

**Portfolio Analysis of Joint Venture Banks**



**A THESIS**

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**In partial fulfillment of the requirements for the Degree of Master of  
Business Studies (M.B.S.)**



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## RECOMMENDATION

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## DECLARATION

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# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

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

In 1952, Harry M. Morkowitz published a landmark paper that is generally viewed as the origin of the modern portfolio theory approach to investing. Nobody is ready to bear the risk without any return but to have returned one must ready to face some risk, portfolio diversification is necessary to minimize the risk at the given rate of return. Portfolio management is unconcerned with efficient management of portfolio investment in financial assets including shares and debentures of companies. A portfolio of an individual or corporate unit is the holding of securities and investment in financial assets. These holding are the result of individual preferences and decision regarding risk and return. The process of portfolio management is closely and directly linked with the process of decision making correctness of which cannot be ensured in all cases. for example portfolio management of bank assets basically means allocation of funds to different degree of risk and carrying rates of return in such a way that balance the conflicting goal of maximum yield and minimum risk .

The portfolio theory is covered with the selection of optimal portfolio i.e. portfolio that provides the highest possible return for any specified level of risk or the lowest possible risk for any specified rate of return. Integrated and speedily development of the country is possible only when competitive banking and financial service reaches risk and concerns of the country. Successful formulation and effective implementation of investment policy is the prime

requisite for the successful performance of the banks and other financial institutions. Good investment policy has a positive impact on economic development of the country and vice versa " A systematic investment process should be followed to win the stock market investment process describes how an investor should go about making decision with regard to what marketable to invest in how extensive the investment should be and when the investment should be made".

Portfolio construction identifies those specific assets in which to invest determine the proportion of the investor's wealth. Diversification should be done to minimize the risk and maximize the return. Portfolio performance involves determining periodically how the portfolio performs in terms of not only the return earned but also the risk experienced by the investor.

The systematic development and implementation of an investment strategy, the purpose of which is to achieve the investor's financial goals, open portfolio management is mistaken for the simple buying of new securities and selling current holdings.

In finance a portfolio is a collection of investments held by an institution or a private individual. In building up an investment portfolio a financial institution will conduct its own investment analysis whilst a private individual may make use of the service of a merchant bank which offers portfolio management. Holding a portfolio is a part of an investment and risk limitation strategy called diversification.

Portfolio means "A collection of company shares and other investment that are owned by a particular person or organization"

(Cambridge International Dictionary English, 1995)

"A portfolio simply represents the practice among the investor of having their fond in more than one asset. The combination of investment asset is called portfolio" Investment portfolio is one of the such tool that help for proper

utilization of resources of joint venture banks are major financial institutions which occupy quite an important place in the framework of every economy because they provide capital for the development of industry, trade, business and other resources deficit sector by investing the saving collected as deposited. All the economic activities of each and every country. Thus, JVBs how become the heart of financial system. A key factor in the development if the country is the mobilization of domestic resources and their investment for productive use to the various sector. To make it more effective, JVBs formulate sound investment policies, which help maximizing quality and quantity of investment and eventually contribute to the economic growth of a country.

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

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937A. D but the financial scenario of Nepal changed with the establishment of joint venture bank in 1984 A. D. NABIL Bank Ltd. is the first joint venture bank introduced in Nepal. Since the joint venture banks introduced in Nepal, the set up of joint venture banks are increasing day by day and domestic banks like Nepal Bank Ltd. And Rastriya Banijya bank no longer been able to enjoy monopoly .There are cut throat competition among these banks, which is healthy sign for the economic development of the country. Among the established commercial banks in NEPSE only four commercial banks are taken for this study.

## List of Licensed Commercial Banks in Nepal

S. No.	Commercial bank	Established date B.S	Head office
1	Nepal Bank Ltd.	1994-04-30	Kathmandu
2	Rastriya Banjiya Bank	2022-10-10	Kathmandu
3	Nabil Bank Ltd	2041-03-29	Kathmandu
4	Nepal Investment Bank	2042-11-16	Kathmandu
5	Standard Chartered Bank Ltd	2043-10-16	Kathmandu
6	Himalayan Bank Ltd	2044-10-25	Kathmandu
7	Nepal SBI Bank Ltd.	2050-03-23	Kathmandu
8	Nepal Bangladesh Bank Ltd.	2050-02-23	Kathmandu
9.	Everest Bank Ltd.	2051-07-01	Kathmandu
10	Bank of Kathmandu Ltd	2051-11-28	Kathmandu
11	Nepal Credit and Commerce Bank Ltd	2053-06-28	Siddharthanagar
12	Lumbini Bank Ltd	2055-04-01	Narayanghat
13	Nepal Industrial and Commercial Bank Ltd.	2055-04-05	Birtnager
14.	Machhapuchhre Bank Ltd.	2057-06-	Pokhara
15	Kumari Bank Ltd.	2056-08-24	Kathmandu
16.	Laxmi Bank Ltd.	2058-06-11	Birjung
17	Siddhartha Bank Ltd.		Kathmandu

Source: <http://bfr.nrb.org.np>, 2007)

Joint venture bank is a new innovation in finance and it is on growing stage, mostly in developing countries. Joint venture means "a business contact of management effort between two persons, companies or organization involving risk and benefit sharing." Joint venture is the process of sharing risk and return from a specific venturing. The first Joint venture bank was Nepal Arab Bank Ltd. (NABIL). It was established in 1984. Later the following joint venture banks were established, respectively.

- NABIL Bank Ltd. 1984
- Standard Chartered Bank Ltd 1985
- Nepal Indoseuz Bank in 1986
- Nepal Grindlays Bank in 1987

- Himalayan Bank in 1993
- Nepal SBI Bank in 1993
- Nepal Bangladesh Bank in 1994
- Everest Bank in 1994
- Bank of Kathmandu 1995
- Nepal bank of Ceylon in 1996

In this past, general introduction of the banks under study is being attempted to furnish for the easy reference of the samples to the research.

- i. NABIL Bank Ltd.
- ii. Nepal SBI Bank Ltd.
- iii. Bank of Kathmandu Ltd.
- iv. Standard Chartered Bank

### **Focus of the Study**

Modern banking history of Nepal began from the establishment of Nepal bank Ltd. in 1936. In 1956 Nepal Rastra Bank came in existence as a central bank of our country. The focus of the study is on portfolio analysis on investment of selected commercial bank in Nepal. This study is designed to describe to minimized risk and maximized return by portfolio management and existing situation of portfolio management of commercial bank in Nepal. And to measure the financial performance of selected five listed banks in NEPSE, their risk, return, trend, and portfolio patterns etc. On the other hand, the study would provide information to management of the bank that would help them to take collective action. Further from the study, the shareholders would get information to make decision while making investment on share of various banks. There are following focus of study given below:

- Exiting situation of portfolio management of Nepalese commercial banks
- Investment to total deposit ratio analysis.

- Investment portfolio analysis of commercial banks and compare with each other.
- Loans and advance portfolio analysis of commercial banks.
- Risk and return analysis of commercial banks in Nepal

**i. NABIL Bank Ltd.**

NABIL Bank Ltd., the first joint venture bank in Nepal which was established in 1984 under the company act 1964. Dubai bank Ltd (DBL) was the initial foreign joint venture bank partner with 50% equity investment. The share owned by DBL was transferred to Emirate Bank International Ltd. (EBIL) Dubai. Later on EBIL sold its entire stock to National Bank Ltd., Bangladesh (NBL). Hence 50% so the current configuration given of follows;

- i. National bank ltd, Bangladesh 50%
- ii. Nepal Industrial Development Corporation NIDC 10%
- iii. Rastriya Beema Sunsthan 9.66%
- iv. Nepal stock exchange (NEPSE) 0.34%
- v. Nepalese public 30%

Authorized capital and paid of capital of NABIL Bank Ltd. are Rs. 500 million and Rs. 491.6544 million.

**ii. Nepal SBI Bank Ltd.**

Nepal SBI Bank Ltd. was established in 1993 under the company act 1964 this is the joint venture of State Bank of India and Nepalese promoter. This bank is managed by State Bank of India under the joint venture and technical service agreement signed with Nepali promoters via employee provident fund and agriculture development Bank Nepal. share holding pattern of the bank is 50% share owned by state bank of India Nepalese promoters includes 20%

government organization and 30% of general public, the main objective of the bank is to carryout modern banking business on the country. The bank is one of the largest shareholder based company and the bank started its banking operation on 8th July 1993. the banks authorized capital issued capital and paid up capital were Rs 240 , Rs. 120 and Rs. 119.82 million respectively . in the initial period at the end of year 2001\2002 authorized capital issued capital and paid up capital were Rs. 1000 and Rs. 500 and Rs 424.89 million respectively.

### **iii. Bank of Kathmandu**

Bank of Kathmandu Ltd. was established in 1994 under the company act 1964. This bank was established as the joint venture investment of SIAM commercial bank public company Ltd Thailand. Authorized, issued and paid up capital were Rs. 240 , Rs. 120 Rs. 42 million respectively at the initial period. At the time of establishment SIAM commercial bank holds 50% share at this bank but later on it holds over its 25% share to Nepalese citizen in 1998 A. D. At the end of year 2001/2002 authorized issued and paid up capital were Rs. 1000 Rs. 58 and Rs. 463.58 million respectively.

### **iv. Standard Charted Bank Ltd.**

Standard Charted Bank Ltd. the second joint venture bank in Nepal. Which was established in 1985 under the company act 1964. ANG Grind lays Bank PLC London in the foreign joint venture partner with 50% equity investment. Now the bank has its partner of annexation of standard charted, U.K. by standard charted banking Group. Among the remaining 50% equity share of SCBL Bank Ltd. 33.34\$ share are held by commercial banks and 16.66% share by Nepalese public and other financial institution. Authorized capital and paid up capital of standard charted bank of Nepal Ltd. are Ts.339.5488 million.

## **1.2 Statement of Problem**

The main problem is almost all underdeveloped countries like Nepal is that capital formation and proper utilization. In such countries, JVBs have more responsibilities to avoid above problem and there by contribute to the national economy. The problem of investment and lending has become very serious for developing countries like Nepal. The development of country is directly related to the volume of investment in productive sectors, which is also obtained from JVBs. The credit policy the interest rate ceiling, discount rate policy, certain percentage of deposit to be lent to productive sector. All these policy effect investment decision of the JVBs.

JVBs are found to be making investment only on short term basis against movable merchandise. There is hesitation to invest on long term projects, they are much more safety minded. So they follow conservative loan policy. There is also a criticism that JVBs have served only richer communities not the poor with the prevailing economic recession political instability and Maoist's violence in the country, there has been lower investment in the productive sector. Lower volume of investment is causing lower growth of gross domestic product, hence foreign trade deficit is increasing day by day. Nepal is known as a capital scare country. It has lower saving rate and as a consequence of which investment rate is also low. The low investment rate has also constrained the growth rate of GDP increasing saving and investment and reducing the consumption there by farther alliterating the place of development is the challenge of the country.

Now all financial sectors have been suffering from cut throat competition. So, Nepalese JVBs cannot escape from such condition. Because of liberal economic policy, many new banks are coming in existence day by day which creates the threatens for existing bank to be competitive. There are various problems in resource mobilization by financial institution in Nepal. The main problem is poor investment climate prevailing in Nepal due to heavy regulatory

procedure uncertain government policy, NRB's directives insecure climate etc. Undoubtedly reduce investment demand below when otherwise would be unsecured loan and investment may cause the liquidation of those institutions.

After the restoration of democracy Nepal has adopted more liberal and open economic policies. The process of economic liberalization and reforms in financial sector introduced in the early 1980's has led to significant changes in the banking industry. The open and liberal policy of government in financial to do has helped in establishing many banks and financial institutions in the country. These banks have contributed towards introducing new technology, new banking system and efficient service delivery on the country. Now a day's JVBs do not seem to be capable to invest their funds in more profitable sectors where there is low risk. They are found to more interested in investment less risky and liquid sectors i.e. treasury bills, development banks, national saving share and debenture etc. This is due to sound investment policy of JVBs and lack of portfolio management. JVBs have not formulated their investment policy in an organized manner. They do not have consideration towards portfolio optimization. They just rely upon the instruction and guideline of Nepal Rastra Bank. They do not have their own clear vision towards investment portfolio. They do not try to pay due attention towards proper matching of the deposit and investment portfolio.

Bank has to invest its source indifferent productive sector of the investment alternatives to earn profit but there is uncertainty of profit which creates risk to the organization. So every JVBs has to diversify their investment to minimize risk. But portfolio management activities of JVBs are in developing stage. There are various reason behind not suing such activities openly by JVBs such as awareness about portfolio management and its usefulness, hesitation of taking risk, lake of proper techniques to run such activities in the best and successful manner less developed capital market, very limited opportunity for exercising the portfolio management. Nepal Rastra Bank has also played vital

role to make JVBs as well as financial institutions to invest their funds in a good sector, which affect the investment portfolio. NRB has imposed many rules and regulations, so JVBs can have sufficient liquidity and security banking competition is increasing day by day but investment opportunity is not comparatively extended.

Under such situation, the present study will try to analyze the investment of JVBs portfolio management of JVBs in their investment, return on various types of investment, portfolio risk return and performance towards investment. Therefore this study will deal with the following issues.

1. Is portfolio management efficient on JVBs?
2. How for JVBs have been able to mobilize and utilize domestic resources?
3. How does bank portfolio behave?
4. How do JVBs manage their risk and return using portfolio diversification?
5. Does the investment decision effect the total earning of the bank?
6. Which bank has largest portfolio return?
7. What is the relationship investment with total deposits, loan and advance, net income etc.?
8. Which banks has the largest degree of financial risk measured in terms of portfolio risk?
9. What is the trend of investment in different assets?

### **1.3 Significance of the Study**

The main significance of this study of investment portfolio analysis of JVBs is to help how to minimize risk on investment and maximize return through

portfolio analysis similarly, the study of JVBs, investment trend, risk return pattern, portfolio management, credit management and effect of investment decision on earning will strive to disclose the internal weakness of the bank and furnish the ideal for improvement. JVBs don't have clear view towards effective investment. They want making investment only short term basis. There is hesitation to investment on long term project because they are much more safety minded. So they follow traditional and un effective investment policy. Similarly, they do not seem to be capable to invest their funds in more profitable sector. They are found to more interest in investment in less risky and highly liquid sectors. The investment analysis of any organization flashes its investment policy. Sound investment policy makes a good impact on the economy of the country. The success and prosperity of any financial institution relies heavily upon the successful investment of its available resource into the profitable sector. Banks and other financial institution are playing vital role in the economic development of the country. So if there is insufficiency of banking and financial facilities, the growth of the economic development becomes slow specially, JVBs provide different facilities to the people engaged in trade, commerce, industry and so on. That is why, they are being the means for the upliftment of the society. Since, the importance of banks is highly appreciated, it needs proper attention to run successfully. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of any organization. The major significance of the study are as follows

It examines the investment, loans and advances portfolio of JVBs.

It analyzes risk and return of JVBs.

It evaluates the financial performance of selected JVBs of Nepal.

- It examines the existing situation of portfolio management of JVBs.

- It provides the literature to the researcher who wants to carry on future research in this field.

