theory provides a normative approach to the investors' decision to investment in assets or securities under risk. Portfolio expected return is a weighted average of the expected return of individual securities but the portfolio is sharp contrast, can be something less then a weighted average of variance. As a result an investor can reduce portfolio risk by adding another security with greater individual risk then any other securities in the portfolio. The seemingly curious result occur because risk greater on the covariance among the return of individual securities.

"Portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. A portfolio is a collection of investment securities."(Weston and Brigham, 1992:123) The portfolio of asset usually offers advantages of reduction risk through diversification. A stock or securities held, as part of a portfolio is less risky than the same stock held in isolation. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate.

Most financial assets are not held in isolation, rather they are held as pars of portfolios. "Portfolio theory deals with selection of optimal portfolios i.e. portfolios that provide the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return." (Weston and Copeland, 2003: 366) Portfolio management is the process of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk or alternatively ensuring minimum level of risk for a given level of return. It can be also taken as risk and return management. Its aims to determine an appropriate asset mix which attains optimal level of risk and return. The objective of portfolio management is to analyze different individual assets and delineate efficient portfolios. The group of all efficient portfolios will be called the efficient set of portfolios. The efficient set of portfolios comprises the "efficient frontier". The efficient frontier is the locus of points in risk – return space having the maximum return at each risk class. The efficient frontier dominates all other investments.

“Portfolio theory was originally proposed by Harry M. Markowitz in 1952 A.D.” (Cheney and Moses, 1995: 162,208) The theory is concerned with selection of an optimal portfolio by a risk avers investor. A risk adverse investor is an investor who selects a portfolio that maximizes expected return for any given level of risk or minimizes risk for any given level of expected returns. A risk adverse investor will select only efficient portfolios. Portfolio theory can be used to determine the combination of these securities that will create the set of efficient portfolios. The selection of the optimal portfolio depends on the investor’s performance for risk and return.

### 1.1.6 Portfolio Analysis and Diversification

“Investment risk can be reduced by including more than one alternative or categories of assets in the portfolio and by including more than one asset from each category. Hence, diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the expected return. This diversification may significantly reduce risk without a corresponding reduction in the expected rate of return on the portfolio.” (Weston and Copeland, 2003: 366)

“Diversification is the one important means that control portfolio risk. Investments are made in a wide variety of assets so that exposure to the risk of any particular securities is limited. By placing one’s eggs in many baskets, overall portfolio risk actually may be less than the risk of any component security considered in isolation.” (Bodie, Kane and Marcus, 2002:162,208)

Diversification is an attempt to reduce risk by investing among various financial instruments and industries. Most investment professionals agree that, although it does not guarantee against loss. Diversification is the most important step to reaching your long range financial goals minimizing risk. Diversification helps to eliminate some degree of total risk. Since diversification risk can be avoided, investor did not compensate for bearing such risk, it happens due to un-professionalism and internal problems. Investor will be rewarded only for taking market risk which is also know as unavoidable risk and systematic risk. Diversification in the investment or making portfolio in security level or in industry level protect against volatility and uncertainty at rate of return.

To minimize risk, a bank must diversify its investment on different sectors. Diversification helps to sustain loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other

companies. In this way the loss cane be minimized or recovered. Different diversification techniques for reducing a portfolio risk are as follows;

**i) Simple diversification**

Simple diversification can be understood as “not putting all the eggs in one basket”. The idea behind this is that we can reduce investment risk simply by spreading our investment in different securities. Even the portfolio of randomly selected securities can reduce risk. Further it is not necessary to include too many securities in the portfolio. A portfolio consisting of 10 to 15 randomly selection securities can eliminate almost all diversifiable risk. Simple diversification reduces a portfolio’s total diversification risk to zero and only the un-diversification risk remains.

**ii) Superfluous Diversification**

It refers to the investors spreading himself in so many investments on his portfolio. The investor finds it is impossible to manage the asset on his portfolio because the management of a large number of assets requires knowledge of the liquidity of each investment return, tax liability and thus becomes impossible without specialized knowledge.

In this context, Clarks adds that superfluous diversification usually result in the following portfolio management problems.

- Impossibility of good portfolio management
- Purchase of lackluster performers
- High search costs
- High transaction costs

Although more money is spent to manage a superfluously diversified portfolio, there will most likely be no concurrent improvement in the portfolio’s performance. Thus, superfluous diversification may lower the net return to the portfolio’s owners after the portfolio’s management expenses are deducted.

**iii) Diversification Across Industries**

Some investment counselors advocate selecting securities from different industries to achieve better diversification. It is certainly better to follow this advice than to select all the securities in a portfolio from one industry. Since all the industries are

highly correlated with one another, diversification across industries is not much better than simply selecting securities randomly. The non diversification variability can not be diversified away simply by selecting securities from different industries.

**iv) Superfluous Diversification Across Quality Rating Categories**

Superfluous diversification across quality rating categories is investing in only same qualified and same rated securities. Such as NEPSE has rated security grade "A" and so on and in this portfolio investor will make in same category security.

**v) Markowitz Diversification**

Markowitz Diversification may be defined as combining assets which are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing portfolio return. It can sometime reduce below the un-diversifiable level. There is a nature trade off between risk return in the market but at any given level of expected return, Markowitz diversification can reduce risk more than simple diversification. Applying diversification to a collection of potential investment assets with a computer is Markowitz portfolio analysis. It is a scientific way to manage a portfolio and its results are quite interesting. Since, Markowitz portfolio analysis considers both the risk and return of dozen and hundreds of different securities simultaneously. It is a more powerful method of analyzing a portfolio than using intuition.

### 1.1.7 Portfolio Risk and Return

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

### i. Portfolio expected return

The expected return of a portfolio should depend on the expected return of each of the securities contained in the portfolio. It also seems logical that the amounts invested in each security should be important. The portfolio return is the weighted average expected return of the individual stocks in the portfolio, with weights being the fraction of the total portfolio invested in each stock. The portfolios expected return is defined in equation as follows;

$Rp = W_1K_1 + W_2K_2 + \ldots + W_nK_n$

Where,

$R_p$ = Portfolio expected return

$W_1$ = Weight for stock 1

$W_2$ = Weight for stock 2

$K_1$ = Expected return for stock 1

$K_2$ = Expected return for stock 2

### ii. Portfolio Risk

Portfolio risk is the risk as a whole for the specific portfolio. In totally, what is the risk of wealth is the risk of portfolio. Calculation of portfolio risk is not as easy as portfolio return. The portfolio risk depends upon the risk of each securities and the covariance of particular securities. Portfolio risk can be measured in terms of standard deviation and variance. The variance used to measure the risk of the portfolio. It is the square root of the standard deviation. The variance of a portfolio of assets depends on not only the variance portfolio but also how the assets track each other asset in the portfolio. This introduces the concept of covariance or correlation; that is to say the degree by which the returns of two assets vary or change together. To determine the variance of a portfolio of assets, the sum of the weighted variances of the individual assets and the sum of the weighted covariance of the assets added together.

