

**INVESTMENT PORTFOLIO
OF
COMMERCIAL BANKS IN NEPAL**

A THESIS

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DECLARATION

I hereby declare that the work reported in this thesis entitled “**INVESTMENT PROTFOLIO OF COMMERCIAL BANKS IN NEPAL**” submitted to Research Department of Khwopa College, Faculty of Management, Tribhuwan University, is my original work as partial fulfillment of the requirements of the degree of Master of Business Studies (M.B.S). This is prepared under the supervision of **Mr. Roopak Joshi**, Principal of Khwopa College.

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ABBREVIATIONS

CB	Commercial Banks
EBL	Everest Bank Limited
NICBL	Nepal Industrial and Commercial Bank Limited
NIBL	Nepal Investment Bank Limited
SCBL	Standard Chartered Bank Limited
HBL	Himalayan Bank Limited
JVB	Joint Venture Banks
NRB	Nepal Rastra Bank
CDS	Cummulative Deposit Scheme
NEPSE	Nepal Stock Exchange
NBL	Nepal Bank Limited
RBB	Rastriya Banijya Bank
SEBON	Security Board Nepal
RWE	Risk Weighted Exposures
CRR	Cash Reserve Ratio
AGM	Annual General Meeting
SD	Standard Deviation
TB	Treasury Bills
FY	Fiscal Year
ATM	Automated Teller Machine
SME	Small Medium Enterprises
AD	Anno Domini

CHAPTER – I

INTRODUCTION

1.1 Background

The economic development of any country is not possible without the development of the sectors like agriculture, industry, trade etc. The economic activities are considered as the backbone of development of the nation. The economy of the nation is strictly based on the proper and efficient use of available natural resources with well planned management, strategy and up to date information. The utilization of resources results in the appreciation of the wealth of individual and the nation.

Both the private and public sector play a vital role in strengthening the economy of any country. Financial institutions play a crucial role in the economic development process. Financial institution refers to business concern, which is mainly confined to finance for the development of trade, commerce and industry. Banking is a major part of a nation for the economic development. Commercial banks occupy an important place in the framework of every economy because they provide capital for the development of industry, trade, business and other resource deficit sectors by investing the saving collected as deposits. All the economic activities of each and every country are greatly influenced by the commercial banking business of the country.

Banks are the essential part of the business activities which are established to safeguard people's money and thereby using the money in making loans and investments. There are several commercial banks operating inside and outside the valley. Every bank invests its money in some profitable financial sector, which may result in profitable business in the long run. An investment is the commitment of money that is expected to generate additional money. Human nature doesn't satisfy for whatever he/she at present tends to have more than whatever he/she has. So expecting the additional return he/she tends to sacrifice the current resources. Whenever we talk about the return, risk too must not be avoided, because in every type of return, risk is involved. "Every investment entails some degree of risk, it requires at present certain sacrifice for a future uncertain benefits" (Francis; 1998:1)

The network of a well-organized financial system of the country has great bearing in capital formation. It collects scattered financial resources from the masses and invests them among those engaged in commercial and economic activities of the country. It has been well established that the economic activities of any country can hardly be carried forward without the assistance and support of financial institutions. Financial institutions have catalytic role in the process of economic development. Thus, commercial banks have become the heart of financial system. A key factor in the development in the country is the mobilization of domestic resources and their investment for productive use to the various sectors. To make it more effective, CBs formulate sound investment policies, which help maximize quality of investment and eventually contribute to the economic growth of a country.

A portfolio is usually defined as a combination of assets. It is a collection of securities. Portfolio provides the highest possible return for any specified degree of risk. The portfolio that provides the highest rate of return with least possible amount of risk is the real investment portfolio. Portfolio simply represents the proactive among the investors having their funds in more than one asset. Successful formulation and effective implementation of investment policy is the prime requisite for the successful performance of banks. Good investment policy has a positive impact on economic development of the country and vice-versa. A good investment policy attracts both borrower and lenders, which helps the investment operation of the bank to be efficient and profitable by minimizing the inherent risk. A key factor in the development in the country is the mobilization of domestic resources and their investment for productive use to the various sectors by commercial banks. Investment portfolio is one which the incomer or profit of the bank depend upon directly to minimize risk, a bank must diversity its investment on different sectors which is known as portfolio investment. Investment portfolio means to reduce risk and divided the investment in different sectors by the means of risk. Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities.

1.1.1 Concept of Commercial Banks

Commercial banks are the financial institution that provides services, such as accepting deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposit. The traditional commercial bank is

a brick and mortar institution with tellers, safe deposit boxes, vaults and ATMs. However, some commercial banks do not have any physical branches and require consumers to complete all transactions by phone or Internet. In exchange, they generally pay higher interest rates on investments and deposits, and charge lower fees. (www.investopedia.com)

The commercial banks are those banks, which are established to accept deposits and grant loan to the industries, individual and traders with a view to earn profit. Apart from financing, they also render services like collection of bills and cheques, safekeeping of valuables, financial advising etc. to their customer. Mainstream function of commercial bank remains the mobilization rigid and scattered saving of public for providing credit to needy firm industry or people to get productive use. All other function can be said as auxiliary function. Commercial banks are a profit oriented financial service institution where certain amount of interest is given to the deposits and a certain rate of interest is charge by the bank in the loan facility. The second charge interest rate is higher than the first. It is the main earning of the bank. **According to Nepal Commercial Banks Act 2031 B.S.** “A Commercial bank refers to such type of bank other than specified banks related to cooperative, agricultural, industrial and other which deals in money exchange, accepting deposits and advancing loans etc.” (Commercial Bank Act; 2031:25).

Commercial Banks are those financial institutions deal in accepting deposits to persons and institutions and giving loans against securities. They provide working capital needs of trade industry and even to agricultural sectors. Moreover commercial banks also provide technical and administrative assistance to industries, trade and business enterprises. CB's poll together the saving of the community and arrange them for the productive use. They transfer monetary source from saver to users. In addition to above, the main purpose is to uplift the backward sector of economy.

Commercial banks are organization on a joint stock company system, primarily for the purpose of earning profit. They can either of the branches banking type, with a large network of branches, or of the unit banking type as we see in the United States, where a bank's operation is confined to single office or to a few branches within a strictly limited area.

“Commercial bank is a corporation which accepts demand deposits subject to check and makes short term loans to business enterprises, regardless of the scope of its other service.”
(Ronald; 2000: 345-346)

Commercial banks is a heart of financial system they hold the deposits of many person, Government establishment. Business unit, they make fund available through their lending and investing activities to borrower, individuals, business firms and service from producers to customers and the financial activities of the government. They provide a large portion is affected. These fact shows that the commercial banking system of nation is import to the functioning of the economy.

In this way commercial banks are those banks, which are engaged in commercial banking transaction and exclude from description. From the above definition of commercial bank, it can be defined as a bank is a financial institution, which performs widest range of economic and financial functions of any business firm in the economy. The commercial banks are these financial institutions, which collect scattered saving of people and provide loan against proper technical helps and suggestions, administrative suggestion, safe keeping of valuable collectives of bills, cheques, and overdraft facilities and provide modern banking facilities to industries and commerce. CB's collect fund as a saving from public of country and invest in highly return yielding firm. It develops saving habits in people. CB's plays vital role for development of a developing country. Banks provides internal resources for developing country's economy. It collect diversified capital from different part of country through its own branches.

1.1.2 Investment Policy

The word investment sounds very good and attractive that is why every individual in the world is interested in it. In layman's sense, there is always a return if there is investment. This return may be favorable as well as unfavorable to the investor's stand point. Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, Investing may result in disaster. In general sense, investment means to pay out money to get more. But in the broadest sense, investment means the sacrifice of current money for future money.

“Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, investing may result in disaster. In general sense; investment means to pay out money to get

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

A portfolio is collection of investment securities. Portfolio theory deals with the selection of optimal portfolio; that is, portfolio that provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return. A portfolio is usually defined as a combination of asset.

“A portfolio simply represents the practice among the investor of having their funds in more than one asset. The combination of investment assets is called a portfolio.” (Western and Brigham; 1992:245)

“Portfolio means a collection or group of assets.” (Gitman; 1990:243)

Investment portfolio refers to an investment that combines several assets. It is a collection of securities. “Portfolio means the lists of holdings in securities owned by an investor or institution.” (Oxford Dictionary; 1997: 173). Portfolio theory deals with the selection of optimal portfolios that is portfolio that provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return.

Portfolio is a collection of investment securities for example, if you owned some of SCBL stock, some Nepal Insurance Co. Ltd. stock, some Salt trading ltd. stock, some Nepal lever ltd. stock, some Bottlers Nepal Ltd. stock you would be holding 5 stock portfolios. Portfolio analysis considers the determination of future risk and return in holding various blends of

individual securities. Portfolio expected return is a weighted average of the expected return of the individual securities. Investment portfolio is one which the income or profit of the banks depend upon directly. Hence, the banks should never invest its fund in those securities; difference may cause a great loss. It must not invest its funds into speculative businessman who may be bankrupt at once and who may earn millions in a minute. The bank should accept that type of securities which are commercial, durable, marketable stable, transferable and high market prices. A commercial bank can maximize its volume of wealth through maximization of return on their investments and lending. So they must invest their funds where they gain maximum profit. The profit of commercial banks mainly depends on the interest rate, volume, period of loan and nature of investment in different securities. While investing excess funds in different securities or at the lending period, the banks should keep in mind that the people deposit money at the bank in different account with confidence that the bank will repay their money when they need. Similarly a bank should not lay all its eggs on the same basket i.e. to minimize risk; a bank must diversify its investment on different sectors. Diversification of loan or investment helps to sustain loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other companies.

Investment policy of any bank depends upon the riskiness of their assets they hold and the return from their investment. Most of commercial banks invest in the risky asses like hire purchase, auto loan, SME etc from which they gain more earnings but to maintain the risky portfolio they have to invest in other fixed income securities such as government bonds, treasury bills even the earning rate is lower.

1.1.3 Banking History of Nepal

In the context of Nepal, like as in other country the goldsmiths and landlord was the ancient banker. The Nepalese people were highly exploited by Shahu Mahajan by charging higher interest rate i.e. compound interest rate and even by manipulating the principal amount. If we try to see the history of banking transaction in depth then evidence of money lending function are found in practice before 8th century. In 780 B.S. Gunakamadev the ruler of Kathmandu reconstructed Kathmandu valley by borrowing debt from the people. In 14th century Tanka dhari system had been running in the period of Ranodip Singh in Kathmandu established an

office called Tejarath Adda. From this office the government distributed salary to their employees and provided loans to government employment @ 5% of interest against the security of gold, silver, etc.