#### **1.4 Objective of the Study**

The main objective of this study is to identify the situation of portfolio management of JVBs. Investment decision is one of the major decision functions of financial management. It emphasizes that the analyze examines the interprets portfolio technique followed by JVBs on their investment in various sector. This study focuses whether the JVB' properly followed portfolio concept to take investment decision or not. Hence, the major objectives of this study are given below.

1. To examine the existing situation of portfolio management of JVBs under study.
2. To evaluate comparative financial performance of selected JVBs in terms of investment strategies.
3. To find out trend of investment in different banks.
4. To analyze how JVBs manage their risk and return on investment using portfolio concept.
5. To analyze the investment loan advance portfolio of JVBs.

#### **1.5 Limitations of the Study**

- To examine financial position of JVBs only certain ratios related with investment are related.
- The study only covers a period of five fiscal years.

- The study is mainly based on secondary data. Consequently the result depends on the reliability of secondary data.
- There are a lot of factors that affect investment decision of JVBs. However, this study concentrates only on those factors, which are related with investment portfolio analysis and available in the form required for the analyzing different issues.
- Given the unavailability of various relevant returns on investment, it has not been possible to estimate portfolio risk and return. However, as an alternative, the returns on various investments has estimated from the data available in the financial statement of banks.
- The financial statement of all JVBs published by them are not readily available. So, only four banks i.e. NABIL Bank Ltd., Nepal SBI Bank Ltd., Bank of Kathmandu Ltd., Standard Chartered Bank are taken for the study,

## **1.6 Statement of the Common Hypotheses about the Study**

Hypothesis is the statement about the relationship between two or more variables which need to be investigated for its truth. Hence, some general hypothesis that related to this study are as follows.

- ❖ The higher level of deposit, the higher level of investment.
- ❖ The return on portfolio depends upon the amount of fund invested in each individual asset.
- ❖ Portfolio return on investment is higher than the individual return on investment
- ❖ Risk can be reduced by investing wealth in more than one security.

- ❖ Portfolio risk is less than individual risk on investment i.e. portfolio management minimize the investment risk and maximize return.

## 1.7 Organization of the Study

The study has been organized into five chapters each denoted to some aspects of the study of clearing and settlement system. The title of each chapter is as follows.

- ❖ The first chapter is **introduction** chapter, which deals with general background, meaning, statement of problem , objective of the study, significance of the study, limitations of the study and common hypothesis about the study.
- ❖ Second chapter, deals with the **review of available literatures** in the field of study being conducted. This includes conceptual review of popular models of portfolio, review of journal and articles and review of previous thesis.
- ❖ Third chapter explains the **research methodology** used in study, which includes research design, population and sample source of data, data collection techniques, data analysis tools.
- ❖ Fourth chapter is **data presentation and analysis**, it is the major part of the whole study in which all collected relevant data are analyzed and interpreted by the help of different financial and statistical tools.
- ❖ The fifth and final chapter is the **summary, conclusion** and recommendation. It includes summary of the study, conclusion of the major findings and recommendation for further improvement.

Besides this chapter, **bibliography and appendixes** will also present at the end of the thesis. Table of contents, list of table list of figure abbreviations are included in the front part of this thesis report.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

This chapter is considered of the major related literature about the portfolio management and related studies. Every possible effort has been made to grasp knowledge and information that are available from libraries, documents and collection center, Nepal Rastra Banks Nepal stock exchange center, security board, other information managing bureaus and concerned JVBs. It provides the foundation for developing a comprehensive theoretical framework and knowledge of the status of the relevant to the field of research in order to explore the relevant and true facts for the reporting purpose. Since, there are not so much adequate study materials related with this topic published in Nepal. This study has to refer almost all the books related with this topic published in other countries than Nepal. The concept of this portfolio management and its analysis is clear from the following studies:

#### **2.1 Concept of Portfolio Management**

Portfolio is defined as the composite set of ownership rights to financial assets in which the investor wishes to investment. Portfolio are thus, composed of securities and their expected returns and risk of their component securities.

Portfolio management is a method of selecting a bundle of securities the providers to the investing organization a minimum yield for a given level of risk “A Portfolio is collection of investment securities. portfolio deals with the selection of optimal portfolios ; that is portfolio that provide the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return ” (Weston & Copeland ;1992,302)

“The term „portfolio “simply means collection of investments. For an investor through the stock exchange the portfolio will be a collection of shareholdings in different companies. For a property, investor has portfolio will be collection of a real capital projects. It will be apparent that the actual nature of the

components of a portfolio depends on the portfolio of opportunities from which the selection has been made” (Raymond;1990,148)

“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)

“A portfolio simply represents the practice among the investors of having their funds in more than one asset. The combination of investment asset is called a portfolio”( Weston & Brigham;1982,100)

“Portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also over time appreciates in value and yields an adequate return consistent with the level of risk assumed.” (Cohen, Zinberg & Zeikel;591)

Portfolio mgmt of banks assets basically means allocation of fund to different components of banking assets having different degrees of risk and varying rate of return in a way that balance the conflicting goal of maximum yield and minimum risk . When the processes of portfolio management of bank assets are done various factors such as availability of fund, liquidity requirement, central bank’s policy etc. It should be considered. As the task of portfolio management of bank assets is to be carried out within the given macroeconomic environment. The manager should carefully watch related macro economic indicator such as interest rate inflation rate national income, saving ratio etc.

Portfolio management refers to an investment that combines several assets the modern portfolio theory explains the relationship between assets risk and return. The theory is founded on the mechanics of measuring the effect of asset on risk and return of portfolio. Portfolio investment assumes that the mean and variance of returns are the only two factors that the investor cares. Bases on this assumption, we can say that rational investor always prefers the highest possible return for a given level of risk or the lowest possible level of risk for a

given amount of return. Portfolio, technically known as efficient portfolio, is a superior portfolio. The efficient portfolio is a function of not only risk and return of individual asset. Included but also the effect of relationship among the assets on the sum total portfolio risk and return. The portfolio return is straight weighted average of the individual assets. But the portfolio risk is not the weighted average of the variance of return of the individual assets. The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and their respective weights.

Portfolio analysis considers the determination of future risk and return in holding various bundles of individual securities. Portfolio expected return is a weighted average of the expected return of individual securities but portfolio variance is a sharp contrast, can be something less than a weighted average of security variance. As a result, an investor can something reduce portfolio risk by adding another security with greater individual risk than any other security in the portfolio.

### **2.1.1 The Expected Rate of Return**

The expected rate of the portfolio is the weighted average of the expected returns of the individual asset in the portfolio. The weights are the proportion of the investor wealth invested in each asset, and sum of the weight must be equal one.

The expected rate of return on the portfolio is calculated by as follows

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

Where,

$R_p$  = Expected portfolio return.

$W_A$  = Weight of investment, invested in asset A

$R_A$  = Expected return for assets A.

$W_B$  = Weight of investment, invested in asset B.

$R_B$  = Expected return for asset B.

### 2.1.2 Portfolio Risk

The portfolio risk is measured by either variance or the standard deviation of returns. Generally, the portfolio risk is less than the weighted average of the standard deviation of individual securities. The reason is that it ignores the relationship or covariance between the returns of two securities.

"The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respected weight."

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

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

$$\sigma_p = \sqrt{W_A \sigma_A + W_B \sigma_B + 2W_A W_B \cdot \text{Cov.}(r_A, r_B)}$$

Where,  $\sigma_p$  = standard deviation of portfolio rate of return

$\text{Cov.}(r_A, r_B)$  = covariance of returns between assets A and B

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

$$\text{Cov.}(r_A, r_B) = P_{AB} \sigma_A \sigma_B$$

$P_{AB}$  = Correlation coefficient between variables A and B.

### 2.1.3 Basic Assumption of Portfolio Analysis

The portfolio selection model development by Markowitz. This model is based on several assumptions regarding investor is behavior.

1. Investment considers each investment alternative as being represented by a probability distribution of expected returns over same holding period.
2. Investors are based their decisions solely on expected return and variance of return only.
3. Investors estimates risk on the basis of the variability of expected returns
4. Investors maximize one period expected utility and posse's utility curve, which demonstrates diminishing marginal utility of wealth.
5. for a given level of risk, the investment prefer higher return to lower returns for any given level of rate of returns

According to Markowitz, the investor should maximize expected return. This rule implies that the non-diversified single security portfolio with the highest expected return is the most desirable portfolio.

#### **2.1.4 Objective of Portfolio Management**

There are several objectives which should be considered as a basis to an executed investment programmer the objective of portfolio analysis is to develop a portfolio these has a maximum return at whatever level at risk, the investor seems appropriate. We can point out the following as the main objective of portfolio management.

- To safety or security of an investment
- To stable of the income
- To easy marketability of asset.
- To ever liquidity.
- Minimization of risk
- Maximization of return.
- To the tax benefit.
- To get income by interest and dividends

### **2.1.5 Portfolio Management Policies**

#### **A. Aggressive Policy**

This policy gives more emphasis on yields of securities. This policy assumed that the market is strong and rising, that common stocks will be best outlets for the portfolio in rising market. This policy depends more on short-terms source of fund.

#### **B. Defensive Policy**

This party gives more emphasis on safety of principal amount. This policy will be useful when it is suspected that the marker will decline in near future. Bonds and preferred stocks are defensive types of securities. This policy depends more upon long term source of fund.

#### **C. Moderate Policy**

This policy suggests for the construction of balanced portfolio of various types of securities. It is the hedge of aggressive and defensive policy or hedge against a rise or fall in the stock market.

#### **D. Income us. Growth policy**

The income policy gives more emphasis upon maximization of current income and attaches insignificant importance to capital gain and growth. The growth policy gives more emphasis on the capital appreciation of the portfolio.

### **2.1.6 Factor affecting Portfolio decisions**

**Amount of Decision:** while determining the investment portfolio the finance manager 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 funds available with them will therefore decide the quantum of their investment in securities.

**Objective of Investment Portfolio:** While determining the investment portfolio we should be clear about objective of making investment in securities. The objective may differ from organization to employees can think of having in its investment portfolio only such securities which can assure safety of the fund and its returns.

**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.

**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.

## **2.2 Review of Journals and Articles**

There are not so many articles published relation to portfolio management of JVBs of Nepal. Some related articles have been mentioned. Mr. Shree Prasad Poudel has given short note, 'Government Security Markets National and Development in Nepal on Nepal Rastra Bank Samachar in 2059. It has concluded that the security markets are key point of the financial system. Debt securities market in the Nepal is highly dominated by government. Debt statistics shows that Nepal remained free nation till 1950's from the beginning of 1960's foreign loans and domestic bonds have been alternative means of debt financing in Nepal as a result total debt as a percentage of GDP widened from 1% in 1960 to 65.3% in 2000. According to Mr. Poudel, government debt consist Treasury Bills (TBS) National Saving Certificates (NSC) development bonds (DBs) special bonds (SBs) and Citizen Saving Certificates (CSCs). In his article he has suggested the following improving area in debt securities marketing in Nepal.

- Exchange of government securities at market price have to be encouraged.
- To make government securities active instruments of open market operation coupon rate on government securities has to be fixed closely to the market rate of interest.
- Products of government debt securities need to be diversified to meet investor demands.
- Like equity shares the marketable government securities need to be exchanged in the floor of Nepal stock exchange at competitive price.

Mahat,L.D(2004) has published an article on the kathamandu post daily of 28<sup>th</sup> April 2004 entitled“Efficient Banking “ ,in his article he has accomplished the efficiency of banks 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 increasing 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. An investing in high yielding asset. In other words it reflects the efficiency in use of funds.

Brennan and Caw (2005) “international portfolio investment flows” Critically analysed and develop a model of international equity portfolio investment flows based on differences in informational endowments between foreign and domestic investors. It is shown that when domestic investors possess cumulative information advantage over foreign investors about their domestic market, investors tend to purchase foreign assets in periods when the return on foreign assets is high and to sell when the return is low .

Thapa C.(2003) has published on the kathmandu post daily on seventh march 2003 entitled “Managing Banking Risk”,in his article he has accomplished the subsequent issues.

**Timilsina, Y.** (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.

Banking and financial service are among the fastest growing industries in developed world and are also emerging as cornerstones for other developing and underdeveloped nations as well bank's primary function is to take risk. Risk cannot be avoided by the bank but can only be managed. There are two types of risk. The first is the diversifiable risk or the firm's specific risk which can be migrated by maintaining an optimal and diversified portfolio. This is due to the fact that when one sector does not well the growth in another might

to set the risk. Thus, depositor must have the knowledge of the sector in which their banks have made 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 banks.

According to Mr. Thapa risk management of the banks is not only crucial for optimal trade off between risk and profitability but is also one of the deciding factors for overall business investment leading to growth of economy. Managing risk not only needs sound professionalism at the organizational level but appropriate environment also needs to develop. Some of the major environmental problems of Nepalese banking sector are under government intervention, relatively weak regulatory frame, 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 framework.

### **2.3 Review of Theses**

**Bajracharya, Prabina** (2000) conduct a study on “*Investment of Commercial Banks in Priority Sector*” with the objective of;

- To analyzed the trend of investments in private sectors for 10 years from 2047 B.S. to 2056 B.S.
- To analyzed the trend of repayment in private sectors for 10 years.
- To measure the effectiveness of the program in terms of the investment and repayment in rural and urban sector.
- To evaluate the banking procedures and services in disbursing loan in this sector.

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 data, some common statistical tools like co-variance, coefficient of variation, mean and trend analysis are used.

**Major Finding:**

- The target of 12% investment of total outstanding liabilities in priority sector and 3% out of which has been invested in deprived sector has been met by RBB.
- Trend analysis for 10 years shows the increasing trend of investment in priority sectors which shows that the CBs are giving due consideration to increase investment in priority sector.
- Interest charged on the loan disbursed in this sector is fairly less than the interest charge on loans for other purposes. In addition to this, there is high overhead cost incurred for supervision, administration and others in this program.
- Regression analysis shows positive relation between investment and repayment.
- The chi square test of effectiveness of program is more effective in rural & semi rural area as compared to the urban areas.
- Investment on agriculture is higher than investment on industry and service sector.
- The study revealed that the procedure of loan disbursing itself is complicated for the borrowers to understand.
- In fact, if the supervisors make the scheduled supervision & inspection & the frequent contact with the borrowers, the chance of misuse of the loan can be minimized.

**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 data, 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. Except 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  $r_{xy} = -0.6$ . Therefore it indicates that there is negative correlation between loans and advances in private sector and portfolio return of five JVBs in Nepal.

**Shah, Sabita** (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

+0.918 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 1<sup>st</sup> and HBL is 4<sup>th</sup>. The Treynor’s performance once measures shows that performance of stock of NBBL is 1<sup>st</sup> and HBL is 4<sup>th</sup>. Likewise Jensen’s performance measure shows the performance of stock of SCBL is 1<sup>st</sup> and NBBL is 4<sup>th</sup> 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, Khem Raj** (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 and 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, Bhavishor** (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 than 83% amount in government securities. Only BOKL has invested its 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.

## **2.5 Justification of the Study**

From the above study the researcher found the gap that all the previous research on portfolio management has been based on only showing the risk and return analysis of the stocks of JVBs. The researcher has been fully assumed that this research is one of the most demand and most valuable research under the financial sector of Nepal.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

Research methodology describes the methods and process applied in the entire aspect of the study. It includes all the procedures from theoretical foundation to the collection and analysis of data. Research methodology is a systematically way to solve the research problem. It may be understood as a science of studying how research is done scientifically.