### iii. Measuring Portfolio Risk

“The measurement of a portfolio risk is not as a straight forward as the calculation of a portfolio’s expected return. In order to calculate the risk of a portfolio, consideration must be given not only to the risk of the individual assets in the

portfolio and their relative weights but also to the extent to which the asset's returns move together. The degree to which the assets returns move together is measured by the covariance or correlation coefficient. By combining the measures of individual assets risk, relative asset weights and the co. movement of asset's return the risk of the portfolio can be estimated." (Cheney and Moses; 1995: 653)

Individual's assets or securities are more risky than the portfolio. How is the risk of portfolio measured? As discussed above, risk is means used in terms of variance or standard deviation. However the standard of a portfolio is not simply the weighted average of standard deviation of individual securities. So, the portfolio risk is measured as;

Variance of portfolio

$$\pm_p^2 = \sum_{t=1}^{n}\sum_{t=1}^{n} x_i x_j Cov_{ij}$$

Taking the square root of both sides the risk of the portfolio in term of its standard deviation is (Francis; 6th Edition: 236)

$$\pm_p = \sqrt{\sum_{t=1}^{n}\sum_{t=1}^{n} x_i x_j Cov_{ij}}$$

Where,

$Cov_{ij}$ = Covariance between securities i and j.

$Cov_{ij} = \pm_i \pm_j \circ_{ij}$

$\circ_{ij}$ = correlation coefficient between i and j.

$x_i$ = weight of security i.

$x_j$ = weight of security j.

**Portfolio Risk In Case Of Two Assets**

The standard deviation (risk) of return for two asset portfolio is given by;

$$\pm_p = \sqrt{X_A^2 \times \pm_A^2 + X_B^2 \times \pm_B^2 + 2X_A \times X_B \times Cov_{AB}}$$

OR

$$\pm_p = \sqrt{X_A^2 \times \pm_A^2 + X_B^2 \times \pm_B^2 + 2X_A^2 \times X_B \times \pm_A \times \pm_B \times \circ_{AB}}$$

Where,

A and B are two securities held in a portfolio.

$X_A, X_B$ = Weights of securities A and B.

$\pm_A, \pm_B$ = Standard deviation of A and B.

$\circ_{AB}$ = Correlation coefficient between A and B.

$Cov_{AB}$ = Covariance between securities A and B.

**iv. Portfolio Risk in Case of N- Securities;**

The calculation of risk becomes quite involved when a large number of securities are combined to form a portfolio. Based on the logic of portfolio risk in a two asset case, the portfolio risk in N- Securities can be calculated as follows; (Pandey; 1997:338)

$$\pm_p^2 = n\left[\frac{1}{2}\right]^2 \times avg.\text{var}\,iance + \left(n^2 - n\right)\left[\frac{1}{n}\right]^2 \times avg.\text{cov}\,ariance$$

$$= \left[\frac{1}{n}\right] \times avg.\text{var}\,iance + \left[1 - \frac{1}{n}\right] \times avg.\text{cov}\,ariance$$

When, n is very large i.e. number of securities are very large, the portfolio variance will become approximately equal to the average covariance because the value of first part will become insignificant.

As the number of securities in portfolio increases, the covariance terms become more important relative to the variance terms. In a two security portfolio, there are

two own variance terms and two covariance terms. For the four security portfolio, there are four own variance terms and twelve covariance terms. For a large portfolio then, total risk depends primarily on covariance among securities. For example, with a forty security portfolio there are 40 own variance in the matrix and 1560 covariance terms. This can be seen by examining the matrix.

For four securities, the matrix of co variances for possible Paris wise combination would be (Van Horne; 1998:55)

$$\begin{matrix} \pm 1,1 & \pm 1,2 & \pm 1,3 & \pm 1,4 \\ \pm 2,1 & \pm 2,2 & \pm 2,3 & \pm 2,4 \\ \pm 3,1 & \pm 3,2 & \pm 3,3 & \pm 3,4 \\ \pm 4,1 & \pm 4,2 & \pm 4,3 & \pm 4,4 \end{matrix}$$

The diagonal element $\pm_{1,1}, \pm_{2,2}, \pm_{3,3}, \pm_{4,4}$ show variances and remaining elements show co variances. In this matrix of sixteen elements, four elements represented variances and remaining twelve elements represented covariance.

### 1.1.8 Correlation Coefficient and Portfolio Risk

Closely related to covariance is the statistical measure known as correlation. In fact, the covariance between two random variables is equal to the correlation between the two random variables times the product of their standard deviations;

$$\pm_{ij} = \circ_{ij} \pm_i \pm_j$$

Where $\circ_{ij}$ denotes the correlation coefficient between the return on security i and the return on security j. correlation between the return of two securities helps to identify the level of risk reduction in portfolio construction and provides possibility of eliminating some risk without reducing potential returns. If the correlation is perfectly positive (or1) then the portfolio cannot reduce any level of risk. On the contrary, if the correlation is perfectly negative (or-1), and then the proper combination of the two securities can reduce unsystematic risk even up to zero. So, the positive correlation between securities return is not so beneficial and vice-versa. A zero coefficient i.e. the two variables are not related to each other. So changes in one variable are independent of changes in the other. So, when securities in a portfolio are perfectly negatively correlated i.e. $\circ = -1$ all risk can be diversified away but when securities are perfectly positively correlated, diversification does not good whatever. In the typical care, “Correlations among the individual stocks are positive but less

than +1, some, but not all risk can be eliminated." (Weston and Brigham, 1992:127). In other words when the returns two securities are perfectly positively correlated i.e. $^{\circ} = 1$, the portfolio variance is just equal to the variance of individual securities. If the returns of securities are perfectly negatively correlated the portfolio variance is zero i.e. the combination of such securities completely reduces the risk. When the return of securities are weakly positively correlated the portfolio variance is less than the variance of individual securities. "The portfolio variance under weakly negative correlated returns of securities has reduced more than when the returns were weakly positively correlated." (Van Horne, 1998:334)

### 1.1.9 Portfolio Risk of a Risky and a Risk Free Security

"A risk free security is one which has a zero various or standard deviation consequently the covariance between the risk free securities and the risky security will be zero. Since the risk free security has a zero standard deviation and covariance between the risk free security and risky security is zero, when a risky asset is combined with a risk free asset, the product of standard deviation of risky asset and portfolio proportion invested in the risky asset." (Bodie, Kane and Marcus, 2002:164)

Here,

$$\pm_p = W_j \times \pm_j$$

Where,

$\pm_j$ = Standard deviation of risky securities.

$W_j$ = Weight of risky securities in a portfolio.