Thus, the evolution of the organized financial system in Nepal has a more recent history than in other countries of the world. In Nepalese context, the history of development of modern bank started from the establishment of “Nepal Bank Ltd.” in 1937AD. With put forth effort of government and public, as a commercial bank with 10 million authorized capital. Then the government felt the requirement of a central bank and established “Nepal Rastra Bank” in 1956 AD. As a Central bank under NRB act 1956 AD, it played leading role in development in banking in Nepal and also controlled the monetary culture in the country. Likewise, rising of banking function gets popular and more complicated, thus NRB suggested for the establishment of another commercial bank and in 1966 AD, “Rastriya Banijya Bank” was established as a fully government owned commercial bank, now its branches are diversified all over the country. As the country moved towards economic liberalization in 1980 A.D., foreign banks were invited to operate in Nepal. The financial scenario has changed with the introduction of JVB’s in 1984. The number of commercial banks has been increasing. Since then, various financial institution like, JVB’s, Domestic commercial banks, Development banks, Finance companies, Co-operative banks Credit Guarantee Corporation, Employee Provident Fund, National Insurance Corporation, NEPAL Stock Exchange have come into existence to cater the financial needs of the country thereby assisting financial development of the country.

In 1990 A.D. after reestablished of democracy, the government took the liberal policy in banking sector. As an open policy of Government of Nepal’s to get permission to invest in banking sector from private and foreign investor under commercial bank act 1975AD, different private banks are getting permission to establish with the joint venture of other countries. The development of commercial banks in Nepal is categorized in three phases on the basis of financial institutions policies adopted by the country from time to time. They are:

CB’s prior to 1980’s ----- CB’s of 1980’s----- CB’s post 1990’s

There are only two banks prior to 1980’s they are NBL and RBB. All the three commercial banks of 1980’s were established as JVB. Similarly six commercial banks of past 1990’s

were also come into operating as JVB's. latest banks including Nepal Industrial and Commercial Bank Ltd., Laxmi Bank Ltd., Kumari Bank Ltd., Lumbini Bank Ltd., Machhapuchhre Bank Ltd., Siddhartha Bank Ltd., Global Bank Ltd., Citizen Bank Ltd., Prime Bank Ltd., Sunrise Bank Ltd., Bank of Asia Nepal Ltd and Kist Bank Ltd were established by private sector. Consequently the names of the banks are also changed. Nepal Arab Bank Ltd., Nepal Grindleys Bank Ltd., Nepal Indosuez Bank Ltd., Nepal Bank of Ceylon Ltd., are known as Nabil Bank Ltd., Nepal Standard-Chartered Bank Ltd., Nepal Investment Bank Ltd., Nepal Credit & Commercial Bank Ltd., respectively.

Taking an overview of financial institutions providing banking facility in Nepal, there are 32 commercial banks, 79 finance companies, 87 development banks, 12 micro credit development banks and 38 co-operative societies licensed by NRB (Banking and Financial Statistics; www.nrb.org.np: July 2011)

Nowadays, there are 32 commercial banks operating in Nepalese financial market along with 9 joint ventures with foreign investors.

Table: 1.1
List of Licensed Commercial Banks
Mid-July 2011

S.No	Commercial Banks	Operation Date(A.D)	Head Office
1	Nepal Bank Ltd.	11/15/1937	Kathmandu
2	Rastriya Banijya Bank Ltd.	1/23/1966	Kathmandu
3	Agriculture Development Bank Ltd.	1/2/1968	Kathmandu
4	Nabil Bank Ltd.	7/16/1984	Kathmandu
5	Nepal Investment Bank Ltd.	2/27/1986	Kathmandu
6	Standard Chartered Bank Nepal Ltd..	1/30/1987	Kathmandu
7	Himalayan Bank Ltd.	1/18/1993	Kathmandu
8	Nepal SBI Bank Ltd.	7/7/1993	Kathmandu
9	Nepal Bangladesh Bank Ltd.	6/5/1994	Kathmandu
10	Everest Bank Ltd.	10/18/1994	Kathmandu
11	Bank of Kathmandu Ltd.	3/12/1995	Kathmandu
12	Nepal Credit and Commerce Bank Ltd.	10/14/1996	Siddharthanagar, Rupandehi
13	Lumbini Bank Ltd.	7/17/1998	Narayangadh, Chitawan
14	Nepal Industrial & Commercial Bank Ltd.	7/21/1998	Biaratnagar, Morang
15	Machhapuchhre Bank Ltd.	10/3/2000	Pokhara, Kaski
16	Kumari Bank Ltd.	4/3/2001	Kathmandu
17	Laxmi Bank Ltd.	4/3/2002	Birgunj, Parsa
18	Siddhartha Bank Ltd.	12/24/2002	Kathmandu
19	Global Bank Ltd.	1/2/2007	Birgunj, Parsa
20	Citizens Bank International Ltd.	6/21/2007	Kathmandu
21	Prime Commercial Bank Ltd	9/24/2007	Kathmandu
22	Sunrise Bank Ltd.	10/12/2007	Kathmandu
23	Bank of Asia Nepal Ltd.	10/12/2007	Kathmandu
24	DCBL Bank Ltd.	5/25/2008	Kamaladi, Kathmandu
25	NMB Bank Ltd.	6/5/2008	Babarmahal, Kathmandu
26	Kist Bank Ltd.	5/7/2009	Anamnagar, Kathmandu
27	Janata Bank Nepal Ltd.	4/5/2010	New Baneshwor, Kathmandu
28	Mega Bank Nepal Ltd.	7/23/2010	Kantipath, Kathmandu
29	Commerz & Trust Bank Nepal Ltd.	9/20/2010	Kamaladi, Kathmandu
30	Civil Bank Ltd.	11/26/2010	Kamaladi, Kathmandu
31	Century Commercial Bank Ltd.	3/10/2011	Putalisadak, Kathmandu
32	Sanima Bank	2011	Naxal, Kathmandu

(Source: <http://bfr.nrb.org.np>, 2012)

After the announcement of liberal and free market economic based policy, Nepalese banks and financial sectors are having greater network and access to national and international markets. They have to go with their portfolio management very seriously and superiority. Most of other commercial banks are providing new schemes like Insurance to depositor, which is an extra bonus to encourage them to deposit their surplus in such banks. Credit card system is other attractive feature of commercial banks i.e NABIL credit card, visa of NIBL, credit card of HBL has launched in market for their clients. EBL introduced cumulative

deposit scheme (CDS) and facilities for Nepalese living in gulf countries for transfer of their savings to their home in Nepal by entering into drawing arrangements with exchange houses in UAE, Bahrain and Kuwait. And provided housing, vehicle and education loan to people, that means invest in other areas.

If commercial banks and financial institutions has to gain prosperity without delay, they should immediately start to improve customer service quality at high standards to reflect tremendous opportunities in the markets for their customers benefits like managing their risk, giving them the advantage of global strength, insights and philosophy because this can make the customer take full confidence to expands their transaction further more with best approach and feel secured for each investment made to earn superior returns over time. Therefore commercial banks should be aware and at every moment while providing service to their customers and should have better judgment on the quality of service whether they could satisfy their customers up to their expectation and have been able to attract others as many to meet the objectives or not as a result of the quality in service delivered. Actually for commercial banks the customers act as the soul which help in correcting the problems of service providers with which the provides can identify the defects of the gaps to minimize them in time through strong and intensive analysis of their service market research team.

Nepal being listed among least developed countries, the commercial banks has played a catalytic role in the economic growth. Its investments range from small scale cottage industries to all types of social and commercial loans and large industries. Generally the investment of the commercial banks include the investment on Government securities, like treasury bills, development bonds, national saving bonds, foreign government securities, shares on government owned companies and non-government companies and investment on debentures, similarly the commercial banks used their funds as loan and advances. The guidelines given by NRB play a significant role in the composition of bank portfolio. Since the constraints framework provided by the central bank is for economic enhancement, it can be hypothesized that the composition of bank portfolio has a considerable impact on national economy. Portfolio management activities of Nepalese banks are in developing stage, however, on the other hand most of the joint venture banks are not doing such activities so far.

1.2 Focus of the Study

Nepal Bank LTD is the first modern bank of Nepal. It is taken as the milestone of modern banking of the country. A new era of modern banking started with the establishment of Nepal Bank Ltd in 1937. Nepal Bank Ltd. remained the only financial institution of the country until the foundation of Nepal Rastra Bank is 1956 A.D.. 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:

- Existing 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.
- Loan and advance portfolio analysis of commercial banks
- Risk and return analysis of commercial banks in Nepal.

1.3 Statement of Problem

Nepal being listed among least developed countries, the establishment of commercial bank in this sector has added more bricks in the construction of Nepalese economy. Commercial banks are the backbone of the Nepalese economy at present. The investment range of commercial bank is from small-scale cottage industries to large industries in making investment in loans and government securities. Higher the investment on loan and advance higher will be the profit. But there are two major problems in front of economy, first to mobilize the greatest amount of saving for the development of the country and second, the collected saving have to be channelized in the productive sector in a planned way. It can be hypothesized that bank portfolio variables like loans, investment, cash reserve, deposit and borrowing affects the national income. And also how the government policy affects these variables, such as the effect of an interest rate on the banks portfolio variables is of great concern. Therefore, when monitoring money and credit conditions, the central bank has to keep an eye on bank portfolio behavior. The investments planning of the commercial banks

in Nepal heavily depend upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of the central bank.

Nowadays Nepalese commercial banks do not seem to be capable to invest their funds in more profitable sector where there is risk. They are found to be more interested in investing in less risky and liquid sector i.e. treasury bills, development bonds, National savings, Shares and Debenture etc. according to short/ long term investment policy. They have to follow all the instruction and guidelines of NRB to have clear vision towards investment portfolio. They have to pay attention towards proper matching of deposit and investment portfolio, which decreases financial problem enforcing commercial banks.

There are various problems in resources mobilization by commercial banks in Nepal. The most important problem is poor investment climate prevailing in Nepal due to heavy regulatory procedure. Uncertain government policy portfolio analysis between various types of investment made by commercial banks are most important subject, which helps to minimize risk by diversifying total risk to different sectors. But portfolio management activities of Nepalese commercial banks are in developing stage. There are various reasons behind not using such activities openly by commercial banks; such as unawareness about portfolio management and it's usefulness, hesitation of taking risk, lack 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. NRB has also played important role to make commercial banks as well as financial institutions to invest their funds in good sector, which affect the investment portfolio. NRB has imposed many rules and regulations so commercial banks can have sufficient liquidity and security. Banking competition is increasing day per day but investment opportunity is not comparatively extended. Now, commercial banks have to face competition with each other's and many more financial institutions.