Research methodology is composed of both parts of technical aspect and logical aspect on the basis of historical data. Research is a systematic and organizational effort to investigate a specific problem that needs a solution. In this study, all the data are secondary and these data are analyzed using appropriate statistical and financial tools. Research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view.

This chapter will includes research design, nature of data, sample selection and size, data collection procedure, data processing and data analysis tools etc.

#### **3.1 Research Design**

Research design is based on two types of research design i.e. descriptive and analytical research design describes the general pattern of the Nepalese investors, business structure, problem of portfolio mgmt, etc. The analytical research design makes analysis of the gathered facts and information and makes a critical evaluation of it. Research design is a controlling media for the collection of data and it analysis of data in manner that aims to combine relevance to the research purpose with economy in procedure” (Source - Kothari, 1992). Research design is the plan, structure and strategy of investigations conceived so as to obtain answer to research questions and to control variances. To achieve this study descriptive and analytical research designs have been used.

### 3.2 Population and Sample

The total number of listed commercial banks in NEPSE i.e. called population, how domestic and joint venture banks are listed in NEPSE. There are nine Joint Venture Bank in Nepal. They are as follows:

S.N	Name of joint venture banks	Established (B.S.)	Date	Head Office
1	Nepal Arab Bank Limited	2041/03/29		Kathmandu
2	Nepal Investment Bank Limited (Formerly Nepal Indo-Suez Bank)	2042/11/16		Kathmandu
3	Standard Chartered Bank Limited (Formerly Nepal Grind lays Bank)	2043/10/16		Kathmandu
4	Himalayan Bank Ltd.	2049/10/05		Kathmandu
5	Nepal SBI Bank Ltd.	2050/03/23		Kathmandu
6	Nepal Bangladesh Bank Ltd.	2051/02/23		Kathmandu
7	Everest Bank Ltd.	2051/07/01		Kathmandu
8	Bank of Kathmandu Ltd.	2051/11/28		Kathmandu
9	Nepal Credit and commerce Bank Ltd. (Formal Nepal Bank of Cylon Ltd.)	2053/06/28		Siddhartha Nagar

Among them only four banks are taken for the study, this study, which is called sample size. Because these banks are at the same category. Their market prices of stock are also not so different between each other. Their establishment and

operation data are also not so different. In the absence of reliable and valid data, the study has been selected only four banks which are as follows:

<b>S.N</b>	<b>Name of Banks</b>
1	Nabil Bank Ltd
2	Nepal SBI Bank Ltd.
3	Bank of Kathmandu Ltd
4	Standard Chartered Bank Nepal Ltd.

### **3.3 Sources of Data**

This study mainly based on secondary data. (However, to certain extent, primary data are also used). Which are collected from their respective annual reports, especially from PL account, Balance sheet and concerned publications from different publishers. The secondary data are gathered from various sources such as books, journals, articles, reports etc. The necessary data and information at micro level have been collected from relevant institutions and authorities such as NRB, ministry of finance, SEBO and their respective publications. Similarly, the

required micro level data derived from annual reports of selected banks and websites of banks and NEPSE. In addition to above supplementary data and information's were collected from different library such as T.U. central library, library of NRB, NEPSE, SEBO etc. similarly, various data and information's were collected from the periodical economic journals and from other published and unpublished reports. The major sources of data and information are as follows:-

- Annual reports of concerted commercial banks.
- Trading reports published by Nepal stock exchange.
- Materials published in papers and magazines

- Related websites.
- Economic survey, ministry of finance.
- NRB economic Report, NRB.
- Annual Reports of SEBO.
- Journal of finance.
- Other related books and booklets.

### **3.4 Data Collection and Processing Techniques**

This study mainly used secondary data, primary data will be used if necessary. The relevant data have been collected from the Nepal stock Exchange limited and concerned banks chosen as sample for this study. Most of the data were obtained after convincing extensively to the concerted officers or authorities official publicans like Economic survey. Annual reports, banking and non Banking financial statistics, Economic. Bulletin and related website etc. were obtained from respective offices. To obtained more information and reality about the various published data, investment policies at the banks, portfolio concept in the field of investment etc. Similarly, the required data have also been recollected from Degree campus library as central library of Kirtipur, Shanker Dev Campus Library, Kathmandu.

### **3.5 Data Analysis Tools**

Financial as well as the statistical tools will be used to make the analysis more convenience, reliable and authentic. Tools of analysis used in this study are as follows:

### **3.6 Financial Tools**

These are several financial tools which can be applied in order to analyze the performance of JVBs. But the following main financial tools are used to analyze.

### **3.6.1 Ratio Analysis**

It shows the relationship between two accounting figures. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time. It refers to the numerical or quantitative relationship between two variables. In financial analysis, ratio is used as an index of yardstick for evaluating the financial position and performance of the firms. Only such ratios which are related to investment of JVBs are taken here.

#### **a) Total Investment to Total Deposit Ratio**

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

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

#### **b) Loans and Advances to Total Deposit Ratio**

This ratio measures extend to which bank is able to mobilize their deposit funds to earn better profit by providing the fund to outsiders in the form of loans and advantages. The higher ratio represents the great efficiency of the firm in utilizing fund and vice -versa this ratio is calculated by dividing loans and advances by the total deposit. This can be stated as:

$$\text{Loans and Advances to Total Deposit Ratio} = \frac{\text{loans and advance}}{\text{Total deposit}}$$

#### **c) Investment on Shares and Debentures to Total outside Investment**

It shows the bank's investment in shares and debentures of subsidiary and other companies. It is calculated by dividing investment on shares and debentures by the total outside investment.

$$\frac{\text{Investment on share and debentures}}{\text{Total outside investment}}$$

**d) Return on Total Assets Ratio**

This ratio is calculated by dividing net profit after tax by total assets

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

It measures the profitability with respect to total assets

**3.6.2 Portfolio Analysis**

**CAPM Model**

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

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

$$\text{Required rate of return (K}_j\text{)} = R_f + (R_m - R_f) \beta_j$$

Where,

$R_f$  = Risk free rate of return

$R_m$  = expected return on market portfolio

$\beta_j$  = beta or systematic risk index of assets j

### **Analysis of Total Risk**

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

Total risk = Diversifiable risk + Undiversifiable risk

### **Diversifiable Risk**

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

:- Unsystematic risk = total risk-systematic risk

$$\text{Var}(e) = \sigma_j^2 - \beta_{jm}^2 \sigma_m^2$$

Where,

var (e) = variance of standard error

### **Undiversifiable Risk**

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

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

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

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

$$= \frac{\beta_{jm}^2 \sigma_m^2}{\sigma_j^2} \times 100$$

$$\text{Coefficient of determination} = \frac{\text{Systematic risk}}{\text{Total risk}} \times 100$$

$$= \frac{\beta_{jm}^2 \sigma_m^2}{\sigma_j^2}$$

### **Return on Portfolio**

The expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each assets and sum of the weights must be equal one.

$$\text{Portfolio return (R}_p\text{)} = W_A R_A + W_B R_B + W_C R_C + \dots + W_A R_A.$$

Where,

$W_A$  = weight investment invested in stock 'A'

$W_B$  = weight of investment invested in stock 'B'

$R_A$  = expected return for stock 'A'

$R_B$  = expected return for stock 'B'

## Risk on Portfolio

The portfolio risk is measured by either variance or the standard deviation of returns. The portfolio risk affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weights.

Hence, the portfolio risk can be defined as

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

Where,

$\sigma_p^2$  = Standard deviation of portfolio rate of return

$\text{Cov}(r_A, r_B)$  = Covariance of returns between asset A & B.

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

$$\text{Cov}(r_A, r_B) = P_{AB} \sigma_A \sigma_B$$

$P_{AB}$  = correlation coefficient between variable A & B.

Portfolio beta

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

$$\text{Portfolio beta } (\beta_p) = \sum_{i=1}^n W_i B_j$$

Where,

$W_1$  = proportion of portfolio

$\beta_j$  = Beta coefficient of asset j

## Beta Coefficient

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

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

Where,

$\beta_j$  = Beta coefficient stock j

$COV(r_j, r_m)$  = Covariance between stock J and market return M

Beta of market returns equals to 1. If beta is greater than 1, then the asset is more volatile than market and is called aggressive beta. If the beta is less than 1, the asset is called defensive beta and its price fluctuation is less volatile than market (Bhattacharai 2004:122).

### 3.6.3 Statistical Tools

#### a) Arithmetic Mean

Arithmetic mean of a set of observations is the sum of all the observations divided by the number of observations. Which is as follows.

$$\text{Arithmetic mean } (\bar{X}) = \frac{\sum x}{n}$$

Where,

$$\sum x = \text{Sum of total values}$$

n = no. of observations

#### b) Standard Deviation of Stock Return

Standard deviation (S.D.) is defined as the positive square root of the mean of the square of the deviations taken from the arithmetic mean (Bajracharya,

2004: 177). It is the square root of the variance and measures the unsystematic risk on the stock investment. It is denoted by  $\sigma$  Symbolically.

$$\sigma_j = \sqrt{\frac{R_j - \bar{R}_j}{N}}$$

Where,

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

Covariance:

### c) Covariance

Covariance is the joint variance of any two assets. It measures how two random variable, such as the return on securities A & B move together. It can state as follows:

$$COV(r_j r_m) = \frac{\sum (R_j - \bar{R}_j)(R_M - \bar{R}_M)}{N}$$

Where,

$COV(r_j r_m)$  = Covariance between stock J and market return M

Coefficient of variation:

The coefficient of variation is the way of expressing risk and it is quite appropriate to use it. It measures risk per unit fo expected return. It is calculated as follows:

$$CV_j = \frac{\sigma_j}{\bar{R}_j}$$

Where,  $\sigma_j$  = S.D. of security j

$\bar{R}_j$  = expected (average) return on security j.

## CHAPTER IV

### DATA PRESENTATION AND ANALYSIS

This chapter is the major part of the whole study. This chapter makes and analysis and interpretation of all collected relevant data related to the study. In this chapter, necessary table, figures have also presented to achieve the objective of the study. Several financial and statistical tools have been used in this chapter. In this chapter the investment portfolios of banks are analyzed with the help of the following tools.

1. Ratio Analysis
2. Trend Analysis
3. Risk and Return on Investment Portfolio
4. Correlation and Regression Analysis
5. Investment Portfolio Performance

#### 4.1 Ratio Analysis

The purpose of this chapter is to evaluate and analyze the financial position and performance of different joint venture bank. In this part only those major ratios, which are related with investment operations of joint venture banks are calculated and analyzed.

##### a) Investment to total Deposit Ratio

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

$$\text{Investment on total deposit ratio} = \frac{\text{total investment}}{\text{total deposit}}$$

The following table number (4.1) shows the ratio of investments to total deposit of NABIL, BOKL, SBI, SCBL.

**Table : 4.1**  
**Investment to Total Deposit Ratio (%)**

Fiscal year	NABIL	BOKL	SBI	SCBL
2004/2005	29.31	29.43	30.13	50.11
2005/2006	31.93	32.18	32.82	55.71
2006/2007	38.32	24.15	23.24	54.99
2007/2008	31.14	20.24	22.52	46.74
2008/2009	28.99	15.39	47.52	56.41
Mean	31.94	24.28	31.25	52.79
S.D.	3.38	6.07	.04	3.75
C.V.	10.58	25	28.93	7.104

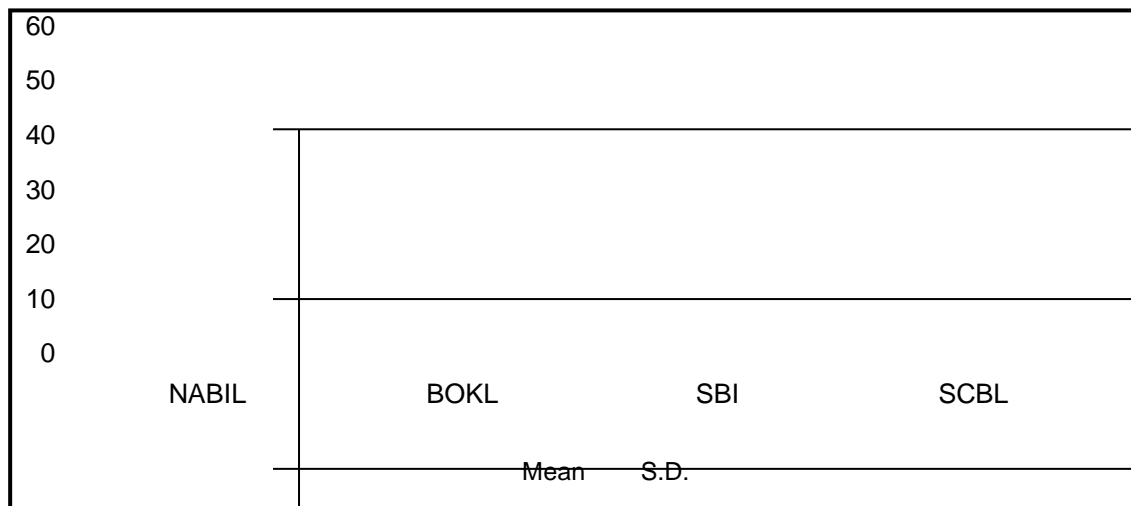
Source: Appendix 1(D,E)

Joint venture Bank's average means 28.05

Joint venture Bank's average means S.D. 5.56

Joint venture Bank's average mean C.V. = 17.90

**Figure: 4.1**  
**Investment to Total Deposit Ratio (%)**



Mean and Standard Deviation of Investment to Total Deposit Ratio of banks.

The comparative table no. 1 reveals that the ratio are in fluctuable. The mean investment to deposit ratio of SCBL is highest i.e. 52.19% and BOKL has the lowest ratio i.e. 24.28% among the four joint venture banks. The other banks NABIL, SBI have 31.94% and 31.25% respectively. On the basis of average ratio, it can be said that SCBL and NABIL are capable to mobilize the deposit on the investment than other banks because they have the greater investment to total deposit it ratio than the average mean i.e. 28.05.% so that the performance

of both banks are quiet nice. Similarly, the C.V. of SCBL is the lowest i.e. 45.98% and SBI has the highest ratio i.e. 28.93% among the four joint venture banks. The other banks NABIL and BOKL have the C.V. ratio of 10.58% and 25%. The SCBL has the lesser of C.V. of four joint venture banks. NABIL are moderate consistent. SBI is the least consistent. BOKL has also less consistent ratio. So it is clear that SCBL is most successful.