The total risk of the portfolio can be partition into two parts. They are,

Undiversifiable risk / Market risk / Systematic risk

Diversification risk / company specific risk / Unsystematic risk / Unique risk

**Systematic Risk**

Systematic risk is that portion of total variability in return caused by market factors that simultaneously affect the prices of all securities. The systematic nature of these price changes makes them immune to much of the risk reduction effects of diversification, thus systematic risk called undiversifiable risk. Changes in the economy, political and sociological environment that affects security market are the

source of systematic risk. Systematic variability of return found in nearly all securities to varying degree because most securities tend to move together in a systematic manner. Systematic risk is the market risk which could be avoidable. The systematic risk lies in the overall stock within market measured by beta (β). The beta of the stock is the slope of the characteristics line between return for the stock and those for the market. Beta depicts the sensitivity of the security's excess return to that of the market portfolio. If the slope is one, it means that excess vary proportionately with excess return for the market as a whole. If the slope steeper than one means that the stock's excess return varies more than proportionately with the excess return of the market portfolio. In other words, it is more systematic risk than the market as whole. This type if stock often called aggressive stock and slope less than 1 called defensive stock.

The un-diversifiable risk is caused by such factor which systematically affect all firms such as;

- War
- Inflations
- Recession
- Interest rates policy
- Corporate tax rate policy

Since all securities will tend to be negatively affected by these factors, systematic risk can not be eliminated by diversification therefore, an investor will expect a compensation for bearing this risk.

**Unsystematic Risk**

"Unsystematic risk or diversifiable risk is the portion of the total risk which is unexplained by overall market movements. Since it happens due to internal causes, it is diversifiable by increasing the efficiencies and effectiveness for the productivity of the organization. This kind of risk is diversifiable risk or avoidable risk. Unsystematic risk can be reduced as more and more securities are added to a portfolio. Various studies suggest that 15 to 20 securities selected randomly are sufficient to eliminate most of the unsystematic risk of a portfolio." (Van Horne; *Financial Management and Policy*. 10th Edition1998:55-69)

"Events such as labor strikes, management errors inventions, advertising, campaigns, shifts in consumer taste and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic security price movements are statistically independent from each other, and so they may be averaged to zero when different

assets are combined to form a diversified portfolio. Therefore, unsystematic risk is also called diversifiable risk". (Weston and Copeland; *Managerial Finance*. 9th Edition 2003: 366)

### 1.1.10 Market Portfolio

"The market portfolio is the unanimously declarable portfolio consisting of all the securities where the proportion invested in each security corresponds to its relative market value. The relative market value of the security divided by the sum of the aggregate market value of all securities. The return on the market portfolio is the weighted average return on all capital assets (Francis: 6th edition: 254). Since the market portfolio contains all risky assets in proportion to their market value, it is by definition, a perfectly diversified portfolio. The market portfolio is, therefore subject only to systematic or non diversifiable risk. The volatility of the market portfolio is due to macroeconomic factors that affect all risky assets and not to economy or industry specific factors. Volatility in return created by unsystematic risk, this risk can be diversified away by adding risky assets to a portfolio." (Cheney and Moses; 1995: 690)

The market portfolio holds a special place in modern in theory and practices. It is central to CAPM, which assumes that the market portfolio lies on the efficient set and that all investors hold the market portfolio in combing with a desired amount of risk free borrowing and lending.

### 1.1.11 Factor Affecting Investment Portfolio Decision

#### i. Amount of Investment

While determining the investment portfolio the finance manger should actually consider the amount of fund available with organization. Trading and manufacturing organization deal in securities only for the purpose of best utilization of their available surplus cash resource. The amount of surplus fund available with them will therefore decide the quantum of their investment in securities.

#### ii. Objective of Investment Portfolio

While determining the investment portfolio we should be clear about objective of making investment in securities. The objective may differ organization to organization. While an Organization looking for investment of provident fund of its employees can think of having in its investment portfolio only such securities which can assure safety of the fund and its return.

### iii. Selection of Investment

This is an essential decision which a finance manager has to take. He has to decide the kind of investment in which he has to put his fund. The selection of investment involves deciding about the type of securities, proportion between fixed and variable yield securities, selection of industries, selection of companies etc.

### iv. Timing of Purchase

To maximize the profit, it is not only important for the finance manager to buy the right security but it is also equally important to buy and sell it at the right time. It is the most intricate and complex decision for finance manager.

## 1.2 Review of Legislative Provision

In this section, the review of legislative framework (environment) under which the commercial banks are operating has been discussed. This legislative environment has significant impact on the commercial banks' establishment, their mobilization and utilization of resources. All the commercial banks have to conform to the legislative provision specified in the Commercial Bank Act 2031 and the rules and regulations formulated to facilitate the smooth running of commercial banks. The preamble of Nepal Bank Act 1994 clearly states the need of commercial bank in Nepal. "In the absence of any bank in Nepal the economic progress of the country was being hampered an causing inconvenience to the people and therefore wit the objective of fulfilling that need by providing services to the people. For the betterment of the country this law is hereby promulgated for the established of the bank and operation."

As mentioned in this act, commercial banks will help in baking business by opening its branches in the different parts of the country under the direction of NRB, The main function of commercial banks established under this act will be, exchange money, to accept deposits and give loan to commercial and business activities.

### NRB Rules Regarding Fund Mobilization of Commercial Bank

To mobilize bank's deposit in different sectors of the different parts of the nation to prevent them from the financial problems, central bank (NRB) any establish a legal framework by formulating various rules and regulations (prudential norms). The directives must have direct or indirect impact while making decision to discuss those rules and regulation, which are formulated by NRB in terms of investment and credit to deprived sector, other institution, single borrower limit, CRR, loan loss provision, capital adequacy ratio, interest spread, productive sector investment. A commercial bank is directly related to the fact how much fund must be collected as paid up

capital, while being established at a certain place of the nation? How much fund is needed to expand the branch and counters? How much flexible and helpful the NRB rules are also important? But we discuss only those, which are related to investment function of commercial banks. The main provisions, established by NRB in the form of prudential norms in above relevant area are briefly discussed here under.

(*Source: http://bfr.nrb.org.np, Oct. 2010)*

**1. Provision for Investment in the Deprived Sector**

Some rules, which are formulated by NRB, affect the areas of credit and investment extension to the deprived sector by the commercial bank. According to the new monetary policy FY 2010/11, every commercials banks operating in Nepal must invest 3% of their total lending portfolio in deprived sector.

**2. Provision for the Investment in Productive Sector**

Nepal, being a developing country needs to develop infrastructure and other primary productive sectors like agriculture, industry etc. In order to boost the productive sector the recent monetary policy FY 2010/11 has launch refinance policy. If any commercials banks are interested to get refinance facility then NRB will provide them fund at 7% interest per annum and the commercials are allow to lend that fund to productive sector at maximum 10% interest to the Industry. This refinance facility is launch in order to motivate the commercials banks to lend more fund in Industry sector rather than real estate and un productive sector. The other reason is to facilitate the lending at the time liquidity crunch in the market.

**3. Provision for the Single Borrower Credit Limit**

With the objective of lowering the risk of over concentration of bank loans to a few big borrowers and also to increase the access of small and middle size borrower to the bank loans. NRB directed CBs to set an upper limit on the amount of loan financed to an individual, firm, company or group of companies. According to this, CBs are required not to exceed the single borrower limit 25% in the case of fund-based credit and 50%, in the case of non-fund based credit. Such as the letter of credit, guarantee, acceptance letter, and commitment has been fixed is a proportion of capital funds of bank except in Hydro Project.