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

- What is the relationship of investment with total deposits, loan and advances, net income?
- How far have commercial banks been able to transfer monetary resources from savers to users?

- How do commercial banks manage their risk and return using portfolio diversification?
- Whether commercial banks effectively utilize portfolio concept in their investment to minimize risk and maximize return or not?
- Which bank has the largest degree of financial risk measured in terms of portfolio risk?
- How do the banks behave for portfolio variables?
- Is investment portfolio directed towards objectives of profit maximization?

1.4 Objectives of the Study

The general objective of the present study is to identify the current situation of investment portfolio of commercial banks in Nepal. The specific objectives are as follows.

- To evaluate the financial performance of commercial banks in term of investment strategies.
- To analyze the risk and return ratio of commercial banks.
- To analyze how commercial banks manage their risk and return on investment using portfolio concept.

1.5 Significance of the Study

Banks are playing vital role in the economic development of the country. Without banking facilities, the growth and the economic development becomes slow. The main objectives of commercial banks is to earn profit by proper mobilization of resources in Nepalese commercial banks, they don't have clear view towards effective investment. They are found to be making investment only on short term basis; only few banks invest on long terms nowadays. There is hesitation to invest on long terms projects because they are much more safety minded. They do not seem to be capable to invest their funds in more profitable sector. They are found to be more interested in investment in less risky and highly liquid sectors. There are various ways to minimize risk, but the bank are not aware of this and do not pay any attention toward such field i.e. they do not think about portfolio investment.

The main significance of this study of investment policy of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. The researcher has undertaken this study to analyze the existing portfolio investment of Nepalese commercial banks and point out the various weakness and defects inherent in it and provide package of suggestion for its improvement.

There are following significance of the study

- Existing situation of portfolio analysis on investment of commercial banks in Nepal.
- Profitability situation of commercial banks and comparing with each other.
- Loan and advance portfolio analysis of commercial banks in Nepal.
- Risk and return analysis of commercial bank in Nepal.

1.6 Limitations of Study

This study is simply a partial study for the fulfillment of M.B.S degree, which has to be finished within limited period. Hence, this study is not far from several limitation of its own kind, which weakens the heart of the study. It has certain limitations.

- Among 32 commercial banks, only five commercial banks are taken under study.
- The study covers a period of 8 fiscal years from 2004/05 to 2011/12 which will be tabulated and processed for drawing conclusion.
- Time factor is major limitation of this study.
- This study concentrates only on those factors, which are related with investment portfolio analysis and available in the form required for analyzing the different issues.
- The data used in the study is secondary data so reliability of the analysis may not be accurate.
- This study was based on the financial statements of the commercial banks like balance sheet, profit and loss account and cash flow statement which provided the quantitative information

1.7 Organization of the Study

This study has been organized over altogether five chapters. Starting from Introduction, Review of Literature, Research methodology, Presentation and Analysis of data and summary, to conclusion and recommendation as get of the entire study. A brief outline of this chapter has been outlined as under.

Chapter I “Introduction”: It introduces the subject, present the research problem, reason for studying, objective of the study, along with limitation.

Chapter II “Review of Literature”: It concerns with the study of portfolio analysis of investment have been reviews and presented.

Chapter III “Research Methodology”: It comprises research designs, nature and source of data, data gathering method and analytical tools used.

Chapter IV “Presentation and Analysis”: This chapter deals with the presentation and analysis of data and scoring the empirical finding out the study through definite course of research methodology.

Chapter V “Summary, Conclusion and Recommendation”: It is followed by the basic conclusion of the study based in the fourth chapter on the basic of these conclusions and recommendation has also been presented for consideration.

CHAPTER - II

REVIEW OF LITERATURE

Review of literature means reviewing research studies or other relevant propositions in the related area of study so that all the past studies, their conclusions and deficiencies may be known and further research can be conducted. It is an advancement of existing knowledge and in-depth study of subject matter. It starts with a search of a suitable topic and continues throughout the volumes of similar or related subjects. It is very rare to find out completely new problem. In literature review, researcher takes hints from past dissertation but he or she should take heed of replication. The main reason for full review of research in the past is to know the outcomes of those investigations in areas where similar concepts had been used successfully. During the review of this research, in depth study and theoretical investigation regarding portfolio's aspects and their present application and potentialities made. Investment "Range of investment held by an investor, company etc." (Oxford Dictionary; 1994:272) A portfolio simply represents having their funds in more than one assets. The combination of investment assets is portfolio. Hence, in this chapter, the focus has been made on the review of literature relevant to the investment portfolio analysis of commercial banks in Nepal. For this study, different Journals, Article, Books, Annual Reports, and some research paper related with this topic has been reviewed. Therefore, this chapter is arranged into the following order:

- Conceptual Framework.
- Review of legislative provisions
- Review of previous studies
- Review of unpublished thesis
- Research gap

2.1 Conceptual Framework

It is basically concerned with theoretical aspect relevant to the topic. Under this heading the concept and meaning of some of terms used in this study have been discussed.

Commercial banks deal with other people's money. They have to find ways of keeping their assets liquid so that they could meet the demands of their customers. In this anxiety

to make profit the bank can't afford to lock up their funds in assets, which are not easily releasable.

The banks are such types of institutions, which deal in money and substitute for money. They also deal with credit and credit instruments. Good circulation of credit is essential for the existence of the bank. Unsteady and unevenly flow of credit always harms the banks and lastly to the economy as a whole. Hence to collect funds and mobilize them in a good investment is not a joke for such an institution. An investment of fund may be the question of life and death of the bank. Thus the banker must think seriously before making an investment decision.

2.1.1 Concept of Investment

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

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

“Investment is the current commitment of funds for a period of time to derive a future flow of funds that will compensate the investing unit for the time funds are committed, for the

expected rate of inflation and also for uncertainty involved in the future flow of the funds.”
(Frank and Reilly; 2004:298-299)

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

“Investment may be defined as the purchase by an individual or institutional investor of a financial or real asset that produces a return proportional to the risk assumed over some future investment period.” (Amling; 1994:147)

According to Sharpe and Alexander “Investment, in its broadest sense, means the sacrifice of current dollars for future dollars. Two different attributes are generally involved : time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all and the magnitude is generally uncertain.”

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

From the definition given above, it is clear that an investment means to trade a known rupee amount today for some expected future stream of payment or benefits. A commercial bank must always mobilize its funds and other deposits to profitable secured and marketable sector so that it earn a handsome amount of profit as well as it should be secured and can be converted into cash as per the requirement.

“Investors rarely place their entire wealth into a single asset or investment. Rather, they construct a portfolio or group of investment. Portfolio is simply a combination of two or more securities or asset.” But risk analysis in a portfolio context is not so simple.

“The return is total gain or loss experience on an investment over a given period of time. It is commonly measured as the changes in value plus the annual income received, usually expressed as percent of the beginning of period investment value.

Expected or actual or required rate of return on any asset express as

$$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

Where,

R = actual return or expected return or required rate of return it refers to a particular time period in the past (Future)

D_t = cash received from the asset at the end of time period t

P_t = value of asset at time period t

P_{t-1} = value of asset at time period $t-1$

This formula can be used to determine both actual one period price returns (when based on historical figure), as well as expected one period returns (when based on expected dividend and price).

This explanation of investment on asset is based on the historical dividend and price data or its expected future data. The return can be defined on their basis of probability distribution of alternative outcome.

2.1.2 Objective of Investment

The objective of investment is to increase systematically the individual's wealth, defined as assets minus liabilities. Investment requires that an individual invest money in assets that will generate the desired wealth when it is needed for retirement, children's education, or other financial goals. Consequently, most investments are undertaken to provide as increase in wealth.

The higher the level of desired wealth, the higher the return that must be received. An investor seeking higher returns must be willing to face higher levels of risk. While wealth maximization may remain an investor's investment objective over a lifetime, age or family circumstances will necessarily force the investor to change his/her investment approach. Thus an investment objective is not static, rather it vary from person to person, from time to time and from one circumstance to another circumstance.

2.1.3 Importance of Investment

Banks are playing vital role in the economic development of the country. Without banking facilities, the growth and the economic development becomes slow. The main objective of commercial banks is to earn profit by proper mobilization of resources in Nepalese

commercial banks. They are found to be more interested in investment in less risky and highly liquid sectors. There are various ways to minimize risk, but the bank are not aware of this and do not pay any attention toward such field i.e. they do not think about portfolio investment.

The main importance of this study of investment policy of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. The researcher has undertaken this study to analyze the existing portfolio investment of Nepalese commercial banks and point out the various weakness and defects inherent in it and provide package of suggestion for its improvement.

There are following importance of the study with reference to investment;

- Existing situation of portfolio analysis on investment of commercial banks in Nepal.
- Profitability situation of commercial banks and comparing with each other.
- Loan and advance portfolio analysis of commercial banks in Nepal.
- Risk and return analysis of commercial bank in Nepal.

2.1.4 Source of Investment Risk

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

i. Interest rate risk

It is the potential variability of return caused by changes in the market interest rates. As interest rate changes the prices of many securities fluctuate. The price of fixed securities (bonds & preferred stocks) drop when interest rate rises. Present value of investment moves inversely with changes in the market interest rate i.e. if market interest rise then the investment's present value will fall.

ii. Purchasing Power risk (Inflation risk)

It is the variability of return an investor suffers because of inflation. Inflation (a rise in general prices over time) seems to be normal way of life in most countries today. However, when inflation takes place, financial assets such as stocks, bonds, etc may lose their ability to command the same amount of real goods and services they did in the past. Specifically, this risk is the chance that generally rising prices (inflation) will reduce purchasing power.

iii. Market Risk

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

iv. Default Risk

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

v. Liquidity Risk

It is variability of return which results from price discounts given or sales commission paid in order to sell the asset without delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs but liquid assets are not readily marketable. Hence, liquid assets required large price discounts and sales commissions in order to affect a quick sell.

vi. Call-ability Risk

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

vii. Convertibility Risk

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

viii. Political Risk

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

ix. Industry Risk

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

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

2.1.5 Investment Alternatives

“In the market, a wide range of investment alternatives are available to an individual investor.” (Cheney and Moses; 1995:8) Traditionally, there are various investment alternatives like, common stocks, preferred stock, bonds, real estates, precious metals and bank as financial assets. The capital market in Nepal is very small to provide wide range of investment alternatives yet.