### b) Loan and Advance to Total Deposit Ratio

The loan and advance is also one of the major sectors of investment. This ratio measure extend to which bank are successful to mobilize their deposit funds to earn profit by providing the fund to outsiders in the form of loan and advances. This ratio is calculated by dividing loans and advances by total deposit. This can be stated as follows:

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

**Table: 4.2**  
**Loan and advance to total deposit ratio (%)**

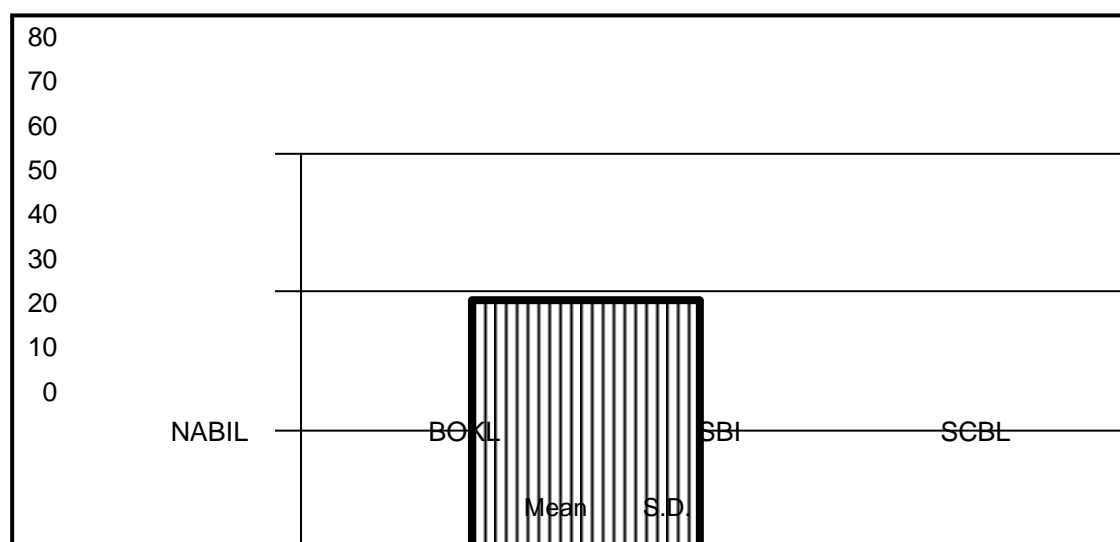
Fiscal year	NABIL	BOKL	SBI	SCBL
2004/2005	72.57	72.84	71.80	42.05
2005/2006	66.79	69.23	69.32	38.75
2006/2007	66.60	75.87	82.66	42.61
2007/2008	66.94	78.71	88.32	46.12
2008/2009	73.87	80.99	54.12	38.14
Mean	69.35	75.53	73.24	41.53
S.D.	3.19	4.17	11.83	2.88
C.V.	4.60	5.52	16.15	6.93

Source: Appendix 1 (B and E)

Average means = 64.91

Average means C.V. = 8.3

**Figure :4.2**  
**Loan and advance to total deposit ratio (%)**



Mean and Standard Deviation of Loans and advances to total deposit Ratio of banks.

In the above table, the mean loans and advances to total deposit ratio of BOKL is highest i.e. 75.53% and SCBL has lowest i.e. 41.53% among four joint venture banks. Other banks NABIL and SBI are 69.35% and 73.25% respectively. On the basis of average ratio, it can be said that SBI and BOKL are the banks that mobilize their total deposit more effective on loan and advances among four joint venture banks. SCBL are poor in mobilizing total deposit loan and advances and NABIL bank comes under normal categories and C.V. of NABIL is lowest and SCBL is highest ratio i.e. 4.6% and 16.15% and other banks BOKL and SBI have the C.V. of 5.52% and 6.93%.The among four banks NABIL bank is most successful bank. BOKL and SBI have moderate consistent. SCBL is least consistent.

**c) Return on Total Assets Ratio**

This ratio measures the effectiveness of the banks in using its overall resources. It measures in terms of relationship between net profit and total assets. This

ratio is calculated by dividing net profit after tax by total assets. This can be calculated as follows:

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

**Table: 4.3**  
**Return on Total Assets %**

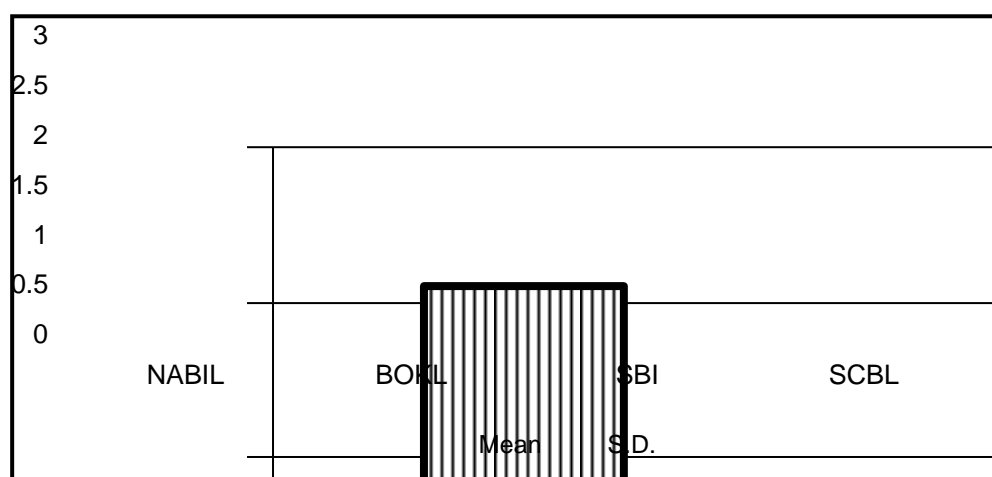
Fiscal year	NABIL	BOKL	SBI	SCBL
2004/2005	3.05	2.51	5.76	2.46
2005/2006	2.84	1.65	0.90	2.56
2006/2007	2.47	1.80	1.90	2.42
2007/2008	2.01	2.04	1.44	2.46
2008/2009	2.40	2.25	1.02	2.53
Mean	2.55	2.05	2.204	2.49
S.D.	.362	0.39	1.81	0.051
C.V.	141.96	19.02	82.12	2.06

Source: Appendix 1 (F and G)

Average means = 2.32%

Average means C.V. = 61.29

**Finger: 4.3**  
**Return on Total Assets %**



Mean and Standard Deviation of Return on Total Assets Ratio of banks

The above table shows, the mean return, S.D. and C.V. on total assets ratio of NABIL is highest return i.e. 2.55% and BOKL has the lowest i.e.2.05% throughout the review period. SCBL and SBI have 2.49% and 2.204% ratios

SCBL and SBI have the moderate mean return on total assets ratios. SCBL and NABIL have above the average return so that actual performance of both banks have good but BOKL and SBI Ltd. have the below the average return which indicate the actual performance of both banks are below the standard NABIL is less consistent on four joint venture banks.

**d) Investment of Share and Debenture to Total outside Investment**

The ratio between investment on share and debenture and total outside investment reflects the extent on which the banks are successful to mobilize their total outside investment on purchase of share and debenture of other companies to generate income. This ratio is calculated by dividing total outside investment.

Investment of share and debenture to total outside investment

$$= \frac{\text{Investment on share and debenture}}{\text{Total outside investment (TOI)}}$$

Where, TOI = Loan and advances + Bills purchased and discounted + investment

**Table :4.4**

**Investment on Share and Debenture to total Outside Investment Ratio**

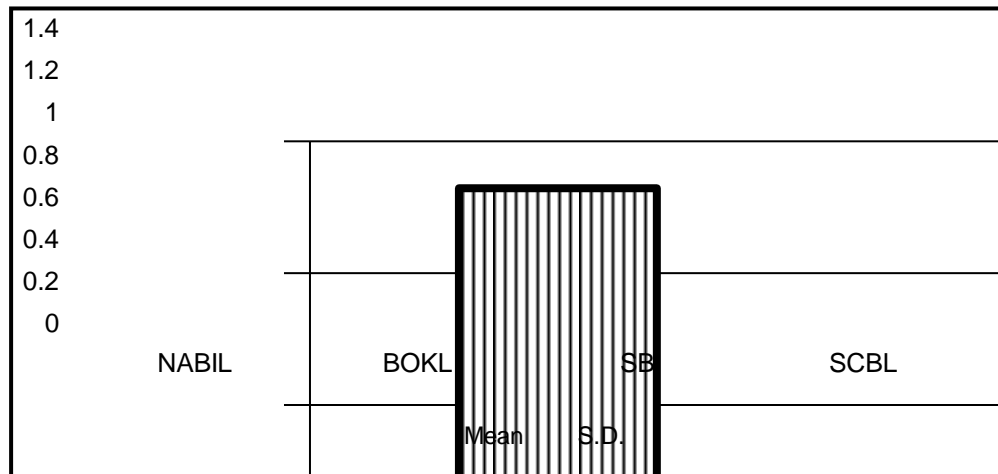
Fiscal year	NABIL	BOKL	SBI	SCBL
2004/2005	2.98	0.60	0.22	0.075
2005/2006	0.55	0.92	0.46	0.071
2006/2007	1.17	0.73	0.75	0.19
2007/2008	1.03	0.73	0.75	0.090
2008/2009	0.924	0.71	0.12	0.40
Mean	1.33	0.74	0.46	0.153
S.D.	0.849	0.10	0.26	0.103
C.V.	63.82	14.11	57.08	67.57

Source: Appendix 1 (A and C)

Average means = 0.67

Average means C.V. = 50.64

**Figure: 4.4**  
**Investment on Share and Debenture to total outside Investment Ratio**



Mean and Standard Deviation of Investment of share and debenture to total outside investment ratio of banks.

The above table number 4.4 shows that the NABIL has the highest mean ratio i.e. 1.33% and SCBL is the lowest investor i.e. 0.153% of total outside investment in share and debentures among the four joint venture banks and BOKL has lowest C.V. i.e. 14.11% which shows that the variability of ratio between investment on share and debenture and total outside investment is most uniform among the four banks. Similarly, the highest C.V. of SCBL i.e. 67.57% shows that it has more variability in investment on shares and debentures to total outside investment.

## 4.2 Trend Analysis

Trend analysis is a statistical tool which highlights the previous trend and forecast for a future with the help of past and present information. The purpose of trend analysis in this chapter is to analyze the trend of loans and investment and total deposits. Loans and investment include loans, advances, overdrafts, cash credit local and foreign bills purchases and discounts. Investment includes government securities, NRB bond share and debentures. Likewise, total

deposits consist of current deposits, fixed deposits, saving deposits, money at call other deposits.

Here, least square method is used to determine the trend value which is state as:

$$y = a+bx$$

y = Dependent variable

x = Independent variable (time)

a = y intercept

b = Slope of the trend line

To make calculation easier, the deviation of the independent variable (i.e. time) are taken from the middle of a and b can be easily calculated by using following formula.

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

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

**Table: 4.5**

**Position of Total Loans and Investment and Total Deposits of NABIL Bank**

(in million)

Fiscal year	Total loans and investment	Total Deposit	Ratios
2004/2005	14861.70	14586.61	1.0189
2005/2006	19101.07	19347.40	0.987
2006/2007	24491.09	23342.30	1.049
2007/2008	31304.82	31915.05	0.9809
2008/2009	38416.31	37348.26	1.0286
Mean			1.013

Appendix -1(C&E)

**Table: 4.6**

**Position of Total Loan and Investment to Total Deposits of BOKL**

(in million)

Fiscal year	Loan and investment	Deposit	Ratios
2004/2005	4992.23	5723.29	0.872
2005/2006	10633.79	10485.36	1.015
2006/2007	12391.76	12388.93	1.00
2007/2008	15666.71	15833.74	0.990
2008/2009	17430.90	18083.98	0.964
Mean			0.968

Appendix -1

**Table: 4.7**

**Position of Total Loan and Investment to  
Total Deposits of SBI**

(in million)

Fiscal year	Loan and investment	Deposit	Ratios
2004/2005	8821.56	8654.7	1.019
2005/2006	11237.52	11002.04	1.021
2006/2007	12119.90	11445.30	1.059
2007/2008	15202.59	13715.40	1.108
2008/2009	28417.93	27957.22	1.02
Mean			1.045

Appendix 1

**Table: 4.8**

**Position of total loan and advance and investment to total deposits  
of SCBL**

(in million)

Fiscal year	Loan and investment	Deposit	Ratios
2004/2005	17845.76	19363.47	0.922
2005/2006	21782.96	23061.03	0.945
2006/2007	24055.87	24647.02	0.960
2007/2008	27621.42	29743.99	0.929
2008/2009	33915.88	35871.72	0.946
Mean			0.9404

Appendix -1

### Trend Value

**Table: 4.9**

**Trand value ( $y_c = a + bx$ ) of Loan and Investment to Total**

**Deposits ratio of NABIL**

(in million)

Fiscal year	Loan and investment $Y_c=25634.98 + 5931.30x$	Total Deposit $Y_c= 25307.92 + 5809.10x$	Ratio %
2010	43428.90	42735.22	101.62
2011	49360.20	48544.32	101.68
2012	55291.50	54353.42	101.73
2013	61222.80	60162.52	101.76
2014	67154.10	65971.62	101.79

**Appendix -2**

**Table : 4.10**

**Trand value ( $y_c = a + bx$ ) of Loan and Investment to Total**

**Deposits Ratio of BOKL**

(in million)

Fiscal year	Loan and investment $Y_c=2834.19+176.43x$	Total Deposit $Y_c=$ $12592.54+2907.49x$	Ratio %
2010	3363.48	21315.01	15.78
2011	3539.91	24222.50	14.61
2012	3716.34	27129.99	13.70
2013	3892.77	30037.48	12.96
2014	4069.20	32944.97	12.35

**Appendix- 2**

**Table : 4.11**  
**Trend value ( $y_c = a + bx$ ) of Loan and Investment to Total**  
**Deposits Ratio of SBI**

(in million)

Fiscal year	Loan and Investment	Total Deposit	Ratio %
	$y_c = 15159.92 + 4315.78x$	$y_c = 14554.95 + 4131.83x$	
2010	28107.26	26950.44	104.29
2011	32423.04	31082.27	104.31
2012	36738.82	35214.10	104.33
2013	41054.60	39345.93	104.34
2014	45370.38	43477.76	104.35

**Appendix 2**

**Table : 4.12**  
**Trend value ( $y_c = a + bx$ ) of Loan and Investment to Total**  
**Deposits ratio of SCBL (in million)**

Fiscal year	Loan and Investment $Y_c = 25044.38 + 3797.87x$	Total Deposit $Y_c = 26537.45 + 3969.95x$	Ratio %
2010	36437.99	38447.30	94.77
2011	40235.86	42417.25	94.86
2012	44033.73	46387.20	94.93
2013	47831.60	50357.15	94.98
2014	51629.47	54327.10	95.03

**Appendix 2**

The above table represents that, NABIL bank limited loan and investment have been increasing by Rs 5936.30 million every year. It is expected to each Rs

67154.10 million at the end of 2014 similarly, NABIL Bank Ltd. total deposit have been increasing by Rs. 5809.10 million every year and expected to reach Rs. 65971.62 at the end of 2014 other things remaining the same, the ratio of loans and investment to total deposit of NABIL Bank Ltd. in 2014 will be 101.79% which is the highest ratio among the four joint venture banks.

Similarly, the above table shows that, BOKL limited loan and investment have been increasing by Rs. 176.43 million per year and expected to reach 4069.20 million at the end of year 2014. Similarly the BK limited total deposit have been increasing by 2907.49 million per year expected to reach Rs. 32944.97million on the end of year 2014. The ratio of loan and investment to total deposit of BOKL at the end of year 2014 will be 12.35%.