In the case of consortium financing, commercial banks are permitted to extend an additional 10% credit above the limit fixed by the NRB as before. In addition, Nepal Oil-Corporation, Agriculture-inputs Corporation and Nepal Food Corporation for

their impost petrol, diesel, kerosene, and fertilizer and food stuffs respectively have been removed from the restrictions of single borrower credit limit.

Besides this, following the BASEL Capital Adequacy Accord, NRB has directed commercial banks to maintain at least 10% capital adequacy ratio (CAR) of their risk weighted assets (RWA) and off-balance sheet transaction i.e. letter of credit, letter of acceptance, Bonds, Guarantee etc. They are further required to classify their capital requirement in to (1) core capital (Tier 1) and (2) supplementary capital (Tier 2) and maintain at least 6% of their total capital in the form of core capital. As per the provision, risk weighted assets (RWA) are to be calculated by classifying assets and giving them different risk weights as presented below.

**Allocation of Risk Factors**

| S. No. | Assets | Weight |
|---|---|---|
| 1. | Cash balance | 0 |
| 2. | Bank Balance:<br>With NRB<br>With other domestic banks<br>With foreign banks | <br>0<br>20<br>20 |
| 3. | Call deposits | 10 |
| 4. | Investments:<br>Government papers<br>Share and Debenture<br>Other investment | <br>0<br>50<br>50 |
| 5. | Loan and Advances | 100 |
| 6. | Fixed Assets | 100 |
| 7. | Contingent Liabilities:<br>Fully secured three months LC<br>Commitment of more than a year<br>Letter of acceptance, simple commitment and other LC transactions | <br>20<br>50<br>100 |

## 4. Cash Reserve Requirements (CRR)

To ensure adequate liquidity in the commercial banks to meet the depositors demand for cash at anytime and to inject the confidence in depositors regarding the safety of their deposited funds.

## 5. Loan Classification and Loss Provision

With a view to improving the quality of assets of commercial banks NRB has directed commercial banks to classify their out-standing loan and advances, investment and other assets into six categories. The classification is done in two ways. The loans of

more than 10 million are to be classified as debt service charge ratio, repayment situation, financial condition of borrower, management efficiency, quality of collateral. The loans of less than 10 million have to be classified as per maturity period.

Furthermore, NRB has directed commercial banks to maintain certain reserves for loans so classified. The existing loan loss provisioning is as follows:

**Loan Loss Provisioning (LLP)**

**(In % of Overdue Loan)**

| Loan Classification | Loan Loss Provisioning: |
|---|---|
| Good | 1 |
| Acceptable | 1 |
| Evidence of substandard | 5 |
| Doubtful | 25 |
| Bad | 50 |
| **Total** | **100** |

LLP has affected banks capability to extend loans and made them risk averse in issuing newer loans, particularly to the private sector where the loan default is high.

### 6. Directives Regarding Interest Rate Spread

The interest rate spread, the difference between interest charged on loan and advances and the interest paid to the depositors, has widened significantly in the aftermath of deregulation in interest rates which has caused lower financial intermediation. Therefore, NRB has hinted commercial banks to limit interest rate spread between deposits and lending rated to a maximum extent of 3%. The spread fixed by the NRB for refinance facility is the initial hint to the commercials banks about their spread.

## 1.3 Review of Previous Studies

This section is developed to the review of major related literature concerning portfolio in different countries. But in Nepal there are very few studies can be found in the topic of portfolio analysis on investment of commercial banks in Nepal. For this study, various books, journals, articles and past thesis are reviewed. It is reviewed from international context and Nepalese context.

### 1.3.1 Review from International Context

In international context, several studies have been done in the field of portfolio analysis. Among them some studies are reviewed as follows.

**Markowitz** (1952) published an article entitled *"Portfolio Selection"* introduced the portfolios theory establishes a relationship between a portfolios expected return and its level of risk as the criterion for selecting the optimum portfolio. So as to find the efficient set of portfolios and select the most effecting one, the portfolio manager will need to know the expected returns and the risk of these returns for the individual securities. The portfolio model developed by Markowitz is based on the following reason able assumptions.

The risk of an individual asset or portfolio is based on the variability of returns (standard deviation or variance)

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

$$R_p = \sum R_i \times X_i$$

$$R_p = R_1X_1 + R_2X_2 + R_3X_3 + \ldots + R_nX_n$$

Where,

$R_p$ = expected return to portfolio.

$R_i$ = expected return to security.

$X_i$ = the proportion of total portfolio investment in security.

The Markowitz has presented the risk of the portfolio consists of the riskiness of the individual securities and the covariance between the returns of the securities

among all possible combinations of them. Thus, portfolio risk can be calculated as follows:-

The portfolio risk

$$\pm_p^2 = X_1^2 \pm_1^2 + X_2^2 \pm_2^2 + 2X_1X_2 \times \pm_1 \pm_2 \times \circ_{12}$$

Where,

X1 = proportion of funds invested in security 1.

X2 = proportion of funds invested in security 2.

$\pm_1^2, \pm_2^2$ = variance of the returns on securities 1 and 2.

$r_{12}$ = correlation between the return of 1 and 2.

**Martin and Klemkosky** (1976) study on *"The Effect of Homogeneous Stocks Groupings on Portfolio Risk"* points out that the portfolio is measured utilizing zero covariance market model, which ignores the possible existence of group effects and a full covariance model which incorporates them into its estimate of portfolio risk.

In their study "the effect of Homogeneous stocks groupings on portfolio risk" tried to assess the impact of homogeneous stock groupings on portfolio risk. According to them portfolio risk is defined in terms of the variance in portfolio return for both zero and full covariance care.

To support their study, they used following linear function.

$$\overline{R}_{it} = \sim_i + \ _i\left(\overline{R}_{mt} + \overline{e}_{it}\right)$$

Where,

$\sim_i$ = Constant whose value is such that the expected value of $\overline{e}_{it}$ is zero.

$_i$ = A measure of the responsiveness of $\overline{R}_{it}$ to change in $\overline{R}_{mt}$.

$\overline{R}_{it}$ = Return on securities i, in period t.

$\overline{R}_{mt}$ = Market return for period t.

$\overline{e}_{it}$ = Random element

Portfolio variance was computed for randomly selected portfolios containing n = 2,3,…….N stocks, using both the Zero-covariance model and the full covariance model was as follows.

**Zero covariance Model**

$$\pm^{2}(\overline{R}_p) = \sum_{t=1}^{n}(x_i \times \ _i)\pm^{2}(\overline{R}_m) + \sum_{t=1}^{n}(x_i^{2} \times \ _i^{2})\pm^{2}(\overline{E})$$

Where,

$\pm^{2}(\overline{R}_m)$ = variance in market return.

$x_i$ = proportion of the total portfolio invested in stock i.

n = no. of stocks in portfolio.