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

1. Equity Securities

- a) Common Stock
- b) Preferred Stock

2. Debt Securities

- a) Short Term Debt Securities
 - i. Negotiable certificate of deposit
 - ii. Commercial Paper
 - iii. Banker's Acceptance
 - iv. Treasury bills

b) Intermediate and Long Term Debt Securities

- Treasury Notes
- Saving Bonds
- Municipal Securities
- Treasury Bonds
- Agency Securities
- Corporate Bonds

3. Derivative Securities

- a) Options
- b) Commodity future
- c) Financial Future
- d) Options on future
- e) Rights
- f) Warrants

4. Real Assets

- a) Precious Metals
- b) Real Estate
- c) Collectibles

5. International Investment

- a) Multinational corporations
- b) Foreign Stocks traded on a local exchange
- c) American depository Receipts

6. Other Investment Alternatives

- a) Pension Funds
- b) Mutual Funds
- c) Closed End Companies

2.1.6 Portfolio Analysis

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

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

risky than the same stock held in isolation. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate.

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

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

2.1.7 Portfolio Analysis and Diversification

Risk is defined as the changes of financial loss or more formally the variability of the actual return from the expected return associated with a given assets. The greater the variability of return on assets said to be riskier asset and the more certain the return from an assets, the less variability and therefore the less risk. No investment will be undertaken unless the expected

rate of return is high enough to compensate the investor for the perceived risk of the investment.

As per oxford-advanced learner's dictionary by A.S Hornby "risk is the possibility or chance of meeting danger or suffering loss." [A.S Hornby, (1996), "Oxford Advance Learners Dictionary", Oxford University Press, New York). But in the context of investment, let's first consider a couple of examples. Assume that you buy a one year Treasury Bill (T-bill) to yield 8%. If you hold it for the full year, you will realize a government guaranteed 8% return on your investment not more, less. Now, buy a share of common stock for any company and hold it for one year. The cash dividend that you anticipate receive may or may not materialize as expected. And, what is more, the year –end price or the stock might be much less than expected may be even less than you started with. Thus, your actual return on this investment may differ substantially from your expected return. If we define the risk the variability of returns from those that are expected, the T-bill would be a risk free security while the common stock would be riskily security the greater the variability, the riskier the securities is said to be." [O.cit, Van Horne James.]

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

Diversification is the one important means that control portfolio risk. Investments are made in a wide variety of assets so that exposure to the risk of any particular securities is limited. By the help of portfolio, risk can be diversified. In this context it can be cleared through the proverb "do not place all the eggs in one basket", it means that one can lose all eggs if unlikely event occurs. So we can say that risk cannot be diversified by investing in a single asset. Obviously, risk can be diversified by forming portfolio.

Diversification is an attempt to reduce risk by investing among various financial instruments and industries. Most investment professionals agree that, although it does not guarantee against loss. Diversification is the most important step to reaching your long range financial

goals minimizing risk. Diversification helps to eliminate some degree of total risk. Since diversification risk can be avoided, investor did not compensate for bearing such risk, it happens due to unprofessionalism and internal problems. Investor will be rewarded only for taking market risk which is also known as unavoidable risk and systematic risk. Diversification in the investment or making portfolio in security level or in industry level protect against volatility and uncertainty at rate of return.

To minimize risk, a bank must diversify its investment on different sectors. Diversification helps to sustain loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other companies. In this way the loss can be minimized or recovered. Different diversification techniques for reducing a portfolio risk are as follows;

i) Simple Diversification

Simple diversification can be understood as “not putting all the eggs in one basket”. The idea behind this is that we can reduce investment risk simply by spreading our investment in different securities. Even the portfolio of randomly selected securities can reduce risk. Further it is not necessary to include too many securities in the portfolio. A portfolio consisting of 10 to 15 randomly selection securities can eliminate almost all diversifiable risk. So this approach assumes that an investor can expect a reasonable return for a given level of risk.

ii) Superfluous Diversification

Superfluous diversification is the extended form of simple diversification. In the simple diversification, 10-15 securities are selected for a portfolio while superfluous diversification includes more. It refers to the investors spreading himself in so many investments on his portfolio. The investor finds it is impossible to manage the asset on his portfolio because the management of a large number of assets requires knowledge of the liquidity of each investment return, tax liability and thus becomes impossible without specialized knowledge.

Although more money is spent to manage a superfluously diversified portfolio, there will most likely to be no concurrent improvement in the portfolio’s performance. Thus,

superfluous diversification may lower the net return to the portfolio's owners after the portfolio's management expenses are deducted.

iii) Diversification Across Industries

Diversification across industries means, securities are selected from different industries rather than from single industry to form a portfolio. Some investment counselors advocate selecting securities from different industries to achieve better diversification. It is certainly better to follow this advice than to select all the securities in a portfolio from one industry. Since all the industries are highly correlated with one another, diversification across industries is not much better than simply selecting securities randomly. The non diversification variability can not be diversified away simply by selecting securities from different industries.

iv) Simple Diversification Across Quality Rating Categories

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

v) Markowitz Diversification

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

2.1.8 Portfolio Risk and Return

Portfolio risk refers to the possibility that an investment portfolio will not earn the expected or desired rate of return. Investors attempt to reduce this risk through diversification. Portfolio risk is the combination of systematic risk and unsystematic risk. And portfolio return is the monetary return experienced by the portfolio holders. Banks, pension funds, insurance companies, mutual funds, and other financial institutions are required by law to hold diversified portfolios. Even individual investors- at least those whose security holding constitute a significant part of their total wealth- generally hold stock portfolios, not the stock of only one firm. This begin the case, from an investor's standpoint the fact that a particular stock goes up or down is not very important; what is important is the return on his or her portfolio, and the portfolio's risk. Logically, then, "the risk and return of an individual security should be analyzed in terms of how that security affects the risk and return of the portfolio in which it is held." (Weston and Brigham; 1992: 183)

i. Portfolio Expected Return

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

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

Where,

$$E(r_p) = \text{Portfolio Expected Return}$$

$$W_1 = \text{Weight for Stock 1}$$

$$W_2 = \text{Weight for Stock 2}$$

$$E(r_1) = \text{Expected Return for Stock 1}$$

$$E(r_2) = \text{Expected Return for Stock 2}$$

ii. Portfolio Risk

Portfolio risk is the risk as a whole for the specific portfolio. In totally, what is the risk of wealth is the risk of portfolio. Calculation of portfolio risk is not as easy as portfolio return. The portfolio risk depends upon the risk of each securities and the covariance of particular

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

iii. Measuring Portfolio Risk

“The measurement of a portfolio risk is not as a straight forward as the calculation of a portfolio’s expected return. In order to calculate the risk of a portfolio, consideration must be given not only to the risk of the individual assets in the portfolio and their relative weights but also to the extent to which the asset’s returns move together. The degree to which the assets returns move together is measured by the covariance or correlation coefficient. By combining the measures of individual assets risk, relative asset weights and the co. movement of asset’s return the risk of the portfolio can be estimated.” (Cheney and Moses; 1995: 653)

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

Variance of Portfolio

$$\sigma_p^2 = \sum_{t=1}^n \sum_{t=1}^n x_i x_j COV_{ij}$$

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

$$\sigma_p = \sqrt{\sum_{t=1}^n \sum_{t=1}^n x_i x_j COV_{ij}}$$

Where,

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

$$Cov_{ij} = \sigma_i \sigma_j \rho_{ij}$$

ρ_{ij} = correlation coefficient between i and j.

x_i = weight of security i.

x_j = weight of security j.

2.1.9 Correlation Coefficient and Portfolio Risk

Correlation refers to a quantitative relationship between two variables that can be measured either on ordinal or continuous scales. The correlation coefficient is a statistic that is calculated from sample data and is used to estimate the corresponding population correlation coefficient. Correlation coefficients generally take values between -1 and $+1$. A positive value implies a positive association between variables (i.e., high values of one variable are associated with high values of the other), while a negative value implies a negative association between variables (i.e., high values of one variable are associated with low values of the other). Thus, a coefficient of -1 means the variables are perfectly negatively related; while $+1$ means a perfect positive relation. Coefficients of 0 means the variables are not related. In fact, the covariance between two random variables is equal to the correlation between the two random variables times the product of their standard deviations; $\sigma_{ij} = \rho_{ij} \sigma_i \sigma_j$

Where ρ_{ij} denotes the correlation coefficient between the return on security i and the return on security j. correlation between the return of two securities helps to identify the level of risk reduction in portfolio construction and provides possibility of eliminating some risk without reducing potential returns. If the correlation is perfectly positive (or 1) then the portfolio cannot reduce any level of risk. On the contrary, if the correlation is perfectly negative (or -1), and then the proper combination of the two securities can reduce unsystematic risk even up to zero. So, the positive correlation between securities return is not so beneficial and vice-versa. A zero coefficient i.e. the two variables are not related to each other. So changes in one variable are independent of changes in the other. So, when securities in a portfolio are perfectly negative correlated i.e. $\rho = -1$ all risk can be diversified away but when securities are perfectly positively correlated, diversification is not good whatever. In the typical case, "Correlations among the individual stocks are positive but less than $+1$ some but not all risk can be eliminated." (Weston and Brigham; 1992:127). In other words when the returns two

securities are perfectly positively correlated i.e. $\rho = 1$, the portfolio variance is just equal to the variance of individual securities. If the returns of securities are perfectly negatively correlated the portfolio variance is zero i.e. the combination of such securities completely reduces the risk. When the return of securities are weakly positively correlated the portfolio variance is less than the variance of individual securities.

2.1.10 Systematic Risk

Systematic risk is the portion of total risk which makes impact in the overall market example; inflation, interest rate changes or economic conditions. It is the portfolio of total variability in return caused by market factors that simultaneously affect the prices of all securities. The systematic nature of these price changes makes them immune to much of the risk reduction effects of diversification, thus systematic risk is also called undiversifiable risk. Systematic variability of return found in nearly all securities to varying degree because most securities tend to move together in a systematic manner. Systematic risk is the market risk which could be avoidable. The systematic risk lies in the overall stock within market measured by beta (β). The beta of the stock is the slope of the characteristics line between return for the stock and those for the market. Beta depicts the sensitivity of the security's excess return to that of the market portfolio. If the slope is one, it means that excess vary proportionately with excess return for the market as a whole. If the slope steeper than one means that the stock's excess return varies more than proportionately with the excess return of the market portfolio. In other words, it is more systematic risk than the market as whole.