Similarly, SBI Bank limited loan and investment have been increasing by Rs. 4315.78 million every year. It is expected to reach Rs. 45370.38 million at the end of 2014. Similarly, SBI bank limited total deposits have been increasing by Rs. 4131.83 million every year and expected to reach Rs. 43477.76 million at the end of 2014 other thing remaining the same, the ratio of loan and investment to total deposits of SBI bank limited in 2014 will be 104.35% which is the lowest ratio among four joint ventral banks. Likewise, SCBL limited loan and investment have been increasing by Rs. 3797.87 million every year. It is expected to reach Rs. 51629.47 million at the end of 2014. Similarly, total deposit of SCBL limited have been increasing by Rs. 3969.95 million every year and expected to reach Rs. 54327.10 at the end of 2014. Other thing reaming the same, the ratio of loan and investment to total deposits of SCB Ltd. in 2014 will be 95.03%.

### **4.3 Investment Portfolio Analysis**

Investment portfolio is one of the tools that help for proper utilization of resources. Banks have to investment its funds in different productive sector of the investment alternatives to earn profit. Higher risk cans get higher returns. To minimize the risk, banks have to invest different types of assets not only the

same risk plays a vital role while analyzing the investment alternatives. The measurement of risk has always been a subject for debate in the investment operation. Risk can be measured in many ways using various statistical techniques such as range, some-inter-quartile, range mean, absolute deviation, variance semi-variance etc.

### **Risk and Return Analysis**

The purpose of this chapter is to analyze and compare the risk and return of the asset or security of the four joint venture banks. To analyze the risk, return, the beta coefficient, expected rate of return and security market line are used.

Expected rate of return

The rate of return on a security that an investor anticipates receiving over a holding period.

$$E (R_J) = R_F + (R_M - R_F) B_J$$

$E (R_J)$  = expected return on asset j

$R_F$  = risk free return

$B_J$  = coefficient of Beta

$R_M$  = average market return

Estimated of market parameter market return and market standard deviation is the most important factors to analyze the risk return. For that, purpose we take 13 companies from overall market selected companies have been taken from different sectors, such as banking sector, manufacturing sector trading sector, service sector, hotel sector etc. return is the combination of capital gain yield and dividend yield capital gain yield can be calculated by difference between this year price and last year price with respect to the last year dividend yield can be calculated dividend per share divided by market price per share. Market return is the mean return of the selected companies, which is represented by the market return of the study. Standard deviation measured the risk that is most necessary to study the risk and expected rate of return and to analyze the beta

coefficient of the study. Market standard deviation is representing the all risk of the stock. It helps the inventor to take the decision for the investment.

**Table : 4.13**

**Calculation of expected return on market and variance of market.**

Expected return on Market	Standard deviation of market	Variance of market	Coefficient of variation Market
15.67%	39.20%	1536.64%	6.52%

Appendix-3

**Table: 4.14**

**Calculation of expected Return and Variance of NABIL**

Banks	Expected return	Standard deviation	Variance	Coefficient of variation
NABIL	36.80	54.41	2960.45	1.48
BOKL	43	47.24	2231.70	1.09
SBI	46.55	33.32	1110.22	0.716
SCBNL	26.16	32.22	1038.13	1.23

Source : [www.nepalstock.com](http://www.nepalstock.com)

Appendix-3

The above table shows that the expected rate of return of NABIL is 36.80% which is sum of single rate of return divided by no. of observation. Where standard deviation of NABIL is 54.41% which is due to the variation is single period rate of return. Where co-efficient of variation of NABIL Bank is 1.48%.

The expected rate of return of Bank of Kathmandu Ltd. is 43% which is sum of single rate of return divided by no. of observation. Where standard deviation of BOKL is 47.24% which is due to the variation is single period rates of return. Where coefficient of variation of BOKL is 1.09%.

Similarly, the expected rate of return of SBI is 46.55% where standard deviation of SBI is 33.32% which is due to the variation in single period rate of return. Where coefficient of variation of SBI is 0.716%.

But, in case of SCBNL the expected rate of return is 26.16%. where standard deviation of SCBL is 32.22% which is due to the variation in single period rate of return. Where CV of SCBL is 1.23%.

In conclusion, from the expected rate of return and C.V point of view, SBI is better than other Banks

**Table: 4.15**

**Calculation of co-variance and beta co-efficient of NABIL**

Banks	Covariance of market and Assets	Beta coefficient
NABIL	2003.59	1.304
BOKL	697.63	0.454
SBI	932.67	0.607
SCBNL	745.05	0.485

From the above table calculation of beta coefficient of NABIL is 1.304 which is greater than 1. Beta is greater than 1 show that the stock of NABIL is more volatile than the market or stock seems to be an aggressive. And it is more risky type of assets.

The covariance of BOKL with the market is positive but less than perfectly correlated. BOKL has beta of 0.454 which indicated that it is a defensive type of assets. It is less risky type of assets.

Similarly, the covariance of SBI with the market is passive but less than perfectly correlated. SBI has beta of 0.607 which indicates that it is a defensive type of assets. In other words assets of SBI is less volatile than the market.

We know that beta is that index of systematic risk, which is aroused by market forces and cannot be diversified. SCBL has the beta of 0.485 which indicates that it is a defensive type of assets which seem to be less volatile than the market. Therefore, it is a less risky asset.

#### 4.4 Security Market Line

The capital asset pricing model (SML) is an equilibrium theory of how to price and measure risk. The logic of the security market line equation is that the required return on any investment is the risk-free return plus a risk-adjusted factor. This factor is obtained by multiplying the risk premium required for the market rate of return by the beta of the individual investment.

$$E(r_i) = R_f + (E(r_m) - R_f) \beta_i$$

Thus, the required rate of return for a joint venture bank can be calculated by the SML equation where the risk-free rate of return is taken as the weighted average return of the bill rate published by the NRB.

Where, risk-free rate of return  $R_f = 2.90$

Beta coefficient of different banks ( $\beta_i$ )

Market rate of return  $E(r_m)$  = beta coefficient and comparison of ERR and required rate of return is shown in the table below.

**Table: 4.16**

#### **Comparative Analysis of ERR and RRR of different Joint Venture Banks**

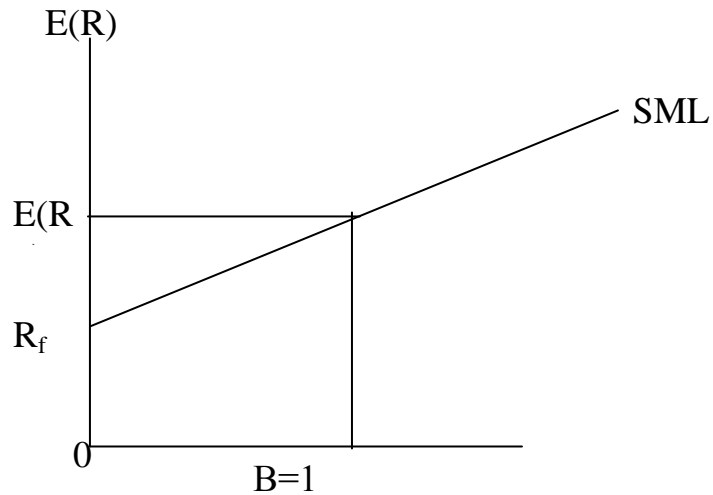
Banks	RF	E (r <sub>m</sub> )	$\beta_i$	RRR= $R_f + E(r_m) - R_f$ $\beta_i$	ERR	Remarks
NABIL	2.9	15.67	1.3039	19.50	36.8	Under
BOKL	2.9	15.67	0.485	9.093	43	Under
SBI	2.9	15.67	0.454	4.988.70	46.55	Under

SCBL	2.9	15.67	0.607	10.65	26.16	Under
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**Figure indicate the RRR on Security Market Value**

**Figure: 4.5**

**RRR on Security Market**



**Partitioning of total risk into systematic and unsystematic risk**

Total risk measured by the variance of return. Total risk can be partitioned into systematic risk and unsystematic risk.

Total risk measured by the variance of return. Total risk can be partitioned into systematic risk and unsystematic risk. Systematic risk cannot be eliminated through diversification. Beta coefficient is the index of systematic risk.

Beta coefficient of different banks is summarized below.

**Table-4.17**

Banks	Beta
Nabil	1.304
BOKL	0.485
SBI	0.454
SCBL	0.607

Above table shows that the beta of BOKL bank is greater than four joint venture banks and beta of NABIL, BOKL and SBI are greater than 1,  $B > 1$ . These three banks have aggressive types of assets.

Which indicate the more volatile than market. If market goes up by 10% these assets will increase by 16.6% and 16.0% respectively in other hand SCBL is less than one beta i.e.  $B < 1$  which indicates the defensive type of assets.

Calculation of systematic and unsystematic risk:

### **NABIL**

Total risk = systematic risk + unsystematic risk

$$\text{Var}(r_n) = (\beta_n)^2 \times \text{var}(r_m) + \text{var}(e)$$

$$2960.45 = (1.304)^2 \times 1536.64 + \text{var}(e)$$

$$\text{var}(e) = 347.52$$

Unsystematic risk = 347.52

### **BOKL**

$$\text{Var}(r_B) = (\beta_B)^2 \times \text{var}(r_m) + \text{var}(e)$$

$$\text{or, } 2231.703 = (0.485)^2 \times 1536.64 + \text{var}(e)$$

$$\text{or, var}(e) = 1870.24$$

### **SBI**

$$\text{var}(SBI) = (\beta_S)^2 \times \text{var}(r_m) + \text{var}(e)$$

$$\text{or, } 1110.22 = (0.454)^2 \times 1536.64 + \text{var}(e)$$

$$\text{var}(e) = 793.49$$

### **SCBL**

$$\text{Var}(SCBL) = (\beta_{SCBL})^2 \times \text{var}(r_m) + \text{var}(e)$$

$$\text{Or, } 1038.13 = (0.607)^2 \times 1536.64 + \text{var}(e)$$

$$\text{var}(e) = 471.96$$

**Table :4.18**

**Total Risk and its Partition into System and Unsystematic 'Risk'**

Bank	Total risk	Sys. risk	Unsys. Risk	Co-efficient
NABIL	2960.45	2612.93	347.52	0.94
BOKL	2231.703	361.46	1870.24	0.38
SBI	1110.22	316.73	793.49	0.71
SCBL	1038.13	566.17	471.96	0.59

The above table indicates that total risk at BOKL is highest that is 2960.45 and total risk of SCBL is lowest i.e. 1038.13. Among the four joint venture banks, systematic risk is the marker risk and that can't eliminate through diversification. Here NABIL has highest coefficient of determinant, which indicates that the total risk of them has, consist with systematic risk that can't be eliminated. Unsystematic risk up NABIL can be diversified away in the other hand NABIL has highest total risk and lower coefficient of determination which shows the there is huge part of unsystematic risk and total risk.

**4.5 Risk and Return on Portfolio**

Investment portfolio is one of the tools that help for proper utilization of resources. Banks have to investment its fund in different productive sector of the investment alternatives to earn profit higher risk can get higher return. To minimize the risk, banks have to invest different types of assess not only the same risk plays a vital role while analyzing the investment alternatives. Risk and return portfolio calculation as follows:

**Table: 4.19**

**Calculation of Weight Invested in Government Securities (Risk Free Assets) and Weight Invested in (Risky Assets) Share and Debenture of Four Banks**

Banks	Weight invested share and debenture	Weight invested government securities	Portfolio return( $R_p = W_m R_m + W_R R_f$ )	Portfolio risk ( $\sigma_p = W_m \sigma_m$ )
NABIL	0.090	0.910	4.06	3.55
BOKL	0.040	0.960	3.41	1.57
SBL	0.019	0.981	3.14	0.745
SCBNL	0.007	0.993	2.99	0.2744

The above calculation shows portfolio of return and risk of joint venture banks. Risk free rate of return for all Bank is 2.9% and return on market is 15.67%. NABIL has the highest portfolio return i.e. 4.06% and SCBL has lowest portfolio return. Because NABIL is investing 9.05% of its total investment and remaining 90.95% at its investment on risk free assets, also it has the highest total risk on portfolio i.e. 3.55% of total investment higher the return will be higher the risk. SBI as invested only 1.90% of its total investment in risky assets and reaming 98.1% of its total investment in risk free assets, so it has the lowest portfolio return and its has also the lowest portfolio risk i.e. 0.745% among four JVBs.

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

## 4.6 Correlation and Regression Analysis

Regression and correlation analyses are the techniques of studying how the variations in one series are related to variations in another series measurement of the degree of relationship between two or more variable is called correlation analysis and using the relationship between two or more variable to estimate the unknown on is termed as regression analysis regression analysis shows how the variables are related.

The multiple regression equation is the algebraic relationship between one dependent variable and two or more independent variable. This relationship is used to estimate the value of dependent variable for the given values of independent variables. We can estimate the unknown value of one variable from the given or known values of the other variables. Multiple regression analysis is a logical extension of the simple linear regression analysis. In multiple regression analysis, instead of a single independent variable, two or more independent variables are used to estimate the unknown value of the dependent variables.

The multiple regression equation describe the average relationship between one dependent variable and two or more independent variable and this relationship is very much useful for estimating the dependent variable. Thus, a multiple regression equation of  $x_1$  on  $x_2$  and  $x_3$  is an equation for estimating a dependent variable  $x_1$  from two independent variable  $x_2$  and  $x_3$ .

Let  $X_1$ ,  $X_2$  and  $X_3$  denoted return on assets, investment to total deposit and liquidity assets respectively. Since, return on assets dependent variable, investment to total deposit and liquidity (current assets/ current liability) assets independent variable.

$a$ = point of intercept on y-axis= the value of  $x_1$  when  $x_2 = x_3 = 0$

$b_1$  slope of  $x_1$  with variable  $x_2 =$  holding variable  $x_3$  constant=  
corresponding change in  $x_1$  for each unit.

$b_2$  = slope of  $x_1$  with variable  $x_3$  holding variable  $x_2$  constant = corresponding change.

**Table-4.20**

Correlation and regression analysis can be as follows:

Banks	r1.2	r1.3	r2.3	R1.23
NABIL	-0.155	-0.543	-0.273	0.543
BOKL	-0.268	-0.80	0.304	0.704
SBL	-0.220	-0.3175	-0.719	0.726
SCBNL	0.529	0.388	0.003	0.627

**Appendix-4**

**Table-4.21**

**Value of Multiple regression equation**

Bank	a1	b1	b2
NABIL	2.51	-0.0008	0.2303
BOKL	-55.79	2.297	1.934
SBL	25.92	-2.225	-7.225
SCBNL	-31.092	0.636	0.017

**Appendix-4**

Above calculation show that, correlation coefficient of SBI bank is perfectly correlated and NABIL bank has positive but low significant among four JVBs. All banks are positively correlated among four JVBs, has perfectly positive correlated and regression line expressed in terms of mathematical relationship between dependent and independent variable.

There are positive correlation between profit, investment on liquidity assess. It means the test of significance of the value of r shows that there is good significant relationship between profit, investment and liquidity assets.

Regression line cash can be fitted to show the relationship between two or more variables. Investment and liquid assets can be forecasted by the profit for this purpose, profit, investment and liquidity assess are interrelated variables.

Regression of SCBL and BOKL has positively related but NABIL has negatively related with investment and SBI'S profit has also negatively related with liquidity assets.

The relationship between profit and investment of BOKL, SCBL, NABIL has positively related, SBI has negatively related but profit and liquidity assets of NABIL and SCBL, BOKL, positively but very low significant SBI has negatively related.