$\pm^{2}(\overline{E})$ = Variance in the random element specific to stock i

**Full Co-variance Model**

$$\pm^{2} full(\overline{R}_p) = \frac{\sum_{t=1}^{m}(R_{pt} - \overline{R}_p)^{2}}{m}$$

$$R_{pt} = \sum_{t=1}^{n} x_i R_{it}$$

$$(\overline{R}_p) = \sum_{t=1}^{m} \frac{R_{pt}}{m}$$

m = no. of period.

In their study, they were selected four homogeneous groups to test their model. A total of 150 form stock including 40growth stock, 44 cyclical stock, 44 stable stocks and 22 oil stock. They further used Wilcox on matched pairs, singed rank test for each of the portfolio size containing two to ten securities to test the statistical significance differences of the portfolio risk between zero covariance estimates and full covariance estimate.

The test result reveals that group effect was so large that they resulted in the zero covariance estimate of portfolio variance being significantly less than the full covariance estimate at the 5% level for portfolios containing only four growths stocks, four cyclical stocks, four stable stocks and two oil stocks. Similarly, the percentage of the portfolio variance attributable to the market risk of the portfolio was used to

measure the extent of portfolio diversification. In the absence of the group effects, the closer to unity will be the ratio of portfolio market risk to the total risk. The proportion of the portfolio's risk attributable to group effects varied from group to group.

**Berger and Bodies** (1976) published an article entitled *"Portfolio Selection in a 'Winner-Take-All' Environment,"* In their article Berger and Bodies has presented and proved three propositions regarding optimal portfolio selection in the winter-take –all environments. The three propositions discussed by them are as follows,

**Proposition 1**

Any investor seeking to maximize the expected utility of his wealth of his wealth will select a portfolio which maximizes the probability of his winning the contest i.e. of yielding the highest return. This is so regarded of the investor's attribute towards risk.

**Proposition 2**

If no short or buying on margin is allow, then the probability of a portfolio of two or more securities beating ever single security in the portfolio is zero.

**Proposition 3**

If the are more than two securities to choose from , one can not select the optimal security though a series of pair wish is interior to all the others in respective pair wish comparison might will be the best in choice among more than two of them.

According to them, the signal most important behavioral implication of the propositions above is that an individual engaged in a winner-take –all investment contests will tend not to diversify his portfolio, even if he is risk averse. It is conjecture that is very highly positively correlated so as t approximates a single stock as closely as possible (Journal of Finance, Vol.34:233-236)

**Kane and Buser** (1979) *"Portfolio Diversification at Commercial Banks"* deals how a firm performs a useful function by holding a portfolio of efficiently priced securities.

It is the rational for a firm to engage round of asset diversification on behalf of its shareholder's even when all assets are priced efficiently and available for direct purchase by shareholders. As away of testing their perspective empirically, they estimates regression model designed to explain the number of distinct of U.S. treasury and federal agency debt held in a time series of cross section of large U.S. commercial

Banks. They interpret the systematic pattern of the diversification observed for large U.S. commercial banks as evidence that banks stockholder from relatively uniform diversification clientele. For firm, marginal benefits fro diversification takes reduction in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weight against the explicit and implicit marginal cost of diversification.

E.J. Kane and S.A. Buser drown following concluding remarks.

- Even wealthy investors should be sensitive to administrative costs associated with selecting, evaluating, managing and continually keeping track of a large number of securities.

- Either homemade of firm produced diversification reduces the variance of shareholder's portfolio return. If homemade of firm produced diversification bears inordinately high levels of information risk. Some benefits of the firm produce diversification might not be reproducible by individual investors acting on their own.

- Investors with even modest resources, the stock pf financial institutions should be relatively less attractive than the stock of that avoid extensive diversification costs by engaging in specialized activities.

- Marginal diversification costs decline as bank size increases. But level off when total deposits reach and 500 million. Beyond this point marginal diversification costs are independent of bank size.

**Brands and Gallagher** (2005) a paper titled "*Portfolio Selection, diversification and fund or funds: a note*". This paper examines the performance and diversification properties of active Australian equity fund-of-funds (FoF). Simulation analysis is employed to examine portfolio performance as function of the number of funds in the portfolio. The present paper finds that as the number of funds in a FoF portfolio increases. Performance improves in a mean-variance setting; however, measures of skewness and kurtosis behave less favorably given an investor's preference, for die higher movements of the return distribution. The majority of diversification benefits are realized when a portfolio of approximately 6 active equity funds.

The present study examines the performance and diversification properties of FoF Portfolios constructed using a sample of actively managed institutional Australian equity funds. The results show that, on average increasing the number of funds in an FoF portfolio leads to reductions in volatility (time-series return and terminal wealth)

while the mean time-series return remains constant. When risk-adjusted performance is examined using the Sharpe Ratio, the results show an improvement in risk-adjusted return as *n* increases. FoF portfolios provide investors with improvements in diversification, although measures of the return distribution. The results presented in this study suggest that although variance declines, FoF returns become more investigation into the downside risk properties of these portfolios is warranted and is the subject of future research.

The majority of diversification benefits are realized when a portfolio of approximately 6 active equity funds is included. However, the number of funds utilized by investors would also be influenced by the size of assets and the additional administrative, search and review costs when engaging multiple investment managers. Furthermore, portfolios with large numbers of funds may achieve and FoF portfolio that mimics the performance of the underlying index, while also incurring active management fees. Future research is currently underway to examine these issues.

### 1.3.2 Review of Journals and Articles

In this section, effort has been made to examine and review of some related articles in different economic journals, magazines, newspapers and other related books and publication.

**Shrestha** (1998) has given a short glimpse on article entitled *"Portfolio Management in Commercial Banks; Theory and Practices"*. (Nepal Bank Patrika, 1998)

Mr. Shrestha in his article has highlighted the followings issues;

- The portfolio management becomes very important both for individuals and institutional investor.
- Investor would like to select better mix of investment assets subject on these aspects like, higher return that is comparable with alternatives according to the risk class of investor.
- Good liquidity with adequate safety on investment, maximum tax concession, economic efficient and effective mixes.

For fulfilling those aspects, the following strategies will be adopted.

- Do not hold any signal security i.e. try to have a portfolio of different securities.
- Choose such portfolio of securities, which ensure maximum return with minimum risk or less return for wealth maximizing objectives.

He has mention short transitory view on portfolio management in Nepalese commercial banks. Nowadays number of banks & financial institution are operating in this sector are having greater networks and access to national and international markets. They have to go with their portfolio management very seriously and superiority, to get success to increase their regular income as well as to enrich the quality service to their clients. In this competitive and market oriented open economy, each commercial banks and financial institution has to play a determining role by widening various opportunities for the sake of expanding provision of best service to their customers.

In this context he has presented two types of investment analysis techniques i.e. fundamentals analysis to consider any securities such as equity, debenture or bond and other money and capital market instrument. He has suggested that the banks having international joint venture network can also offer admittance to global financial markets. He has pointed out the requirement of skilled labors, proper management information system in joint venture banks and financial institution to get success in portfolio management and customer assurance.