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

- War
- Inflation
- Recession
- Interest Rates Policy
- Corporate Tax Rate Policy

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

Unsystematic Risk

“Unsystematic Risk or Diversifiable Risk is the portion of the total risk which is unexplained by overall market movements. Since it happens due to internal causes, it is diversifiable by increasing the efficiencies and effectiveness for the productivity of the organization. This kind of risk is diversifiable risk or avoidable risk. Unsystematic risk can be reduced as more and more securities are added to a portfolio. Various studies suggest that 15 to 20 securities selected randomly are sufficient to eliminate most of the unsystematic risk of a portfolio.” (Van Horne; 1998: 55-59)

“Events such as labor strikes, management errors inventions, advertising, campaigns, shifts in consumer taste and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic security price movements are statistically independent from each other, and so they may be averaged to zero when different assets are combined to form a diversified portfolio. Therefore, unsystematic risk is also called diversifiable risk”. (Weston and Copeland; 2003:366)

2.1.11 Market Portfolio

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

The market portfolio holds a special place in modern theory and practices. It is central to CAPM, which assumes that the market portfolio lies on the efficient set and that all investors

hold the market portfolio in combining with a desired amount of risk free borrowing and lending.

2.1.12 Factors Affecting Investment Portfolio Decision

i. Amount of Investment

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 fund available with them will therefore decide the quantum of their investment in securities.

ii. Objective of Investment Portfolio

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

iii. Selection of Investment

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

iv. Timing of Purchase

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

2.2 Review of Legislative Provision

In the section, the review of legislative framework (environment) under which the commercial banks are operating has been discussed. This legislative environment has significant impact on the commercial banks' establishment, their mobilization and utilization of resources. All the commercial banks have to conform to the legislative provision specified in the Commercial Bank Act 2031 and the rules and regulations formulated to facilitate the

smooth running of commercial banks. “In the absence of any bank in Nepal the economic progress of the country was being hampered and causing inconvenience to the people and therefore with the objective of fulfilling that need by providing services to the people. For the betterment of the country this law is hereby promulgated for the establishment of the bank and operation.”

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

NRB Rules Regarding Fund Mobilization of Commercial Bank

To mobilize bank’s deposit in different sectors of the different parts of the nation to prevent them from the financial problems, central bank (NRB) any establish a legal framework by formulating various rules and regulations (prudential norms). The directives must have direct or indirect impact while making decision to discuss those rules and regulation, which are formulated by NRB in terms of investment and credit to priority sector, deprived sector, other institution, single borrower limit CRR, loan loss provision, capital adequacy ratio, interest spread, productive sector investment. A commercial bank is directly related to the fact how much fund must be collected as paid up capital, while being established at a certain place of the nation? How much fund is needed to expand the branch and counters? How much flexible and helpful the NRB rules are also important? But we discuss only those, which are related to investment function of commercial banks. Hence, NRB Rules regarding Fund Mobilization of Commercial Bank is briefly described below:

(Source: <http://bfr.nrb.org.np>, Jan 2009)

2.2.1 Directive No: 3 Provision for Credit to Priority Sector

NRB requires commercial banks to extend loans and advances amounting at least to 12% of their total outstanding credit to priority sector including the deprived sector. In this connection NRB has included Agriculture sector, Cottage and Small industry sector, Service oriented sector and Co-operative sectors as the priority sector for investment. This provision is totally based on the objective associated with living standard enhancement of people residing in the remote and the rural areas. *(NRB unified directive 2010)*

2.2.2 Directive No: 17 Provision for Investment in Deprived Sector

Commercial banks are compulsorily required to extend their credit and investment in the deprived sector such as co-operative institutions and the rural banks that are licensed through NRB. The new provision obligates the commercial banks to invest 3.0 - 3.5 % of the total loan and advances to the deprived sector. *(NRB unified directive 2012)*

2.2.3 Directive No: 3 Provision for Investment in Productive Sector

Nepal, being a developing country needs to develop infrastructure and other primary productive sectors like agriculture, industry etc. For this, NRB has directed commercial banks to extend at least 30% of their credit to the productive sectors like agriculture sector and industrial sectors. *(NRB unified directive 2010)*

2.2.4 Directive No: 2 Loan Classification and Loss Provision

To enhance the quality of assets of commercial banks, NRB has directed commercial banks to classify their outstanding loan and advances, investment and other assets into six categories. The classification is done in two ways. The loans exceeding 10 million are classified as debt serve charge ratio, repayment situation, financial condition of the borrower, management efficiency, quality of collateral. However, the loans not exceeding 10 million have been classified as per maturity period. *(NRB unified directive 2010)*

Furthermore, NRB has directed commercial banks to maintain certain reserve for loans so classified. Credits and purchase of bills by commercial banks have been classified as good, average, substandard, doubtful and poor for the purpose of adequate provisioning. The existing loan loss provisioning is as follows.

Table 2.2

Loan classification and loan loss provision

Loan category	Loan loss provisioning (LLP) (in % of overdue loan)	Periods
Pass	1	Up to 90 days
Substandard	25	90 to 180 days
Doubtful	50	180 to 365 days
Loss	100	More than 365 day

Source: NRB Directives Manual, 2012 Edition

Loan loss provisioning has affected banks capability to extend loans and made the risk averse in issuing newer loans, particularly to the private sector and priority sector where loan default is pretty high.

2.2.5 Directive No: 3 Provision for the single Borrower Credit Limit

NRB has issued the following directives to commercial banks for lending. NRB has barred an individual, firm, company or group of companies the single borrower credit limit at 25% of the primary capital in case of fund based credit and 50% of the primary capital in case of non-fund based credit, such as letter of credit, guarantee, commitment etc. (*NRB unified directive 2008*)

In case of consortium financing, NRB have allowed commercial banks to extend an additional 10% credit above the limit. However, Nepal Oil Corporation and Agriculture Input Corporation for import of petrol, diesel, kerosene, fertilizer and food stuffs have been removed from the restriction of single borrower credit limit.

Besides this, following the BASEL II Capital Adequacy Accord. NRB has directed commercial banks to maintain at least 8% Capital Adequacy Ratio (CAR) of their risk weighted assets (RWA) and off balance sheet transaction, for instance letter of credit, letter of acceptance, bonds, guarantee etc. They are further required to classify their capital requirement into: core capital (Tier 1) and supplementary capital (Tier 2) and maintain at least 6% of their total capital in the form of core capital. (*NRB unified directive 2008*)

Elements of Tier 1 Capital

- Paid up equity capital
- Irredeemable non-cumulative preference shares

- Share premium
- Proposed bonus equity share
- Statutory general reserve
- Retained earning available for distribution to shareholders
- Unaudited current year cumulative profit including staff bonus and taxes
- Capital redemption reserves
- Dividend equalization reserves

Elements of Tier 2 Capital

- Cumulative or redeemable preference shares with maturity of five years and above
- Subordinated term debt fully paid up with a maturity of more than 5 years
- Hybrid capital instruments which combine certain characteristics of debt and certain characteristics of equity
- General loan loss provision limited to a maximum of 1.25 % of total risk weighted exposures.
- Exchange equalization reserves created by banks as a cushion for unexpected losses arising out of adverse movements in foreign currencies
- Investment adjustment reserves created as a cushion for adverse price movements in bank's investments falling under 'Available for Sale' category.

According to the provision, risk weighted assets (RWA) should be calculated by classifying assets and giving different weights as presented below.

Table 2.3
Allocation of Risks Factors

S.No.	Assets	Weight
1	Cash balance	0
2	Bank balance with NRB*	0
	Other domestic bank**	20
	Foreign bank	20
3	Call deposit	10
4	Investment:	
	Government papers	0
	Share and debenture	50
	Other investment	50
5	Loan and advances	100
6	Fixed assets***	100
7	Contingent liabilities	
	Fully secured three month letter of credit	20
	Commitment of more than a year	50
	Letter of acceptance, simple commitment and other letter of transactions	100

Source: NRB 2008

*

ECA risk score	0-1	2	3	4-6	7
Risk weights	0%	20%	50%	100%	150%

Source: NRB Capital Adequacy Framework 2007, (updated July 2008)

**

ECA risk score	0-1	2	3-6	7
Risk weights	20%	50%	100%	150%

Source: NRB Capital Adequacy Framework 2007, (updated July 2008)

*** as per the NRB Capital Adequacy Framework 2007, (updated July 2008) if all the criteria mentioned in the product paper approved by Board of Banks are fulfilled then under Claims on Regulatory Retail Portfolio RWE, Claims under Residential Properties RWE and Claims secured by commercial real estate RWE are 75%,60%, and 100% respectively.

2.2.6 Directive No: 15 Directives regarding Interest Rate Spread

The interest rate spread, the difference between interest charged on loan and advances and the interest paid to the depositors, has widened significantly in the aftermath of deregulation in

interest rates which has caused financial intermediation. Hence, NRB directed commercial banks to limit interest rate spread between deposits and lending rated to a maximum extent of 5% NRB has also provided commercial banks with a new calculation method of interest rate spread for a certain period recently. (*NRB unified directive 2008*)

2.2.7 Directive No:9 Guidelines for Investment in Stocks and Securities

Commercial banks are also required to minimize exposures to risk involved in investing the deposits of the saver and other financial resources at their disposal in earning assets. (*NRB unified directive 2008*)

Statistical Information and reporting

Commercial banks are required to compile and submit their financial reports keeping in view:

- Nepal Rasta Bank Act
- Commercial Bank Act
- International Accounting System
- Nature and type of their respective transaction
- Directives of the Nepal Rastra Bank
- Monetary and Financial Statistics Manual 2000 of the IMF

2.2.8 Directive No: 21 Investment Management Regulation

A commercial bank formulating a written policy may decide to invest in shares and securities of an organized institution. However, such investment is restricted to 10% of paid up capital of the organization. However, the cumulative amount of such investment in all the companies in which the bank has financial interest shall be limited to 20% of the paid up capital of the bank. But the total amount of investment in share and securities of the organized institution is restricted to 30% of the paid up capital of the bank.