#### **4.7 Portfolio Performance Evaluation**

The portfolio of assets usually offer advantage of reducing risk through diversification. The portfolio risk depends upon weight of funds invested in various assets, risk of individual assets.

To test the portfolio performance this study uses sharp's portfolios performance model. According to this model, in assessing the performance of a portfolio, it is necessary to consider both risk and return. William f. Sharpe devised an index of portfolio performance denoted by sp, measure the slope of the line starting at risk- less rate R and running out to assess is defined as below.

#### **Sharp Portfolio Performance Evaluation**

$$Sp = \frac{\overline{r_p} - r_f}{\sigma_p}$$

Where,

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

$r_f$  = Risk free rate of return

$\sigma_p$  = Standard deviation of portfolio

**Table: 4.22**

**Performance of Various Banks**

Banks	$r_f$	$r_p$	$\sigma_p$	$s_p$	Ranking
NABIL	2.9	3.34	9.45	0.04656	4
BOKL	2.9	3.96	22.60	0.049	1
SBI	2.9	3.70	16.98	0.047	2
SCBL	2.9	3.20	6.43	0.04665	3

Note: for the calculation of Sharpe's performance measure the risk free rate of interest (return) is taken according to Nepal Rastra Bank economic report 2006 (p.4) which is 2.9.

Form the above table shows that  $s_p$  of stock of BOKL is the highest i.e. 0.049 and  $s_p$  of stock of NABIL is worst i.e. 0.04656, SBI is second position i.e. 0.047 and SCBL is in third position i.e. 0.04665 among four JVBs.

#### **4.8 Major Finding of the Study**

Investment to total deposits ratio of SCBL is fluctuating trend throughout the review period. The mean investment to total deposit ratio of SCBL is highest i.e. 38.06% the C.V. ratio of SCBL is lowest among four JVBs, i.e. 45.981 lower ratio indicates the most consistent which is better than high consistent.

##### **a) Findings from ratio analysis**

- From the ratio of **investment to Total deposit** of commercial banks. the ratio of BOKL ,NABIL SCBNL and SBI are in fluctuating trend throughout the review period . The mean investment to total deposit ratio of Standard Chartered Bank Nepal Limited is the highest i.e 52.79% among four JVBs and it's C.V. i.e 7.104% which is less than among the four JVBs. It indicates that SCBNL has made second high amount of its investment through deposit and it is more

consistent. Similarly NABIL has the second highest mean investment to total deposit ratio i.e. 31.94% and its C.V. is 10.58%. Similarly SBI stood at third position with 31.25% mean ratio and its C.V. is 28.93%. BOKL Bank limited is in fourth position with 24.28% mean ratio and its C.V. is 25%. So, BOKL has made low investment from its deposit

- The mean **loans and advances to total deposit ratio** of BOKL is the highest i.e. 75.53% among the four JVBs over the review period. It can be concluded that BOKL has provided high amount of loans and advances through its deposit. NABIL and SBI have the moderate mean loans and advances to total deposits ratio among the four selected commercial Banks. Hence it has provided low amount of loans and advances through its deposit.
- According to calculation of ratio of **return on total assets** mean return of NABIL is the highest i.e. 2.55%. Similarly, the mean return on total assets of BOKL is lowest i.e. 2.05%. and SBI return on total assets is 2.204 and SBL has 2.49%. on the basis of C.V. SCBL has less C.V and SBI has more C.V. From overall point of view SCBNL is better than among other Banks
- Investment on Share and Debenture to total on investment of NABIL has high mean value i.e. 1.33% and its C.V. is 63.82% similarly, SCBNL has low mean return i.e. 0.0153 and its C.V. is 67.57% the mean return of BOKL is 0.47% and its C.V. is 14.11% and mean return of SBI is 0.46% and C.V. is 57.08% from mean point of view NABIL is than other joint venture Banks
- The **beta coefficient** of NABIL is 1.304% which is the highest beta coefficient among the four selected JVBs. Therefore NABIL has the highest systematic risk. similarly, BOKL has the lowest beta coefficient among the four commercial banks i.e. 0.454 it indicates

that the BOKL has the lowest systematic risk and less risky assets. SBI has the second highest beta coefficient i.e. 0.607 .it indicates that the SBI has the second highest systematic risk among the selected commercial Banks .similarly, SCBNL has the low beta coefficient i.e. 0.485 it indicated that the SCBL has the less systematic risk.

- Joint venture banks should analyzed the risk and return while making investment decision. The average return of SBI is highest and its C.V. is also more so it is less consistent SCBNL has lowest average return i.e. 26.16% and it's C.V. is also less so it is more consistent from overall pint of view BOKL is better than among four Banks. Because its average return is 43% and C.V. is 1.09%
- From portfolio return and risk point of view NABIL has highest portfolio return i.e. 4.06% it has portfolio risk 3.55% similarly SBI has less portfolio return and more portfolio risk from overall, BOKL has less portfolio risk i.e. 1.57% it average return is 3.41. so BOKL is better than among other Banks
- From the sharp performance analysis of stock of BOKL is the highest i.e. 0.049 and sp of stock of NABIL is worst i.e. 0.04656, SBI is second position i.e. 0.047 and SCBL is in third position i.e. 0.04665 among four JVBs.

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS AND ECOMMENDATION**

This chapter highlights some selection, actionable conclusions and recommendations on the basis of major findings, which are derived from the analysis of NABIL.

In order to carryout thus study, data have been basically obtained by the secondary sources. This chapter summarized the whole study. Summary gives the brief introduction to all the chapters of the present situation under the topic of the study. Conclusions of the findings are based on the consequences of the analysis of relevant data by using various financial and statistical tools. The recommendations are presented in term of suggestions, which are prepared on the basis of findings and conclusions.

#### **5.1 Summary**

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

Portfolio management is one of the challenging tasks for every financial institution. Nowadays there is very high competition in banking industry but very less opportunities to make an investment without proper

Management of portfolio, any institution cannot compete effectively in market. Portfolio management of banks assets basically means allocation of fund to

different components of banking assets having different degrees of risks and varying rates of returns in such way that If can balance the conflicting goal of maximum yield in minimum risk. Bank has to invest its resources in different productive sector of investment alternative to earn profit. Uncertainty of profit creates risk to an investor, so every investor has to diversify their investment in different sector to minimize risk. Diversification of asset on different sectors lowers the risk of portfolio. The main objective of the study is to identify the situation of portfolio management of JVBs, analyze the risk and return on common stock investment level of portfolio risk and return of JVBs investment.

JVBs are major financial institutions which occupy quite an important place in the framework of every economy. They provide capital for the different sector such as industry trade and so on. So, the economic development of the every country is highly affected by the development of the JVBs for the growth and expansion of the JVBs they should not be dependent on same kind of investment, they should have to follow the diversification strategy of portfolio management. Nepal being listed among least developed countries, the JVBs, successful formulation and effective implementation of investment policy is the prime requisite JVBs must mobilize its deposits and other funds to profitable secured, stable and marketable sector. This study is mainly focused on how the JVBs have managed their available fund.

In Nepalese context, it seems that joint venture banks are exercising to follow the diversification strategy, they are investing in different kinds of securities such as government securities (treasury bill treasury bonds, development bonds etc) foreign government securities share and debentures of other companies, loan and advances etc. Although they are investing on various assets but they are not seem to be capable to invest their funds on more profitable sector where there is low risk most of the banks are interested on invest their funds on liquid and less risky sector. This due to lack of sound investment policy the portfolio management. The study is focused on the

portfolio analysis of joint venture banks. While making an analysis and interpreting the data on portfolio, various financial tools like ratio analysis, holding period return, CAPM models, portfolio performance measures etc. and statistical tools like mean, S.D., coefficient of variation, covariance correlation, coefficient of determination, trend analysis etc. have been used information are tabulated and presented as per the requirement of study. The data which are used in this study are mainly of secondary nature from this study it is found that those investors who had made diversification on their investment in different sector have got a better result rather than investing in only one sector.

## **5.2 Conclusion**

The total investment to total deposit ratio of SCBL is the highest and BOKL is the lowest among four joint venture banks. It means SCBL is the most successful to mobilize its deposit on profitable sector and BOKL is not able to do so. NABIL has also a good ratio but SBI are not so much satisfiable.

- The total loan and advance to total deposit ratio of SBI, BOKL are the quite better than NABIL and SCBL. It means SBI and BOKL are more successful to use its deposit on loan and advance and NABIL has the moderate condition. But the loan and advance to deposit ratio of SCBL is very poor. It is not able to make healthy ratio.
- The return on total assets ratio of the NABIL is highest and SCBL are moderate position but the BOKL and SBI are the weakest position and BOKL and SBI are also a poor bank in this ratio among the other banks during the study period.
- The investment of share and debenture to total outside investment ratio of the NABIL is highest and SCBL is the smallest investment of share and debenture of other companies. BOKL has the highest portion and SBI has lowest portion of investment.

- Coefficient of variance of investment to total deposit ratio of SBI is highest among four joint venture banks. i.e.28.93% higher ratio is indicate that less consistent which is not effective to mobilize the total investment and SCBL is the less CV i.e. 7.104% so it is clear that SCBL is most successful.
- Coefficient of variance of the loan and advance to total deposit ratio of SBI Ltd. is highest i.e. 16.15 it indicate that less consistent NABIL has lowest CV i.e. 4.60 NABIL bank is more consistent and other two banks are moderate consistent. CV of return on total assets ratio of NABIL has highest and SCBL has lowest CV. It show that SCBL is successful bank among four joint venture banks.
- According to trend analysis, it shows that the total investment and total deposit of joint venture bank's are in increasing trend.
- SCBL focuses in investing its fund on share and government securities and providing very high portion of fund in private sectors. NABIL bank focused its investment on government bond and SCBL focuses on private sector.
- SCBL has investing very high amount of fund on government securities NABIL has the investing very high amount on share and debenture.
- SCBL is the greatest investor on government securities and BOKL has the smallest investment. Similarly, on the share and debenture of other companies, NABIL has the highest portion and SBI has the lowest portion of investment.
- Investment on loan and advances is also the NABIL has higher and BOKL has the smallest.
- Expected rate of return of all joint venture banks, which are taken as sample has higher than market expected rate of return.

- SBI Bank has the highest expected rate of return and SCBL has the lowest return. So investor can get the highest rate of return in SBI bank, but only expected rate of return cannot give appropriate comparison between the assets.
- Coefficient of variation is the ratio of risk of per unit expected return. So investor should decide to invest by observing the CV. Where NABIL and SCBL have the highest CV and concluded as most risky assets.
- Correlation coefficient measures the degree of relationship between two stocks. Correlation coefficient always lies between -1 to +1 value of +1 represent the perfectly positively correlation and -1 represents the perfectly negatively correlated with the market.
- BOKL is the highest risk among the four joint venture bank but it is not higher than market risk which is lower than 1 and other three banks are the lowest risk amount. It has very nominal risk than market.
- According to sharp portfolio performance, portfolio between SCBL has the best performance, as it has highest risk premium at per unit risk and SBI has the worst performance as it has the lowest risk premium at per unit at total risk.
- In conclusion, NABIL Bank Ltd. is the best bank among four joint venture banks due to various ratio proved above. SBI and BOKL least performance among four joint venture banks. We conclude that NABIL and SCBL are the most successful in Comparison to the other two banks.

### 5.3 Recommendations

Based on the all study and conclusion following suggestion can be given in recommendation and subjection.

- The mean investment to total deposit ratio of BOKL is the lowest among four banks and the ratio of SBI also not so good. So they should have increased the investment in different newly productive sector.
- NABIL has to maintain the highest return on assets and it ratio also increase the investment on government securities.
- BOKL has the lowest return on assets, so it has to mobilize its resources on more profitable area. It has also a lower investment portion on loan and advance, so to earn more profit it has to increase investment on more secured and returnable loan and advances.
- Expected rate at return from SBI is highest among the sample study, so it is suggested to invest in SBI bank's stock and among them BOKL has lowest standard deviation.
- Expected rate of return from all banks is greater than required rate of return so it is suggested to purchase the stock of JVBS that will beneficial in future.
- In this growing time competition on banking sector, the activities of the bank should be customer oriented. It should strengthen and active in marketing and retaining customer for this purpose, banks should develop an "innovative approach to the bank marketing" and formulate new strategies of serving customers in a more convenient and satisfactory.

## BIBLIOGRAPHY

### BOOKS

- Bajracharaya, B.C., (2058), *Basic Statistics*, Kathmandu: M.K. Publishers and Distributor
- Cheney, John M. and Edward A. Moses, (1995), *Fundamentals of Investments*. 10<sup>th</sup> Edition, St. Paul: West Publishing Company
- Elton, Edwin J. and Martin J. Gruber, (2001), *Modern Portfolio Theory and Investment Analysis*. 5<sup>th</sup> Edition, Singapore: John Wiley and Sons Inc.
- Fisher E. Donald and Ronald J. Jordan, (2000), *Security Analysis and Portfolio Management*. 6<sup>th</sup> Edition, New Delhi: Prentice Hall of India Pvt. Ltd.
- Frank and Reilly, (2004), *Investment*. 5<sup>th</sup> Edition, Chicago: The Dryden Press
- Frank, Jack Clark, (2006), *Investment Analysis and Management*. 6<sup>th</sup> Edition, New Delhi: Mc Grew Hill International
- Gitman L.J and Joehnk, (1990), *Fundamentals of Investment*. 9<sup>th</sup> Edition, New York: Mc-Grew Hill Publishing House
- Gitman, L.J., (1988), *Principal of Management Finance*. 5<sup>th</sup> Edition, San Diego: San Diego State University
- Gupta, S.C., (1987), *Fundamentals of Statistics*. 5<sup>th</sup> Edition, Bombay: Himalayan Publishing House
- Kothari, C.R., (2004), *Research Methodology Method and Techniques*. 2<sup>nd</sup> Edition, New Delhi: Vikas Publishing House Pvt. Ltd.
- Panday, I.M., (1997), *Financial Management*. 7<sup>th</sup> Edition, New Delhi: Vikas Publishing House Pvt. Ltd.
- Pradhan, Surendra, (2058), *Basics of Financial Management*. 2<sup>nd</sup> Edition, Kathmandu: Educational Enterprise Pvt. Ltd.
- Shrestha, Sunity, (1995), *Portfolio Behavior of Commercial Banks in Nepal*. Kathmandu: Mandala Book Point (Based on her Ph.D. thesis "Investment Planning of Commercial Banks in Nepal", 1993)

- Singh, Preeti, (1998), *Investment Management*. 3<sup>rd</sup> Edition, Bombay, Himalayan Publishing House
- Van Horne, J.C., (1996), *Financial Management and Policy*. 10<sup>th</sup> Edition, New Delhi: Prentice Hall of India Pvt. Ltd.
- Weston, J. Fred and Eugene F. Brigham, (2005), *Essentials of Managerial Finance*. 9<sup>th</sup> Edition, Chicago: The Dryden Press
- Weston, J. Fred and Thomas E. Copeland, (2003), *Managerial Finance*. 9<sup>th</sup> Edition, Chicago: The Dryden Press
- William F. Sharpe, Alexander J. Gordon, Baily V. Jeffery, (2004), *Investment*. 7<sup>th</sup> Edition, New Delhi: Prentice Hall of India Pvt. Ltd.
- Wolff, H.K. and Pant P.R., (2002), *Social Science Research and Thesis Writing*. Kathmandu: Buddha Academic Enterprises Pvt. Ltd.