On the basis of his article, the portfolio management activities of Nepalese commercial banks at present is in nascent stage. However, on the other hand most of the banks are doing such activities so far because of following reasons. Such as unawareness of the client about the service available, hesitation of taking risk by the client to use such facilities, lack of proper techniques to run such activities in the best and successful manner, less development of capital market and availability of few financial investment in the financial market.

- He has given the following conclusion for smooth running and operation of commercial banks and financial institution.

- For surviving commercial banks should depend upon their own financial health and various activities.

- In order to develop and expand the portfolio management activities successfully, the investment management methodology of portfolio manger should reflect high standards and give their clients the benefits of global strengths, local insights and product philosophy.

- With the discipline and systematic approval to the selection of appropriate countries, financial assets and management of various risks the portfolio manager could enhance the opportunity for each investor to earn supervisor returns over time.

- The Nepalese banks having greater network and access to national and international capital market have to go for portfolio management activities for the increment of their fee based income as well as to enrich the client base and contribute to the national economy.

**Timilsina** (1999) has published an article on "*Managing Investment Portfolio*." He is however, confronted with problems of managing investment portfolio particularly in times of economic slowdown like ours. A rational investor would like to diversify his investments in different classes of assets so as to minimize risks and earn a reasonable rate of return.

Commercial banks have continuously been reducing interest rates on deposits. Many depositors are exposed to the increasing risk of non-refund of their deposits because of the mismanagement in some of the banks and finance institutions and accumulation of huge non-performing assets with them.

Few depositors of cooperative societies lost their deposits because some of these cooperatives were closed down because of their inability to refund public deposits. An investor in days of crisis has to make an effort to minimize the risk and at least earn a reasonable rate of return on his aggregate investment.

An investment in equity share can earn dividend income as well as capital gain, in the form of bonus share and right share until an investor holds it and capital profit when he sells it in the stock market. As returns from equity investments have fluctuated within a very wide range, investors feel it much difficulty to balance risk and reward in their equity portfolio. As a matter of fact, investors in equity shares should invest for a reasonable long time frame in order to manage the risk.

Making investment in fixed deposits with commercial banks is a normal practice among the common people. Normally fixed deposits with banks are considered risk-less, but they also are not 100% free of risk. You should select a bank to put your deposit therein, which has sound financial health and high credibility in banking business. In times of crisis if you select a sick bank deposit your money there is high probability that your money could be returned back.

An investor may have option of making investment in government bonds or debentures. In history we have examples that a government can nationalize the private property of its citizens, cancel out old currency notes, and can convert the new investment into some conditional instrument. But in democracy there is no probability that the government would default to repay money back. This is comparatively risk free investment, but yields low return.

An investor has to evaluate the risk and return of each of the investment alternatives and select an alternative, which has lower degree of risk and offer at least reasonable rate of return. One can draw a safe side conclusion to invest all the money he has only in government securities, but this is not a rational decision. An investor who doesn't try to maximize return by minimizing the possible risk is not a rational investor. On the other hand, one can place over-confidence on equity investment and assume high risk by investing the whole money in equity shares. Stock market these days is much dwindling and notoriously unpredictable; therefore this too is not a wise decision. Therefore, a portfolio, which consists of only one class of financial assets, is not a good portfolio.

**Thapa** (2003) has published an article on The Kathmandu Post daily of 9th march 2003 entitled "*Managing Banking Risk*", in his article ha has accomplished the subsequent issues.

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

On the basis of his article risk management of the banks is not only crucial for optimum trade off between risk and profitability but is also one of the deciding factors

for overall business investment lending to growth of economy. Managing risk not only needs sheer professionalism at the organizational level but appropriate environments also need to develop. Some of the major environmental problems of Nepalese banking sector are under government intervention, relatively weak regulatory fame, if we consider the international standard, meager corporate governance and the biggest of all is lack of professionalism. The only solution to mitigate the banking risk is to develop the badly needed commitment eradication of corrupt environment especially in the disbursement of lending, and formulate prudent and conducive regulatory frame work.

**Mahat** (2004) has published an article on The Kathmandu Post daily of 28th April 2004 entitled "*Efficient Banking*", in his article he has accomplished, the efficiency of banks can be measured using different parameters. The concept of productivity and profitability can be applied while evaluating efficiency of banks. The term productivity refers to the relationship between the quantity of inputs employed and the quantity of outputs produced. An increase in productivity means that more output can be produced from the same inputs or the same outputs can be produced from fewer inputs. Interest expense to interest income ratio shows the efficiency of banks in mobilizing resource at lower cost and investing in high yielding asset. In other words, it reflects the efficiency in use of funds.

The analysis of operational efficiency of banks will help one in understanding the extant of vulnerability of banks under the changed scenario and deciding whom to bank upon. This may also help the inefficient banks to upgrade their efficiency and be winner in the situations developing due to slowdown in the economy. The regulators should also be concerned on the fact that the banks with unfavorable ratio may bring catastrophe in the banking industry.

### 1.3.4 Review of Unpublished Thesis

**Khaniya (Banjade), Kalpana,** (2003), in their thesis entitled "*Investment Portfolio Analysis of Joint Venture Banks*" has been done in 2003. The study is based on five joint venture banks and they are; NABIL, SCBNL, HBL, NBBL & EBL. The general study of the present study is to identify the current situation of investment portfolio of joint venture banks in Nepal. The specific objectives are as follows;

- To analyze the risk and return ratios of commercial banks.
- To evaluate the financial performance of joint venture banks.
- To study exiting investment policies taken by Nabil in various sectors.
- To study portfolio structure Nabil bank ltd. In investment as compared to other joint venture banks.
- Preference given by Nabil bank ltd. For investment between loan investment, investment in real fixed assets, investment in financial assets.

Researcher used to various financial tools to analyze the data to support the conclusion. The major ratios like total investment to total deposit ratio, loan and advances to total deposit ratio, net profit to total asset ratio, investment on government securities to total outside investment ratio etc. Other financial tools like return on portfolio return on loan and advances, return on share and debenture, return on government securities are used to find the relevance and significance of the samples. To process the financial dat6a, some common statistical tools like co-variance, coefficient of variation, mean and trend analysis are used.

**Major finding;**

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

- SCBNL and HBL have better position. NBBL and NABIL have a low position in the industry. But EBL has a very low position in the industry because of having lowest mean return on shareholder's fund resulting from the negative returns in the fiscal years 1995/96 and 1996/97.
- SCBNL has the highest mean return and EBL has the lowest return. Expect EBL, all other four banks i.e. NABIL, SCBNL, HBL and NBBL have good performance.
- Among other joint venture banks, SCBNL has the highest return and EBL has above mean return than industry average. SCBNL and EBL mobilizes the funds in investment title is higher than the standard ratio.
- NABIL, SCBNL and HBL are investing low amount of deposits on loans and advance which is lower than industry average and NBBL and EBL have invested a high amount of deposits to loans and advances title which is higher than industry average.