Likewise, Commercial Banks are not allowed to invest in any shares, securities, and hybrid investment issued by any banks and financial institutions licensed by NRB. Where such investment exists prior to issuances of this directive, such investment brought within the restrictive limitation by the FY2003//04(2060/61). However, investments on rural microfinance development banks' share are free from such restriction. (*NRB unified directive 2008*)

2.2.9 Directive No: 05 Provision for Minimizing Liquidity Risk

Commercial banks are required to monitor their liquidity risks. This is to minimize risk inherent in the activities and portfolio of the banks. According to the regulation a gap found between maturing assets and maturing liabilities on the basis of maturity period, maturity periods such as 1-90, 91-180,181-270,271-365 days and above one year are classified for the purpose of checking. (*NRB unified directive 2012*)

2.2.10 Cash Reserve Requirements (CRR)

To ensure adequate liquidity in the commercial banks to meet the depositors demand for cash at anytime and to inject the confidence in depositors regarding the safety of their deposited funds. (*NRB unified directive 2010*)

2.3 Review of Previous Studies

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

2.3.1 Review from International Context

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

The Harry M. Markowitz's Study (1952)

Markowitz entitled the portfolios theory establishes a relationship between a portfolios expected return and its level of risk as the criterion for selecting the optimum portfolio. So as to find the efficient set of portfolios and select the most effecting one, the portfolio manager will need to know the expected returns and the risk of these returns for the individual securities. The portfolio model developed by Markowitz is based on the following reasonable assumptions. (Markowitz; 1952:77-91)

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

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

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

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

Where,

R_p = Expected return to portfolio.

R_i = Expected return to security

X_i = The proportion of total portfolio investment in security.

The Markowitz has presented the risk of the portfolio consists of the riskiness of the individual securities and the covariance between the returns of the securities among all possible combinations of them.

Thus, portfolio risk can be calculated as follows:

$$\text{The portfolio risk: } \sigma_p^2 = X_1^2 \times \sigma_1^2 + X_2^2 \times \sigma_2^2 + 2X_1 \times X_2 \times \sigma_1 \times \sigma_2 \times \rho_{12}$$

Where,

X_1 = proportion of funds invested in security 1.

X_2 = proportion of funds invested in security 2.

σ_1^2, σ_2^2 = variance of the returns on securities 1 and 2.

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

The Edward J. Kane and Stephen A. Buser's study (1979)

His study of the Edward J. Kane and Stephen A. Buser in the title "Portfolio diversification at Commercial Banks" (Kane and Buser; 1979: 19-31) deals how a firm performs a useful function by holding a portfolio of efficiently priced securities.

It is the rational for a firm to engage round of asset diversification on behalf of its shareholder's even when all assets are priced efficiently and available for direct purchase by shareholders. As a way of testing their perspective empirically, they estimates regression model designed to explain the number of distinct of U.S. treasury and federal agency debt held in a time series of cross section of large U.S. commercial Banks. They interpret the systematic pattern of the diversification observed for large U.S commercial banks as evidence that banks stockholder from relatively uniform diversification clientele. For firm, marginal benefits for diversification takes reduction in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weight against the explicit and implicit marginal cost of diversification.

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

- Even wealthy investors should be sensitive to administrative costs associated with selecting, evaluating, managing and continually keeping track of a large number of securities.
- Either homemade of firm produced diversification reduces the variance of shareholder's portfolio return. If homemade of firm produced diversification bears inordinately high levels of information risk. Some benefits of the firm produce diversification might not be reproducible by individual investors acting on their own.
- Investors with even modest resources, the stock of financial institutions should be relatively less attractive than the stock of that avoid extensive diversification costs by engaging in specialized activities.
- Marginal diversification costs decline as bank size increases. But level off when total deposits reach at 500 million. Beyond this point marginal diversification costs are independent of bank size.

2.3.2 Review of previous studies

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

Till this date, there are not many articles available in the published form related to investment portfolio management in Nepal Mr. Shiba Raj Shrestha, Deputy Chief Officer of Nepal Rastra Bank, Banking Operation Department, has given a short glimpse on the “Portfolio Management in Commercial Bank, theory and practice.” [Shrestha, Shiba Raj, “Portfolio Management in Commercial Bank, theory and practice” Nepal Bank Patrika, Baisakh Masanta, 2055] Mr Shrestha has highlighted the following issues in the articles.

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

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

In view of above aspects, following strategies are adopted.

- Do not hold any single security i.e. try to have a portfolio of different securities.
- Do no put all the eggs in one basket i.e. to have a diversified investment. (Making investment in different sectors)
- Choose such a portfolio of securities, which ensures maximum return with minimum risk or lower of return but with added objective of wealth maximization.

Shrestha (1997), has presented the following approaches to be adopted for designing a good portfolio and its management.

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

- To find out the risk of securities depending upon the attitude of investor towards risk.
- To develop alternative investment strategies for selecting a better portfolio this will ensure a tradeoff between risk and return so as to attach the primary objective of wealth maximization at lowest risk.
- To identify securities for investment to refuse volatility of return and risk.

Researcher has presented two types of investment analysis techniques i.e. fundamental analysis and technical analysis to consider any securities such as equity, debenture or bond and other money and capital market instruments.

According to Shrestha, the portfolio management activities of Nepalese Commercial Banks at present are in emerging stage. However, on the other hand, most of the banks are not doing such activities so far because of the following reasons:

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

Regarding the joint venture commercial banks, they are very eager to provide such services but because of the above mentioned problems, very limited opportunities are available to the banks for exercising the portfolio management.

Shrestha has thrown following concluding remarks.

- The survival of the banks depends upon their own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully, the investment management methodology of a portfolio manager should reflect standards and give their clients the benefits of global strengths, local insights and prudent philosophy.
- With the disciplined and systematic approval for the selection of appropriate countries, financial assets and the management of various risks, the portfolio manager could enhance the opportunity for each investor (client) to earn superior returns overtime.
- The Nepalese banks having a great network and access to national and international capital markets have to go for portfolio management activities for the increment of their

fee based income as well as to enrich the client base and to contribute in national economy.

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

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

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

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

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

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

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

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

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

- For surviving commercial banks should depend upon their own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully, the investment management methodology of portfolio manager should reflect high standards and give their clients the benefits of global strengths, local insights and product philosophy.
- With the discipline and systematic approval to the selection of appropriate countries, financial assets and management of various risks the portfolio manager could enhance the opportunity for each investor to earn supervisor returns over time.
- The Nepalese banks having greater network and access to national and international capital market have to go for portfolio management activities for the increment of their fee based income as well as to enrich the client base and contribute to the national economy.

Timilsina, 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.

Thapa, C. (2003) has published an article on The Kathmandu Post daily of 9th March 2003 entitled “*Managing Banking Risk*”, in his article he has accomplished the subsequent issues.

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

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

2.4 Review of Unpublished Thesis

Bajracharya (2047), [Bodhi B. Bajracharya, “*Monetary policy and Deposit Mobilization in Nepal*”, Rajat Jayanti Smarika, RBB, Kathmandu, NRB 2047:93-97] in his article “Monetary Policy and Deposit Mobilization in Nepal”, has concluded that mobilization of the domestic saving is one of the prime objectives of the monetary policy in Nepal and Commercial intermediary for generating in the form of deposit of private sector and providing credit to the investor in different sectors of the economy.

Bista (2048), “*Nepal Ma Aadhunik Banking Byabastha*”, has made an attempt to highlight some of the important factors which have contributed to the efficiency and performance of joint venture banks. He concluded that the establishment of joint venture banks a decade ago marks the beginning of modern banking era in Nepal. The joint venture banks have brought many new banking techniques such as computerization hypothecation consortium finance and modern fee bases activities into the economy. [Bhagat Bista, Nepal Ma Aadhunik Banking Byabastha (Indu Chhapakhana, Kupondole, Lalitpur 2048 B.S)]

Shrestha (2054), “*A Study on Deposit and Credit of Commercial Banks in Nepal*”, Nepal Rastra Bank Samachar, (Kathmandu, NRB 2054 B.S)[, in his articles, “A study on deposits and Credit of Commercial Banks in Nepal” has concluded that the credit deposits ratio would be 51.3% other things remaining the same, in 2004 A.D, which was the lowest under the period of review. So he had strongly recommended that the commercial banks should try to give more credit entering new field as far as possible, otherwise, they might not be able to absorb even their total expenses.

Likewise, **Sharma** wrote an article, “*Joint Venture Bank in Nepal: Co-existing or Growing Out*”. In his words, it would be definitely unwise for Nepal not to let the JVBs operate in the country and not to take an advantage of them as additional means of resource mobilization as well as harbinger of new era in banking. But it will certainly be unfortunate for the country to develop JVBs and the costs of the domestic banks. So far one should admit frankly no different treatment has been extended to the domestic and JVBs at least from the government side, which is commendable. If His Majesty’s Government keeps on the stance of treating the domestic and JVBs equally deposit holder’s bargaining strength and if the JVBs also show their alacrity to come forward to share the trials and tribulations of this poor country, both types of banks will coalesce and co-exist complementing each other and contributing to the nation’s accelerated development. On the contrary, if the JVBs use their strength against trading into the number, some path of developing along with domestic banks and the government, they will eventually grow out the domestic banks from the more profitable urban areas and lucrative urban sectors unless remedying by the determination of the government.” [Murari Raj Sharma “Joint Venture Banks in Nepal Co-existing or Growing Out.” (His Majesty’s Government Year 1988) pp.31-42]

2.5 Review of Thesis

Khaniya (2003), in her thesis entitled “*Investment Portfolio Analysis of Joint Venture Banks*”. 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 of 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 debentures, 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 Findings:

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.

Manandhar (2003) in her thesis entitled “*Analysis of Risk and Return on Common Stock Investment of Commercial Bank in Nepal*”. The main objective of the study is to analyze risk and return on common stock investment of commercial banks and other objectives are as follows;

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

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

Major Findings:

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

Shah (2004) in her thesis "*Impact of Interest Rate Structure on Investment Portfolio of Commercial Banks in Nepal*". 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 Findings:

- 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 is 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 (2005) in her thesis entitled “*Portfolio Analysis of Common Stock of Commercial Banks in Nepal*”. 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 statistical 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 1st and HBL is 4th. The Treynor’s performance once measures shows that performance of stock and NBBL is 1st and HBL is 4th. Likewise Jensen’s performance measure shows the performance of stock of SCBL is 1st and NBBL is 4th among the banks.
- Among four banks optimal portfolio return and risk shows that return NBBL is highest i.e. 32.7% and return if 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%.

Poudyal (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 it's 0.63% on non-resident sector. None of the banks have invested any amount on NRB bond.