## **JOURNALS AND PERIODICALS**

- Bawa, Vijay S., Edwin J. Elton and Martin J. Gruber, (1979), '*Simple Rules for Optimal Portfolio Selection in Stable Pertain Markets*', *Journal of Finance*, 34 (4):1041-1047
- Berger, Paul D. and Zvi Bodie, (1985) '*Optimal Portfolio Selection in a Winner Take all Environments*', *Journal of Finance*, 34 (1): 233-236
- Gaumnitz, Jack E., (1970), '*Appraising Performance of Investment Portfolio*', *Journal of Finance*, 25 (6): 555-560
- Jones, Mark Britten, (1999), '*The Sampling Error in Estimates of Mean Variance Efficient Portfolio Weights*', *Journal of Finance*, 54(2):655-668
- Kane, Edward J. and Stephen A. Buser, (1979), '*Portfolio Diversification at Commercial Banks*', *Journal of Finance*, 34(3):19-31
- Mahat, L.D., (8 April 2004), '*Efficient Banking*', *The Kathmandu Post*.
- Markowitz, Harry M., (1952), '*Portfolio Selection*' *Journal of Finance*, 40(6): 77-91

Martin, John D. and Robert C. Klemkosky, (1989), *'The Effect of Homogeneous Stock Grouping on Portfolio Risk'*, *Journal of Business*, 49(2):239-246

Shrestha, Shiva Raj, (Baishakh 2055), *'Portfolio Management in Commercial Banks, Theory and Practice'*, *Nepal Bank Patrika* Thapa, Chandra, (9<sup>th</sup> March 2003), *'Managing Banking Risk'*, *The Kathmandu Post*.

## **Official Publications**

- Annual reports of NABIL Bank Ltd., FY – 2004 to 2009
- Annual reports of SCBL Bank, FY-2004 to 2009
- Annual reports of BOKL bank , FY-2004- 2009
- Annual reports of SBI Bank, FY,-2004-2009
- Economic survey of HMG ministry of finance.
- Trading reports of SEBO
- Annual report of SEBO
- Annual report of NEPSE
- Annual report of NRB

## **Websites**

[www.nepalstock.com](http://www.nepalstock.com)

[www.nabilbank.com](http://www.nabilbank.com)

[www.nrb.org.np](http://www.nrb.org.np)

[www.sebonp.com](http://www.sebonp.com)

[www.bokltd.com](http://www.bokltd.com)

## **DISSERTATIONS:**

Bajracharya, Prabina, (2000), '*Investment of Commercial Banks in Priority Sector*', Kathmandu, an Unpublished Master Degree, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Bajracharya, Rabina, (2000), '*Investment of CBs in Priority Sector*', Kathmandu, an Unpublished Master Degree of Business Administration, University Campus, Kirtipur

Khaniya (Banjade), Kalpana, (2003), '*Investment Portfolio Analysis of JVBs in Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Mahandhar, Manilata, (2003), '*Analysis of Risk and Return on Common Stock Investment of CBs in Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Paudyal, Bhavishor, (2006), '*A Study on Portfolio Analysis of Commercial Banks in Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Shah, Sabita, (2004), '*Impact of Interest Rate Structure on Investment Portfolio of CBs in Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Shrestha, Natasha, (2005), '*Portfolio Analysis of Common Stock of CBs of Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Shrestha, Khemraj, (2006), '*A Study on Investment Portfolio of Commercial Banks in Nepal*', Kathmandu, an Unpublished Master Degree Thesis, Thesis submitted to Shanker Dev Campus, Putalisadak, Kathmandu

Shrestha, Sunity, (1993), '*Investment Planning of CBs in Nepal*', Kathmandu, an Unpublished Ph.D. Thesis

## Appendix-1

### a) Investment on share and debenture (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	443.08	38.01	19.54	13.35
2005/06	104.19	96.87	19.54	15.35
2006/07	286.96	90.17	90.17	44.94
2007/08	323.24	114.05	114.06	114.54
2008/09	354.93	123.75	32.950	115.42

### b) Investment on loan and advance: (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	10586.17	4494.45	6213.87	8143.21
2005/06	12922.54	7259.02	7626.74	8935.42
2006/07	15545.78	9399.33	9460.45	10502.64
2007/08	21365.05	12462.64	12113.70	13718.60
2008/09	27589.93	14647.30	15131.75	13679.76

### c) Total outside investment : (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	14861.70	6358.85	8821.56	17845.76
2005/06	19101.07	10633.79	4243.98	21782.96
2006/07	24491.09	12391.76	12119.90	24055.87
2007/08	31304.82	15666.71	15202.59	127621.42
2008/09	38416.31	17460.90	28417.93	33915.88

### d) Total Investment: (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	4275.53	1816.15	2607.68	9702.55
2005/06	6178.53	3374.71	3610.77	12847.54
2006/07	8945.31	2992.43	2659.45	13553.23
2007/08	9939.77	3204.07	3088.89	13902.82
2008/09	10826.38	2783.60	13286.18	20236.12

e) Total Deposit: (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	14586.61	6170.70	8654.77	19363.47
2005/06	1934740	10485.36	11002.04	23061.03
2006/07	23342.29	12388.93	11445.29	24647.02
2007/08	31915.05	15833.74	13715.39	29743.99
2008/09	37348.26	18083.98	27957.22	5871.72

f) Net profit of different CB's: (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	520.11	416.25	57.38	536.25
2005/06	635.26	202.44	117.00	658.76
2006/07	673.96	262.39	262.38	691.87
2007/08	746.47	361.50	247.77	818.92
2008/09	1031.05	461.73	316.37	1025.12

g) Total Assets: (Million)

FY	NABIL	BOKL	SBI	SCBL
2004/05	17064.08	16562.61	9963.02	21781.68
2005/06	22329.97	12278.33	13035.84	25776.33
2006/07	27253.39	14570.10	13901.20	28596.69
2007/08	37132.76	17721.93	17187.45	333357.79
2008/09	42867.39	20496.00	30916.68	40587.47

**Appendix -2**  
Trend Value

a)NABIL

Year	(t)Loan and investment (y)	t= (x)-2007	X <sup>2</sup>	Xy
2004/05	14861.70	-2	4	-12723.40
2005/06	19101.07	-1	1	-19101.07
2006/07	24491.09	0	0	0
2007/08	31304.82	1	4	31304.82
2008/09	38416.31	2	1	76832.62
	Σy=128174.99		ΣX <sup>2</sup> = 10	Σxy=59312.97

$$a = \frac{\sum y}{n} = 25634.99$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{59312.97}{10} = 5931.30$$

NABIL

Year	Deposit (y)	t=(x)-2007	X <sup>2</sup>	Xy
2004/05	14586.11	-2	4	-29173.22
2005/06	19347.40	-1	1	-19347.40
2006/07	23342.30	0	0	0
2007/08	31915.65	1	4	31915.05
2008/09	7348.26	2	1	74696.52
	Σy=126539.62	0	ΣX <sup>2</sup> = 10	Σxy= 58090.95

$$a = \frac{\sum y}{n} = 25307.92$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{58090.95}{10} = 5809.19$$

b) BOKL

Year	Loan&Inve(y)	t= (x)-2007	X <sup>2</sup>	Xy
2004/05	1816.15	-2	4	-3632.30
2005/06	3374.71	-1	1	-3374.71
2006/07	2992.43	0	0	0
2007/08	3204.07	2	4	3204.07
2008/09	2783.60	1	1	5567.20
Total	Σy=14170.96	0	ΣX <sup>2</sup> = 10	Σxy= 1764.26

$$a = \frac{\sum y}{n} = 2834.19$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{1764.26}{10} = 176.43$$

BOKL

Year	Deposit (y)	t=(x)-2007	X <sup>2</sup>	ΣXy
2004/05	6170.70	-2	4	-12341.40
2005/06	10485.35	-1	1	-10485.36
2006/07	12388.93	0	0	0
2007/08	15833.74	2	4	15833.74
2008/09	18083.98	1	1	36067.96
Total	Σy=62962.68	0	ΣX <sup>2</sup> = 10	Σxy= 29074.94

$$a = \frac{\sum y}{n} = 12592.54$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{29074.94}{10} = 2907.49$$

c) SBI

Year	Loan and investment (y)	t= (x)-2007	X <sup>2</sup>	ΣXy
2004/05	8821.56	-2	4	-17643.12
2005/06	11237.52	-1	1	-11237.52
2006/07	12119.90	0	0	0
2007/08	15202.59	1	1	15202.59
2008/09	28417.93	2	4	56835.89
Total	Σy=75799.59	0	ΣX <sup>2</sup> = 10	Σxy= 43157.81

$$a = \frac{\sum y}{n} = 15159.92$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{43157.81}{10} = 4315.78$$

SBI

Year	Deposit (y)	t=(x)-2007	X <sup>2</sup>	ΣXy
2004/05	8654.77	-2	4	-17309.54
2005/06	11002.04	-1	1	-11002.04
2006/07	11445.30	0	0	0
2007/08	13715.40	1	1	13715.40
2008/09	27957.22	2	4	55914.44
	Σy=72774.73	0	ΣX <sup>2</sup> = 10	Σxy= 41318.26

$$a = \frac{\sum y}{n} = 14554.95$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{41318.26}{10} = 4131.83$$

D) SCBL

Year	Loan and investment (y)	t= (x)-2007	X <sup>2</sup>	ΣXy
2004/05	17845.76	-2	4	-35691.52
2005/06	21782.96	-1	1	-21782.96
2006/07	24055.87	0	0	0
2007/08	27621.42	1	1	27621.42
2008/09	33915.88	2	4	67831.76
Total	Σy = 125221.89	0	ΣX <sup>2</sup> = 10	Σxy= 37978.70

$$a = \frac{\sum y}{n} = 25044.38$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{37978.70}{10} = 3797.87$$

SCBL

Year	Total Deposit (y)	t= (x)-2007	X <sup>2</sup>	ΣXy
2004/05	19363.47	-2	4	-35691.52
2005/06	23061.03	-1	1	-21782.96
2006/07	24647.02	0	0	0
2007/08	29743.99	1	1	27621.42
2008/09	35871.72	2	4	67831.76
Total	Σy = 125221.89	0	ΣX <sup>2</sup> = 10	Σxy=37978.70

$$a = \frac{\sum y}{n} = 26537.45$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{39699.46}{10} = 3969.55$$

### Appendix-3

A) expected return on market and variance of market.

Year	Closing price	R <sub>M</sub> (%)	(R <sub>M</sub> - $\bar{R}_M$ )	(R <sub>M</sub> - $\bar{R}_M$ ) <sup>2</sup>
2003/2004	549.77	-	-	-
2004/2005	475.62	-13.49	-29.16	850.31
2005/2006	496.85	4.46	-11.21	125.66
2006/2007	960.77	93.22	77.55	6014.002
2007/2008	1153.92	20.10	4.43	19.62
208/2009	1035.23	-10.29	-25.96	673.92
		∑R <sub>M</sub> =94		(R <sub>M</sub> - $\bar{R}_M$ ) <sup>2</sup> =7683.51

$$\therefore \text{Expected return } (\bar{R}_M) = \frac{\sum R_M}{N} = \frac{94}{6} = 15.67\%$$

$$\text{Standard deviation } (\sigma_M) = \sqrt{\frac{\sum (R_M - \bar{R}_M)^2}{N-1}} = \sqrt{\frac{7683.51}{5}} = 39.20\%$$

$$\text{Variance } (\sigma_M^2) = 1536.64\%$$

$$\text{C.V} = \frac{\sigma_m}{R_m} = \frac{39.20}{15.67} = 6.52\%$$

B) expected Return and Variance of NABIL

Year	Closing price	Cash div.	R <sub>N</sub> (%)	(R <sub>N</sub> - $\bar{R}_N$ )	(R <sub>N</sub> - $\bar{R}_N$ ) <sup>2</sup>
2004/2005	1505	70	-54.49	-	-
2005/2006	2240	85	130	17.69	312.94
2006/2007	5050	100	5.64	93.2	8686.24
2007/2008	5275	60	-6.46	-31.16	970.95
208/2009	4899	35		-43.26	1871.43
			∑R <sub>N</sub> =184		(R <sub>N</sub> - $\bar{R}_N$ ) <sup>2</sup> =11841.56

$$\therefore \text{Expected return } (\bar{R}_N) = \frac{\sum R_N}{N} = \frac{184}{5} = 36.8\%$$

$$\text{Standard deviation } (\sigma_N) = \sqrt{\frac{\sum (R_N - \bar{R}_N)^2}{N-1}} = \sqrt{\frac{11841.56}{4}} = 54.41\%$$

$$\text{Variance } (\sigma_N^2) = 2960.45\%$$

$$\text{C.V} = \frac{\sigma_N}{R_N} = \frac{54.41}{36.8} = 1.48\%$$

co-variance and beta co-efficient of NABIL

Fy	$(R_N - \bar{R}_N)$	$(R_M - \bar{R}_M)$	$(R_N - \bar{R}_N) (R_M - \bar{R}_M)$
2004/05		-29.16	-
2005/06	17.69	-11.21	-198.30
2006/07	93.20	77.55	7227.66
2007/08	-31.16	4.43	-138.04
2008/09	-43.26	-25.96	1123.03
			8014.35

$$\text{Covariance of NABIL } (\text{cov } r_n r_m) = \frac{(R_N - \bar{R}_N) (R_M - \bar{R}_M)}{N - 1}$$

$$= \frac{8014.35}{4} = 2003.59$$

$$\text{Beta coefficient} = \frac{\text{cov } r_N r_M}{\sigma_m} = \frac{2003.59}{1536.64} = 1.3039$$

$$\text{Correlation coefficient } (P_{Nm}) = \frac{\text{cov } r_N r_M}{\sigma_N \times \sigma_M} = \frac{2003.59}{2132.87} = 0.94$$

C) Expected Return and Variance of BOKL.