- NABIL is investing the highest amount of funds on NRB bond as compared to other JVBs i.e. 3%. NBBL has invested no amount of funds in this title and EBL has invested the lowest of funds i.e. 0.4% and SCBNL and HBL have invested above industry average.
- SCBNL has the highest EPS and EBL has the lowest EPS. Similarly HBL also has above mean EPS than industry average and that of NBBL is lower than industry average.
- HBL has the lowest beta coefficient among the five JVBs which means that the systematic risk of HBL is the lowest among JVBs. The portfolio return of NBBL is 94%. This return is the average of capital gain yield and dividend yield.
- The coefficient of correlation between loans and advance in private sector and portfolio return if joint venture banks come out to be rxy = -0.6. Therefore it indicates that there is negative correlation between loans and advances in private sector and portfolio return of five JVBs in Nepal.

**Mahandhar** (2003) in her thesis entitled "*Analysis of Risk and Return on Common Stock Investment of Commercial Bank in Nepal*" has been done in 2003. The main objective of the study is to analyze risk and return on common stock investment of CBs and other objectives are as follows;

- To examine risk and return on common stock of NABIL, BOKL, HBL, NBBL, NIBL.
- To calculate risk and return of their portfolio.
- To identify whether stocks of selected companies are over-priced, under-price and equilibrium priced.

Focusing on risk and return pattern of the sample taken from the listed companies, Researcher used financial tools to calculate the financial factors like MPS, DPS. The major financial tools like Holding Period Return (HPR), Expected Rate or Return, Beta coefficient to measure systematic risk, portfolio risk along with other statistical majors. To draw the conclusion, researcher has used Hypothesis test to satisfy the null hypothesis.

**Major Finding:**

- Stocks have greater volatility risk than other investment, which takes a random and unpredictable path. Stock market is risky in the short term and it is necessary to prepare the investors for it.
- This study used the historical data of five years starting from FY 053/054 to 057/058 and found that FY 057/058 is best for banking sector according to market capitalization.
- Expected return of the common stock of BOKL is maximum (i.e. 1.1267) due to the effect of unrealistic annual return. Similarly, expected return of the common stock of NIBL is found minimum (i.e.0.4917). On the basis of sector-wise comparison, expected return on banking sector (i.e. 67.39%) is higher and others sector is the least (i.e. 0.65%).
- Risks associated with common stock investment of different selected companies are 1.3949, 0.4154, 0.7392, 0.6798 and 0.1429 of BOKL, NABIL, HBL, NBBL, and NIBL respectively. In the context of comparison of banking sector with other sector expected return is greater than that of other sectors. Standard deviation of other sector is greater than that of other sectors. CV of others sector is greater than that of others.
- BOKL, NABIL, HBL, NBBL's beta coefficient is 2.30, 2.01, 1.0853, 1.7632 and 1.7441 respectively, which is greater than one. Therefore such banks common stocks are more volatile with market. On the other hand NIBL's beta coefficient is 0.3461, which is less than one, therefore common stock of NIBL is said to be less volatile with market.
- One of the main significance of beta coefficient is in capital asset priding model (CAPM). CAPM is a model that describes the relationship between risk and return.
- Stock of all banks in this study are said to be under priced. These companies' common sticks are worth to purchase, as their expected return is greater than required rate of return.
- Portfolio return is greater than portfolio risk of two banks (i.e. NBBL and HBL)

**Shah** (2004) in her thesis "*Impact of Interest Rate Structure on Investment Portfolio of Commercial Banks in Nepal*" has been done in 2004. The main objective of the

study is to analyze the interest rates structure and its impact on various activities of commercial banks. Other objectives are as follows;

- To present the concrete picture of the interest rates structure before and after liberalization.
- To study the relationship between interest rates and other economic variables like deposit, loan, and advances, total investment and credit flow of commercial banks.
- To evaluate the trends of deposit, loan, and advances, total investment and credit position of commercial banks.
- To analyze loans and advances in different sectors of investment portfolio of commercial banks.
- To study the current impact of deregulation on interest rate and its effects on related fields.

Measuring interest rate impact in terms of return in investments, researcher used financial tools to calculate interest returns in savings and fixed deposits as well as the impact on loan distribution patterns. Research gave the key to find out the significance difference of interest rate structure between deposits and loans. Taking the liberalization policy as a marginal impact researcher tried to conclude the research by assessing various ratios in terms of interest.

**Major finding:**

- The interest rates on saving deposit are less or more constant in five years of before liberalization but it started to decline after liberalization. In the same way the fixed deposit rates also started to decline after liberalization. Thus the deposit is increasing at decreasing rate. The lower rates of interest rates decrease deposit. Deposit rate is the most important determinant of the deposit collection.
- The lending rates on purpose wise loan i.e. industrial sector, agricultural sector increased in average after liberalization but decreased in commercial sector. Increasing in lending rates resulted in the decrease in credit flow, which consequently decreased the profit of commercial banks.
- The amount of deposit increased after liberalization but the growth rate in average comparison to before liberalization increased only by 0.44%. Thus the

deposit had not increased more even after the existence of liberalization is due to the declining deposit rates.

- Credit/ Loan and advances also influenced by the lending rates. Increment in lending rates decreases the growth percent of credit flow. In this analysis except agriculture and general use and purpose sector the other sector growth rate is found to be increasing after liberalization instead of increasing lending rates. So it can be say that this increasing is not only due to changing lending rates but also other factors i.e. income, inflation, competition which indirectly affects credit flow of CBs.
- CBs investment in government and other securities highly increased in the year liberalization, which is due to the lack of proper utilization of collected resources. But started to decline after two years of liberalization and reached to negative point due to the higher rate and enough promising investment opportunities available in private sectors.
- The correlation between interest rates and amount of saving deposit is found to be less correlated before liberalization. But in case of fixed deposit interest rates and amount are found to be negative correlation before liberalization. Higher the deposit higher will be the credit flow and higher will be the profit in which the correlation between deposit and credit is positive before liberalization but there is high degree of correlation between deposit and credit after liberalization. Correlation between deposit and investment is highly positive correlated before liberalization but it is found to be negative correlation after liberalization. Lending rates after liberalization in commercial sectors is found to be decreasing.
- There is no significant relation between saving deposit and interest rates before and after liberalization but no significant relationship between fixed deposit and interest rates. Purpose wise loan and lending rates before and after liberalization is significant relationship. There is significant relationship between commercial and industrial sector loan before and after liberalization but no relation between agriculture, general use and purpose and service sector loan before and after liberalization.

**Shrestha, Natasha** (2005) in her thesis entitled "*Portfolio Analysis of Common Stock of Commercial Banks in Nepal*" has been done in 2005. The main objective of the

study is to find out level of portfolio risk and return on stock of commercial bank investment and other objective are;

- To analyze the trend of NEPSE index.
- To analyze the risk and return of common stock of reviewed banks.
- To analyze the market price movement of the common stock.
- To try to find out the best portfolio from NEPSE.

Various tools are used to analyze the data to support the conclusion. Trend analysis showed the trends of NEPSE Index. Risk and return tools like Beta coefficient, Portfolio risk and return, Expected return, holding period return along with stastical tools like CV, Standard Deviation, Correlation and Regression are used to find out the relevance of data collected.