All of the selected commercial banks are granting very high amount its loan and advances to private sector. NIBL and HBL have given second priority to government enterprise and EBL and BOKL give second priority to foreign bills purchase and discount. EBL and BOKL have granted very low (less than 1%) loan and advance to government enterprises.

BOKL stock has the highest expected return i.e. 8.34% and HBL has 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 36.03% respectively. The market risk is 15.68%. In conclusion we can say that higher the risk 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%, NBIL 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.

2.6 Research Gap

Portfolio investment refers to an investment that combines several assets i.e. diversification of total investment into government securities, loan and advances into private sectors. For that, various financial and statistical tools as well as regression and regression models are build to measure the interrelationships of the concerned variables of the concerned banks.

The concerned variables are: Loan & advances, government securities and portfolio return. It studies how individual bank manage its loan & advances. It also focuses on the investment of government securities and how the portfolio return varies in different banks.

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

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

Finally, the sample taken from the research purpose are unique that has hardly taken in previous study in a single batch for study purpose. This study will focus overall financial indicators that may or may not affect the financial performance of commercial banks in consideration with portfolio management. In this research, researcher presents the current data up to beginning of 2009.

CHAPTER - III

RESEARCH METHODOLOGY

Generally, research is an effort to search new facts, knowledge and principle in scientific ways. It is conducted on a specific topic but not a general topic. Research may verify old facts and discover new facts. And for conducting research various research methods are used. Research methodology is a way to solve the research problems systematically. Research methodology is the process of arriving at the solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Research is a systematic method of finding right solution for the problem whereas research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view. In other words research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. It is the plan, structure and strategy of investigations conceived to answer the research question or test the research hypothesis. Research methodology considers the logic behind the methods used in the context of research study and explains why particular method and technique is used. It highlights about how the research problem has been defined what data have been collected, what particular method has been adopted.

3.1 Research Design

As an architect prepares a blue print before approval of construction work, the researcher should make a plan of study before undertaking the research work. After identification of research area appropriate research design should be made. Research Design is basically considered as the procedure of acquiring information about collection, measurement, and analysis of data. Research Design is a strategic approach, proactively maintain possible cause and effect. “Research design is the plan, structure and strategy of investigations conceived so as to obtain answers to research questions and to control variances.” (Kerlinger, 1984)

Kothari defines, “ In fact research design is the conceptual structure within which research is conducted, it constitute the blueprint for the collection, measurement and analysis of data.”

The present study is mainly based on two types of research design i.e. descriptive and analytical. Descriptive research design will help to describe the general pattern of Nepalese

investors, business structure, problems of portfolio management etc. whereas the analytical research design will make analysis of the gathered facts and information and make a critical evaluation of it.

3.2 Population and Sample

Population is the total number of items and sample is any number selected to represent the population. And in this study of investment portfolio analysis of Nepalese commercial banks, the total number of commercial banks including domestic and joint venture banks operating in the Nepal is the population. At present there are 32 licensed commercial banks are running in Nepal. All 32 licensed Nepalese Commercial Banks will consider as the total population. Out of them, this study will be concern with five Commercial Banks as a sample. In this sample, banks are taken according to their rapid growth rate and gradually growth rate by which we can compare about the investment portfolio of these banks. The selected sample banks for the analysis are as follows;

- NIC Bank Ltd
- Everest Bank Ltd
- Nepal Investment Bank Ltd
- Standard Chartered Bank Ltd.
- Himalayan Bank Ltd.

Population size = 32

Sample size = 5

3.3 Sources of Data

The collection of data is an integral part of research activity, which provides the necessary source of information for the research study. Data collection develops some understanding in quantitative phenomenon. The data collected for the first time for any specific purpose are primary data. Primary data are collected from primary sources in the field. Whereas the data collected and used by one agency, person, or organization and made available to others in forms of published or unpublished information are known as secondary data.

This study is mainly based on secondary data. Data are collected from Concerned banks, Nepal Rastra Bank, SEBON and different library. The review of literature of the proposed study was based on the text books, different journals, unpublished thesis, web site etc. The

necessary data and information at macro level have been collected from relevant institutions and authorities such as NRB, NEPSE, SEBON and their respective publications similarly the required micro level data derived from annual reports of selected banks, SEBON and NEPSE. In addition to above, supplementary data and information were collected from different library such as library of T.U. Central library, SEBO etc. The major sources of data and information are as follows;

- Annual Reports of Concerned Commercial Banks (from 2003/04 to 2011/2012)
- Annual Report of SEBO Nepal
- Trading Report of NEPSE
- Annual Report of NRB
- Published Journals in the topic Investment Portfolio
- Various Text Books
- Different Library
- Different Website Related to Investment Policy
- Previous Research Studies, Dissertation and Articles on the Subject
- Quarterly Economic Bulletin, NRB
- Main Economic Indicators of Nepal, NRB
- Banking and Financial Statistics, NRB
- Economic Survey, Ministry of Finance

3.4 Data Collection Techniques

The study mainly used secondary data. For the study purpose various information were collected from Annual Reports of concerned Banks, Official publications like Economic Survey of Ministry of Finance, Banking and Economic Bulletin published by NRB etc. were obtained from respective offices and their websites.

As the collected data from the various sources cannot be directly used in their original form. Further they need to be verified and simplified for the purpose of analysis. Hence, in this study the available data, information, figures and facts were checked, rechecked, edited and tabulated for computation. Similarly, according to the need and objectives, the secondary data were compiled, processed tabulated and graphed if necessary for the better presentation.

3.5 Data Analysis Tools

Various financial and statistical tools were used to analyze the data ratio analysis, correlation coefficient, trend analysis, risk and return, standard deviation, hypothesis test, etc were used in the study. A brief explanations of statistical and financial tools employed in this study is given below.

a) Financial Tools

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

I. Ratio Analysis

Ratio analysis is a widely used tool of financial analysis. It is defined as the systematic use of ratio to interpret the financial statements so that the strength and weaknesses of a firm as well as its historical performance and current financial condition can be determined. The term ratio refers to the numerical or quantitative relationship between two variables. The relationship between the two accounting figures expressed mathematically is known as ratio. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time (Gitman; 1990:275). In simple language it is one number expressed in term of another and can be worked out by dividing the number to the other i.e. it is calculated by dividing one items of the relationship with the other. In financial analysis, ratio is used as an index of yardstick for evaluating the financial position and performance of the firms. Since, this study mainly moves around investment portfolio of CBs. Only such ratios which are related to investment of CBs are taken here. Hence, in this study the following ratios are calculated and analyzed.

1. Total Investment to Total Deposit Ratios

Investment is one of the major credits created to earn income. This implies the utilization of firms deposit on investment in government securities. This ratio can be obtained by dividing total investment by total deposit. This can be mentioned as;

$$\text{Total Investment to Total Deposit Ratio} = \frac{\text{Total Investment}}{\text{Total Deposit}}$$

2. Loan and Advances to Total Deposit Ratio

This ratio assesses to what extent the banks are able to utilize the depositor's funds to earn profit by providing loan and advances. It is computed by dividing the total amounts of loans and advances by total deposited funds. The formula used to compute this ratio is as

$$\text{Loan and Advances to Total Deposit Ratio} = \frac{\text{Loan and Advances}}{\text{Total Deposit}}$$

High ratio is the symptom of higher/ proper utilization of funds and low ratio is the single of balance remained unutilized/ idle.

3. Investment on Government Securities to Total Outside Investment Ratio

This ratio is crucial for measuring the investment on government securities out of total outside investment. This ratio is calculated by dividing investment on government securities by total outside investment.

$$\begin{aligned} &\text{Investment on Government Securities to Total Outside Investment Ratio} \\ &= \frac{\text{Investment on Government Securities}}{\text{Total Outside Investment}} \end{aligned}$$

$$\text{TOI} = \text{Loan Advances} + \text{Bill Purchased} + \text{Discounted} + \text{All types of Investment}$$

4. Investment on Share and Debenture to Total Outside Investment

This ratio shows the bank investment in share and debenture of subsidiary and other companies. This ratio is calculated by dividing investment on share and debenture by total outside investment.

$$\begin{aligned} &\text{Investment on Share and Debenture to Total Outside Investment} \\ &= \frac{\text{Investment on Share and Debenture}}{\text{Total Outside Investment}} \end{aligned}$$

5. Return on Government Securities

This ratio indicates how efficiently the bank has employed its resources to earn good return from government securities. This ratio is computed by dividing interest income on government securities by government securities. This can be expressed as;

$$\text{Return on Government Securities} = \frac{\text{Interest Income on Government Securities}}{\text{Government Securities}}$$

6. Return on Loan and Advances

This ratio indicates how efficiently the bank has employed its resources to earn good return from provided loan and advances. This ratio is computed by dividing interest income on loan and advances by loan and advances. This can be expressed as;

$$\text{Return on Loan and Advances} = \frac{\text{Interest Income on Loan and Advances}}{\text{Loan and Advances}}$$

7. Return on Share

The return on share considers dividend yield and capital gain yield. The dividend yield is only a partial indication of the return hence, return on share and debenture significantly depends on the change in its share price. It is calculated as follows;

$$\text{Return on share } (R_s) = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$$

II. Risk on Individual Assets

The riskiness of assets depends on the variability of rates of return, which is defined as the extent of the deviation of individual rates of return from the average rate of return. Risk on individual assets can be calculated as;

$$\sigma = \sqrt{\frac{\sum (R - \bar{R})^2}{n-1}}$$

Where,

σ = Standard Deviation or risk

\bar{R} = average rate of return on individual assets

R = rate of return on individual assets

n = no. of years

III. Return on Portfolio

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

$$\text{Portfolio return } (R_p) = W_A R_A + W_B R_B + \dots + W_N R_N$$

Where,

R_p = Portfolio return

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Return for stock 'A'

R_B = Return for stock 'B'

IV. Risk on Portfolio

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

The portfolio risk can be calculated in terms of its standard deviation as;

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + W_C^2 \sigma_C^2 + 2Cov_{AB} \times W_A \times W_B + 2Cov_{AC} \times W_A \times W_C + 2Cov_{BC} \times W_B \times W_C}$$

Where,

W_A, W_B, W_C = Weight of assets A, B and C

$\sigma_A, \sigma_B, \sigma_C$ = Standard Deviation of A, B and C

Cov_{AB} = Co-variance between assets A and B

Cov_{BC} = Co-variance between assets B and C

Cov_{AC} = Co-variance between assets A and C

V. Co-Variance

The covariance measure how two variables co-vary. It is a measure of the absolute association between two variables. How the returns of individual stocks and market co-vary measured by covariance between the return of individual stocks and market return. If two variables are independent, their covariance will zero. It computed as;

Symbolically

$$Cov.(j\&m) = \rho_{jm} \sigma_j \sigma_m$$

VI. Coefficient of Variation

Standard deviation is the absolute measure of dispersion of rate of return. The relative measure of dispersion based on the standard deviation is known as the coefficient of standard deviation.

$$C.V = \frac{\sigma_j}{\bar{R}_j}$$

Where,

σ_j = Standard deviation of securities j.