Year	Closing price	Cash div.	$R_B$ (%)	$(R_B - \bar{R}_B)$	$(R_B - \bar{R}_B)^2$
2004/2005	430	15	-	-	-
2005/2006	850	18	101.86	58.86	3464.50
2006/2007	1375	20	64.12	21.12	446.05
2007/2008	2350	2.11	71.06	28.06	787.36
208/2009	1825	7.37	-22.03	-65.03	4228.90
			215.01		8926.81

$$\therefore \text{Expected return } (\bar{R}_B) = \frac{\sum R_B}{N} = \frac{215.01}{5} = 43\%$$

$$\text{Standard deviation } (\sigma_B) = \sqrt{\frac{\sum (R_B - \bar{R}_B)^2}{N-1}} = \sqrt{\frac{8926.81}{4}} = 47.24\%$$

$$\text{Variance } (\sigma_B^2) = 2231.7025\%$$

$$\text{C.V} = \frac{\sigma_B}{R_B} = \frac{47.24}{43} = 1.099\%$$

**co-variance and Beta coefficient of BOKL**

Fy	$(R_B - \bar{R}_B)$	$(R_M - \bar{R}_M)$	$(R_B - \bar{R}_B) (R_M - \bar{R}_M)$
2004/05	-	-29.16	-
2005/06	58.86	-11.21	-659.82
2006/07	21.12	77.55	1637.86
2007/08	28.06	4.43	124.31
2008/09	-65.03	-25.96	1688.18
			2790.53

$$\begin{aligned} \text{Covariance of BOKL } (\text{cov } r_B r_m) &= \frac{\sum (R_B - \bar{R}_B) (R_M - \bar{R}_M)}{N-1} \\ &= \frac{2790.53}{4} = 697.63 \end{aligned}$$

$$\text{Beta coefficient} = \frac{\text{cov } r_B r_m}{\sigma_m} = \frac{697.63}{1536.64} = 0.454\%$$

$$\text{Correlation coefficient (P}_{Bm}) = \frac{\text{cov } r_N r_M}{\sigma_N \times \sigma_M} = \frac{697.63}{1851.81} = 0.3767$$

#### D) Expected Return and Variance of SBI.

Year	Closing price	Cash div.	R <sub>SBI</sub> (%)	$(\frac{R_{SBI}}{\bar{R}_{SBI}})$	$(\frac{R_{SBI}}{\bar{R}_{SBI}})^2$
2004/05	335	-	-	-	-
2005/06	612	5	84.19	37.64	1416.77
2006/07	1176	12.59	94.21	47.66	2271.48
2007/08	1511	-	28.49	-18.06	326.16
2008/09	1900	2.11	25.88	-20.67	427.25
			$\sum R_{SBI} = 232.77$		$(\frac{R_{SBI}}{\bar{R}_{SBI}})^2 = 4441.66$

$$\therefore \text{Expected return } (\bar{R}_{SBI}) = \frac{\sum R_{SBI}}{N} = \frac{232.77}{5} = 46.55\%$$

$$\text{Standard deviation } (\sigma_{SBI}) = \sqrt{\frac{\sum (R_{SBI} - \bar{R}_{SBI})^2}{N-1}} = \sqrt{\frac{4.441.66}{4}} = 33.32\%$$

$$\text{Variance } (\sigma_{SBI}^2) = 1110.22\%$$

$$\text{C.V} = \frac{\sigma_{SBI}}{\bar{R}_{SBI}} = \frac{33.32}{46.55} = 0.716\%$$

### co-variance and Beta coefficient of SBI

Fy	$(R_S - \bar{R}_S)$	$(R_M - \bar{R}_M)$	$(R_S - \bar{R}_S) (R_M - \bar{R}_M)$
2004/05	-	-29.16	-
2005/06	37.64	-11.21	-421.94
2006/07	47.66	77.55	3696.03
2007/08	-18.06	4.43	-80.01
2008/09	-20.67	-25.96	536.59
			3730.67

$$\begin{aligned} \text{Covariance of SBI } (\text{cov } r_S r_M) &= \frac{(R_S - \bar{R}_S) (R_M - \bar{R}_M)}{N - 1} \\ &= \frac{3730.67}{4} = 932.67 \end{aligned}$$

$$\text{Beta coefficient} = \frac{\text{cov } r_S r_M}{\sigma_m} = \frac{932.67}{1536.64} = 60.70\%$$

$$\text{Correlation coefficient } (P_{SM}) = \frac{\text{cov } r_S r_M}{\sigma_S \times \sigma_M} = \frac{932.67}{1306.14} = 0.714$$

### E) Expected Return and Variance of SCBL

Year	Closing price	Cash div.	$R_s$ (%)	$(R_S - \bar{R}_S)$	$(R_S - \bar{R}_S)^2$
2004/05	2345	120	-	-	-
2005/06	3775	130	66.52	40.36	1628.93
2006/07	5900	80	58.41	32.25	1040.06
2007/08	6830	80	17.12	-9.04	81.72
2008/09	6010	50	-11.27	-37.43	1401.004
			$\sum R_s = 130.78$		$(R_S - \bar{R}_S)^2$ =4151.75

$$\therefore \text{Expected return } (\bar{R}_s) = \frac{\sum R_s}{N} = \frac{130.78}{5} = 26.16\%$$

$$\text{Standard deviation } (\sigma_s) = \sqrt{\frac{\sum (R_S - \bar{R}_S)^2}{N - 1}} = \sqrt{\frac{4151.75}{4}} = 32.22\%$$

Variance ( $\sigma_s^2$ )=1038.13%

$$C.V = \frac{\sigma_s}{R_s} = \frac{32.22}{26.16} = 1.23\%$$

**co-variance and Beta coefficient of SCBL**

Fy	$(R_{SCB} - \overline{R_{SCB}})$	$(R_M - \overline{R_M})$	$(R_{SCB} - \overline{R_{SCB}}) (R_M - \overline{R_M})$
2004/05	-	-29.16	-
2005/06	40.36	-11.21	-452.44
2006/07	32.25	77.55	2500.99
2007/08	-9.04	4.43	-40.05
2008/09	-37.43	-25.96	971.68
			2980.18

$$\text{Covariance of SBI } (cov r_{SCB} r_m) = \frac{(R_{SCB} - \overline{R_{SCB}}) (R_M - \overline{R_M})}{N-1}$$

$$= \frac{2980.18}{5} = 745.05$$

$$\text{Beta coefficient} = \frac{cov r_{SCB} r_m}{\sigma_m} = \frac{745.05}{1536.64} = 48.50\%$$

$$\text{Correlation coefficient } (P_{SCBM}) = \frac{cov r_{SCB} r_m}{\sigma_{SCB} \times \sigma_M} = \frac{745.05}{1263.024} = 58.99\%$$

## Appendix-4

correlation and regression equation of  $X_1$ , on  $X_2$  and  $X_3$  of NABIL

Years	$X_1$	$X_2$	$X_3$	$X_1 X_2$	$X_2 X_3$	$X_1 X_3$	$X_1^2$	$X_2^2$	$X_3^2$
2004/05	3.05	59.31	2.98	89.40	87.34	9.089	9.30	859.08	8.88
2005/06	2.84	31.93	0.55	90.68	17.56	1.56	8.07	1019.53	0.303
2006/07	2.47	38.32	1.17	94.65	44.83	2.89	6.10	1468.42	1.369
2007/08	2.01	31.14	1.03	62.59	32.07	2.07	4.04	969.70	1.061
2008/09	2.40	28.99	0.92	69.58	26.67	2.21	5.76	840.42	0.85
	$\sum X_1 = 13.77$	$\sum X_2 = 159.69$	$\sum X_3 = 6.65$	$\sum X_1 X_2 = 406.90$	$\sum X_2 X_3 = 208.47$	$\sum X_1 X_3 = 17.82$	$\sum X_1^2 = 33.77$	$\sum X_2^2 = 5157.14$	$\sum X_3^2 = 12.46$

$$r_{12} = \frac{N \sum x_1 x_2 - \sum x_1 \cdot \sum x_2}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_2^2 - (\sum x_2)^2}}$$

$$= 0.155$$

$$r_{13} = \frac{N \sum x_1 x_3 - \sum x_1 \cdot \sum x_3}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= 0.543$$

$$r_{23} = \frac{N \sum x_2 x_3 - \sum x_2 \cdot \sum x_3}{\sqrt{N \sum x_2^2 - (\sum x_2)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= (0.273)$$

$$R_{1.23} = \frac{\sqrt{r_{12}^2 + r_{13}^2 - 2r_{12} \times r_{13} \times r_{23}}}{1 - r_{23}^2}$$

$$= 0.543$$

Calculation of multiple regression equation of  $X_1$  on  $X_2$  and  $X_3$  is given by

$$X_1 = a_1 + b_1 X_2 + b_2 X_3 \dots\dots\dots(1)$$

The regression constant  $a_1$ ,  $b_1$  and  $b_2$  can be obtained by solving following three equations:

$$\sum X_1 = n a_1 + b_1 \sum X_2 + b_2 \sum X_3 \dots\dots\dots(i)$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3 \dots\dots\dots(ii)$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2 \dots\dots\dots(iii)$$

$$b_2 = 0.2303$$

$$b_1 = -0.00083$$

$$a_1 = 2.51$$

correlation and regression equation of  $X_1$ , on  $X_2$  and  $X_3$  of BOKL

Years	$X_1$	$X_2$	$X_3$	$X_1 X_2$	$X_2 X_3$	$X_1 X_3$	$X_1^2$	$X_2^2$	$X_3^2$
2004/05	2.51	29.43	0.60	73.87	17.66	1.51	6.30	866.12	0.36
2005/06	1.65	32.18	0.91	53.18	29.28	1.502	2.723	1035.55	0.828
2006/07	1.80	24.15	0.73	43.47	17.63	1.31	3.24	583.22	0.533
2007/08	2.04	20.24	0.73	41.29	14.78	1.49	4.16	409.66	0.533
2008/09	2.25	15.39	0.71	34.63	10.93	1.90	5.06	236.85	0.504
	$\sum X_1 = 10.25$	$\sum X_2 = 1121.39$	$\sum X_3 = 3.68$	$\sum X_1 X_2 = 246.36$	$\sum X_2 X_3 = 90.28$	$\sum X_1 X_3 = 7.42$	$\sum X_1^2 = 21.48$	$\sum X_2^2 = 3131.40$	$\sum X_3^2 = 2.76$

$$r_{12} = \frac{N \sum x_1 x_2 - \sum x_1 \cdot \sum x_2}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_2^2 - (\sum x_2)^2}}$$

$$= -0.268$$

$$r_{13} = \frac{N \sum x_1 x_3 - \sum x_1 \cdot \sum x_3}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= -0.80$$

$$r_{23} = \frac{N \sum x_2 x_3 - \sum x_2 \cdot \sum x_3}{\sqrt{N \sum x_2^2 - (\sum x_2)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= 0.304$$

$$R_{1.23} = \frac{\sqrt{r_{12}^2 + r_{13}^2 - 2r_{12} \times r_{13} \times r_{23}}}{1 - r_{23}^2}$$

$$= 0.704$$

Calculation of multiple regression equation of  $X_1$  on  $X_2$  and  $X_3$  is given by

$$X_1 = a_1 + b_1 X_2 + b_2 X_3 \dots \dots \dots (1)$$

The regression constant  $a_1, b_1$  and  $b_2$  can be obtained by solving following three equations:

$$\sum X_1 = n a_1 + b_1 \sum X_2 + b_2 \sum X_3 \dots \dots \dots (i)$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3 \dots \dots \dots (ii)$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2 \dots \dots \dots (iii)$$

$$b_2 = 0.0459$$

$$b_1 = -0.289$$

$$a_1 = 26.53$$

correlation and regression equation of  $X_1$ , on  $X_2$  and  $X_3$  of SBI

Years	$X_1$	$X_2$	$X_3$	$X_1 X_2$	$X_2 X_3$	$X_1 X_3$	$X_1^2$	$X_2^2$	$X_3^2$
2004/05	5.76	30.13	0.222	173.55	6.69	1.28	33.18	907.82	0.0493
2005/06	0.90	32.82	0.46	29.54	15.18	0.414	0.81	1077.15	0.212
2006/07	1.90	32.24	0.75	61.26	24.18	1.43	3.61	1039.42	0.563
2007/08	1.44	22.52	0.75	32.43	16.89	1.08	2.074	507.15	0.563
2008/09	1.02	47.52	0.12	48.47	5.512	0.12	1.04	2258.15	0.0135
	$\sum X_1 = 111.2$	$\sum X_2 = 165.23$	$\sum X_3 = 2.30$	$\sum X_1 X_2 = 345.25$	$\sum X_2 X_3 = 68.37$	$\sum X_1 X_3 = 4.32$	$\sum X_1^2 = 40.71$	$\sum X_2^2 = 5789.69$	$\sum X_3^2 = 1.4008$

$$r_{12} = \frac{N \sum x_1 x_2 - \sum x_1 \cdot \sum x_2}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_2^2 - (\sum x_2)^2}}$$

$$= -0.220$$

$$r_{13} = \frac{N \sum x_1 x_3 - \sum x_1 \cdot \sum x_3}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= -0.318$$

$$r_{23} = \frac{N \sum x_2 x_3 - \sum x_2 \cdot \sum x_3}{\sqrt{N \sum x_2^2 - (\sum x_2)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= -0.7186$$

$$R_{1.23} = \frac{\sqrt{r_{12}^2 + r_{13}^2 - 2r_{12} \times r_{13} \times r_{23}}}{1 - r_{23}^2}$$

$$= 0.726$$

Calculation of multiple regression equation of  $X_1$  on  $X_2$  and  $X_3$  is given by

$$X_1 = a_1 + b_1 x_2 + b_2 x_3 \dots \dots \dots (1)$$

$$\sum X_1 = n a_1 + b_1 \sum X_2 + b_2 \sum X_3 \dots \dots \dots (i)$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3 \dots \dots \dots (ii)$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2 \dots \dots \dots (iii)$$

$$b_2 = -7.225$$

$$b_1 = -0.225$$

$$a_1 = 25.92$$

**Correlation and regression equation of  $X_1$ , on  $X_2$  and  $X_3$  of SCBL**

Years	$X_1$	$X_2$	$X_3$	$X_1 X_2$	$X_2 X_3$	$X_1 X_3$	$X_1^2$	$X_2^2$	$X_3^2$
2004/05	2.46	50.11	0.075	123.27	3.758	0.185	6.05	2511.01	0.0056
2005/06	2.56	55.57	0.070	142.62	3.90	0.18	6.55	3103.60	0.049
2006/07	2.42	54.99	0.19	133.08	1.45	0.46	5.86	3023.90	0.036
2007/08	2.46	46.74	0.090	114.98	4.21	0.22	6.052	2184.63	0.0081
2008/09	2.53	5.41	0.34	142.72	19.18	0.86	6.40	3182.09	0.116
	$\sum X_1 = 12.43$	$\sum X_2 = 263.96$	$\sum X_3 = 2.30$	$\sum X_1 X_2 = 656.67$	$\sum X_2 X_3 = 41.50$	$\sum X_1 X_3 = 1.91$	$\sum X_1^2 = 30.912$	$\sum X_2^2 = 14005.23$	$\sum X_3^2 = 0.1707$

$$r_{12} = \frac{N \sum x_1 x_2 - \sum x_1 \cdot \sum x_2}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_2^2 - (\sum x_2)^2}}$$

$$= 0.529$$

$$r_{13} = \frac{N \sum x_1 x_3 - \sum x_1 \cdot \sum x_3}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= 0.338$$

$$r_{23} = \frac{N \sum x_2 x_3 - \sum x_2 \cdot \sum x_3}{\sqrt{N \sum x_2^2 - (\sum x_2)^2} \sqrt{N \sum x_3^2 - (\sum x_3)^2}}$$

$$= 0.0032$$

$$R_{1.23} = \frac{\sqrt{r_{12}^2 + r_{13}^2 - 2r_{12} \times r_{13} \times r_{23}}}{1 - r_{23}^2}$$

$$= 0.627$$

Calculation of multiple regression equation of  $X_1$  on  $X_2$  and  $X_3$  is given by

$$X_1 = a_1 + b_1 X_2 + b_2 X_3 \dots \dots \dots (1)$$

The regression constant  $a_1, b_1$  and  $b_2$  can be obtained by solving following three equations

$$\sum X_1 = n a_1 + b_1 \sum X_2 + b_2 \sum X_3 \dots \dots \dots (i)$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3 \dots \dots \dots (ii)$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2 \dots \dots \dots (iii)$$

$$b_2 = 0.0972$$

$$b_1 = 0.4499$$

$$a_1 = 8.708$$