**Major Findings:**

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

- The performance measure shows the ranking stock by different method. The Sharpe's performance shows that performance of stock of SCBL is 1st and HBL is 4th. The Treynor's performance once measures shows that performance of stock of NBBL is 1st and HBL is 4th. Likewise Jenson's performance measure shows the performance of stock of SCBL is 1st and NBBL is 4th among the banks.
- Among four banks optimal portfolio return and risk shows that return NBBL is highest i.e. 32.7% and return of HBL is lowest i.e. 24.9% and HBL has a highest portfolio risk of i.e. 61% and SCBL has a lowest portfolio risk of 34.8%.

**Shrestha** (2006) in his thesis entitled "*A Study on Investment Portfolio of Commercial Banks in Nepal*" has been done in 2006. The general objective of this research is to identify the current situation of investment portfolio of CBs in Nepal. The main objectives are as follows:

- To analyze the investment portfolio of Commercial Banks
- To analyze the risk and return of selected commercial banks on investment using Portfolio concept.
- To forecasting and examine the trend of investment and to provide complementary measures based on analysis.

Methodology used to analyze the data includes common financial tools like return on share and debenture, return on government securities, return on loan and advances and return on portfolio. For risk measurement, it was measured on risk on individual assets and risk on portfolio. The major ratios like return on total asset ratio, total investment to total deposit ratio, loan and advances to total deposit ratio, government securities to total deposit ratio are used. To verify the assumption, there used common statistical tools like standard deviation, arithmetic mean, co- variance, correlation and regression analysis.

**Major Findings:**

- Proper investment on various securities i.e. balance allocation of funds on various government securities such as Treasury bills, National saving bonds, Development bonds etc and fixed income percentage rate that help to reduce the variability of return. In the analysis of risk and return comparatively

SCBNL have more return from investment on government securities like same NABIL has better position on investment on loan and advances.

- The return on share and debenture of commercial banks shows wide fluctuation. These fluctuations in returns are caused mainly by the volatility of the shares prices in market and by the changes in dividends in some extent. Comparatively to other assets, share and debenture has higher return and higher risk. Hence, it is cleared from analysis that investment on share and debenture is high risky assets.
- The return is slightly lower than average return from loan and advances and share and debentures. The portfolio risk on investment is less than that of risk on loan and advances and risk on share and debenture. It shows there is vital role of government securities to reduce the risk.
- The study shows that the portfolio return is decreasing trend every year. It shows the investment portfolio concept is not using properly by the selected banks.
- SCBNL is the bank that mobilizes its total deposits more effectively on government securities. EBL has concentrated to mobilize its depositor's funds in loan and advances. HBL, NSBIBL ands NIBL are not so successful to mobilize its depositor's funds in government securities. But NSBIBL is also more successful to mobilize depositor's funds in loan and advances as well as share and debentures. And NIBL effectively mobilize its depositor's funds in share and debentures.

**Paudyal** (2006) conduct a study on "*A study on Portfolio Analysis of Commercial Banks in Nepal*" with the objective of

- To evaluate financial performance of commercial banks of Nepal.
- To examine the existing situation of portfolio management of Nepalese commercial bank.
- To analyze risk and return of commercial banks.
- To analyze the investment and loans and advance portfolio of commercial banks.
- To show the present position trend of loan and advance and investment to total deposit and forecast it.

Using common financial tools like ratios, portfolio returns, portfolio risk, systematic and unsystematic risks, and researcher tried to give up the insights of financial performance. To process the financial data, some common statistics tools like correlation, covariance, and coefficient of determinant are used to find the relevance and significance of the samples.

**Major Findings:**

- The industrial mean ratio of investment to total deposit is 21.86%. The only EBL has a greater ratio above industrial mean ratio i.e. 24.77>21.8. But other banks have lower investment to total deposit ratio than industrial mean ratio. It shows that EBL has effective mobilization its deposit on investment to generate the return. But other banks are investing its deposits in lower ratio than average industry ratio. Similarly, the CV of EBL is the lowest i.e. 19.9%. Lower ratio indicates that cost consistent which is better than high consistent. The industry CV ratio is 32.37%. The EBL and HBL have the lesser CV ratio to the comparison with industrial CV ratio. It shows variability of ratio of EBL and HBL is the most consistent.
- Among four commercial banks HBL has invested its more funds on government securities (i.e. risk free assets) and lesser fund on share and debenture (i.e. risky assets). All banks have invested more than83% amount in government securities. Only BOKL has invested it's 0.63% on non-resident sector. None of the banks have invested any amount on NRB bond.
- All of the selected commercial banks are granting very high amount its loan and advances to private sector. NIBL and HBL have given second priority to government enterprise and EBL and BOKL give second priority to foreign bills purchase and discount. EBL and BOKL have granted very low (less than 1%) loan and advance to government enterprises.
- BOKL stock has the highest expected return i.e. 8.34% and HBL has the lowest expected return i.e. -8.82%. NIBL has also negative return i.e. -7.71%. The market expected return is -6.47%. The risk of BOKL is the highest i.e. 57.14% and HBL has the lower risk i.e. 15.26%. NIBL and EBL have risk 19.41% and 36.03% respectively. The market risk is 15.68%. In conclusion we can say that higher the risk higher the return and vice versa.
- Total risk of BOKL stock is highest and total risk of HBL stock is lowest among four commercial banks.

- HBL has the highest portfolio return i.e. 4.85%, NIBL stock has lowest (i.e. negative -1.19%) portfolio return and it has the highest portfolio risk i.e. 8.46%. It means NIBL invest its amount in risky assets so it become in loss. EBL and BOKL have a portfolio return of 4.79% and 4.80% respectively and portfolio risk is 0.28% and 5.77% respectively. It shows that the portfolio return of three banks is not so different but risk of BOKL is higher than HBL and EBL.
- EBL is utilizing its more collected fund on loan and advances and investment which mean percentage ratio is 95.85%. It is the highest average ratio among four commercial banks. HBL is in lost position on its 67.36%. Other banks NIBL and BOKL are utilizing their deposit in loan and investment is 83.59% and 94.73% respectively.

**1.4 Research Gap**

Portfolio investment refers to an investment that combines several assets. Commercial banks cannot utilize whole of its fund raised through deposit and borrowing into loans and advance. To fulfill the gap between borrowing and lending banks rather goes for investment. From the above study the researcher founds the gap that researcher has failed to analyze the financial performance of commercial banks in terms of investment strategies.

More specifically, researcher has taken the samples which are more bullish in current market and try to find out how they have managed the investment portfolio that made them success in unprecedented way. In this research, researcher has try to diagnosis that good portfolio investment lead directly on the financial performance of the banks in long run and help to maximize market price of share.

Finally, the sample taken from the research purpose are unique that has hardly taken in previous study in a single batch for study purpose. This study will focus overall financial indicators that may or may not affect the financial performance of commercial banks in consideration with portfolio management. In this research, researcher presents the current data up to 2010.

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