\bar{R}_j = Average return on securities j.

The CV thus defines the risk associated with each dollar of expected return in terms of ratio of the standard Deviation of return to the expected return (Pradhan; 2000:250).

b) Statistical Tools

The process of analyzing and evaluating various data statistical tools has been used. In this study, statistical tools such as standard deviation, mean, coefficient of variation, coefficient of correlation between different variables, trend analysis as well as hypothesis test have been used, which are as follows;

I. Karl Person's Coefficient of Correlation

Correlation Coefficient is statistical tools for measure of the relative association between two variables series; it describes how much linear co-movement exists between two variables. Karl Person's measure, known as personas correlation coefficient between two variables (series) X and Y usually denoted by r (X,Y) or r_{xy} or simply r can be obtained as;

$$r = \frac{N \sum XY - \sum(X) \sum(Y)}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

The value of correlation coefficient 'r' lies between -1 to +1

If r = 1 there is perfect positive relationship

If r = -1 there is perfect negative relationship

If r = 0 there is no correlation at all

The close the value of 'r' is 1 or -1, the closer the relationship between the variables and the closer 'r' is to 0, the less close relationship.

II. Mean

It can also be denoted by AM or simply a mean of a set of observations is the sum of all the observation divided by the number of observations. AM is also known as the arithmetic

average. AM is the most popular one among the different measures of the averages. e.g, the AM of x of N observation $x_1, x_2, x_3, \dots, x_n$ is given by

$$\bar{X} = \frac{1}{N}(x_1 + x_2 + x_3 + \dots + x_n)$$

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

III. Trend Analysis

The straight line trend implies that irrespective of the seasonal and cyclical swings and irregular functions, the trend values increases or decreases by absolute amount per unit of time. It is computed as follows

$$Y = a + bx + cx^2$$

Where,

Y = the value of dependent variable

a = Intercept of trend line

b = Slope of trend line

c = Constant variables

x = Value of the independent variable

Following two equations can be developed putting the above values in normal equation

$$\sum y = Na + b\sum x + \sum x^2$$

$$\sum xy = a\sum x + b\sum x^2 + c\sum x^3$$

$$\sum x^2 y = a\sum x^2 + b\sum x^3 + c\sum x^4$$

Since, $\sum x = 0$, $a = \frac{\sum y}{n}$, $b = \frac{\sum xy}{\sum x^2}$ $c = \frac{\sum x^2 y}{\sum x^4}$

The constant 'a' is simply equal to the mean Y value and constant 'b' gives the rate of change.

This is a mathematical method which is widely used in practice. It is applied for finding out a trend line for those series which changes periodically in absolute amount.

For the calculation of Mean, Standard Deviation, Coefficient of Variation, Correlation Coefficient and Regression Equation, MS-Excel and SPSS softwares are used.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

The collected data are necessary to present and analyze in order to find the answer for the research problem. The chapter will present the data on tables and figures. The chapter is focuses in the presentation, analysis, interpretation and scoring the empirical finding of the study through a defined research methodology. Getting at the study objectives, a set of financial and statistical tools has been applied. Data collected from several sources have been inserted in the tabular form. Tables compiled for the analysis have been presented in Annexes. Necessary graphs and diagrams have been included to clarify the actual status of the banks. This section analyzes the investment portfolio of commercial banks through the following tools:

- Risk and return analysis of individual assets and investment portfolio
- Analysis of ratio
- Trend Analysis

4.5 Investment Portfolio Risk and Return Analysis of Commercial Bank

Investment involving greater risk expects higher return than the investment with lower risk. The relationship between risk and return is perceived by individuals based on their attitude for compensation.

The main aim of risk and return is to appraise investment performance to explore combination of investments maximizing returns and minimizing risk or accomplishing both. Risk, however enjoys a crucial role in the investment analysis. Commercial banks or investors generally avoid invest their money in one risky asset only. Nevertheless, they tend to hold portfolio of several assets to diversify the investment risk. On the portfolio context, the contribution of each asset to the portfolio risk is the portion of relevant risk of the asset.

The measurement of return in rupees or percentage is a simple statistical process, while the measure of risk involves a complex process. Risk can be measured in many ways using statistical techniques, such as range, semi-inter quartile range, mean deviation, standard deviation and coefficient of variance etc. Among them, standard deviation is commonly used for measuring risk on investment. In this section, standard deviation and coefficient of

variation are adapted as measuring tools for risk and return. Then it has been endeavored to explore the effects of portfolio diversification.

4.5.1 Return on Individual Investment

4.5.1.1 Return on Government Securities

Government securities are the fixed income securities issued by the government. These securities are the ones among the safest of all investments, as government is quite unlikely to default on interest or principal repayments. The return on government securities, such as Treasury Bills, Development Bonds and National Saving Bonds etc can be calculated as follows:

The return on government securities is obtained by dividing interest income from government by total investment on government securities expressed as:

$$\text{Return on Government Securities } (R_g) = \frac{\text{Interest Income from Government Securities}}{\text{Total Investment on Government Securities}}$$

$$\text{The average rate of return on Government Securities } (R_g) = \sum_{t=1}^n \frac{R_g}{n},$$

Where n = Number of years (periods)

The following tables (4.1 – 4.6) depict the return on government securities of NICBL, NIBL, SCBL, EBL, HBL and banking industry.

Table 4.1
Return on Government Securities of NICBL Bank Ltd
(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	65,784.00	1,235,276.00	5.33
2005	59,790.00	1,194,313.00	5.01
2006	60,914.00	1,756,585.00	3.47
2007	51,854.00	1,104,060.00	4.70
2008	51,828.00	1,545,375.00	3.35
2009	111,738.00	2,195,004.00	5.09
2010	129,571.00	3,978,901.00	3.26
2011	279,709.00	3,865,143.00	7.24
2012	249,810.00	3,622,218.00	6.90
Total	1,060,998.00	20,496,875.00	44.33
Average	117,888.67	2,277,430.56	4.93

Source: Annual Reports of NICBL

The table no. 4.1 shows that in an average Nepal Industrial and Commercial Bank (NICBL) which generate 4.93 % return in the investment made in government securities. It indicates highly fluctuating trend of NICBL in the return on government securities. During the study period the greatest return is 7.24% in the year 2011 and lowest is 3.26% in the year 2010.

Table 4.2
Return on Government Securities of Nepal Investment Bank Ltd
(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	35,868.00	2,001,100.00	1.79
2005	56,550.00	1,948,500.00	2.90
2006	82,420.00	2,522,300.00	3.27
2007	78,494.00	3,256,400.00	2.41
2008	99,991.00	3,155,000.00	3.17
2009	140,698.00	2,531,300.00	5.56
2010	169,620.00	4,201,850.00	4.04
2011	258,387.00	4,294,600.00	6.01
2012	241,878.00	6,169,486.00	3.92
Total	1,163,906.00	30,080,536.00	33.07
Average	129,322.89	3,342,281.78	3.67

Source: Annual Reports of NIBL

The table no. 4.2 shows that in average NIBL generate 3.67% return on the investment made in government securities. However, it demonstrates inconsistent trend of NIBL in the return

on government securities. During the study period the greatest return is 6.01% in the year 2011 and the lowest is 1.79% in the year 2004.

Table 4.3
Return on Government Securities of Standard Chartered Bank Nepal Ltd (SCBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	380,441.00	7,948,217.00	4.79
2005	331,663.00	7,203,066.00	4.6
2006	355,291.00	8,644,856.00	4.11
2007	326,550.00	7,107,937.00	4.59
2008	319,606.00	8,137,615.00	3.93
2009	406,326.00	9,998,754.00	4.06
2010	436,305.00	8,531,520.00	5.11
2011	607,859.00	9,957,261.00	6.10
2012	552,917.00	7,862,717.00	7.03
Total	3,716,958.00	75,391,943.00	44.32
Average	412995.3333	8376882.556	4.925

Source: Annual Reports of SCBL

The table no. 4.3 shows that in an average SCBL generate 4.925 % return in the investment made in government securities. It indicates almost consistent trend of SCBL in the return on government securities. During the study period the greatest return is 7.03 in the year 2012 and the lowest is 3.93 in the year 2008.

Table 4.4
Return on Government Securities of Himalayan Bank Ltd (HBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	170,332.00	3,431,728.00	4.96
2005	149,131.00	5,469,729.00	2.73
2006	172,242.00	5,144,313.00	3.35
2007	191,559.00	6,454,873.00	2.97
2008	201,310.00	7,471,668.00	2.69
2009	354,949.00	4,212,300.00	8.43
2010	216,036.00	4,465,372.00	4.84

2011	389,104.00	6,407,362.00	6.07
2012	474,916.00	9,162,223.00	5.18
Total	2,319,579.00	52,219,568.00	41.22
Average	257,731.00	5,802,174.22	4.58

Source: Annual Reports of HBL

The table 4.4 shows that in an average HBL generate 4.58% return on an investment made in government securities. It shows no fixed trend of HBL in the return on government securities. During the study period the greatest return is 8.43% in the year 2009 and the lowest is 2.69% in the year 2008.

Table 4.5
Return on Government Securities of Everest Bank Ltd (EBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	92,509.00	2,466,428.00	3.75
2005	77,993.00	2,100,289.00	3.71
2006	97,272.00	3,322,443.00	2.93
2007	128,566.00	4,704,632.00	2.73
2008	180,219.00	4,821,605.00	3.74
2009	289,765.00	5,146,046.00	5.63
2010	238,993.00	4,354,353.00	5.49
2011	362,263.00	7,145,018.00	5.07
2012	420,444.00	6,068,876.00	6.93
Total	1,888,024.00	40,129,690.00	39.98
Average	209,780.44	4,458,854.44	4.44

Source: Annual Reports of EBL

The table no. 4.5 shows that in an average EBL generate 4.44% return on an investment made in government securities. It shows no fixed trend of EBL in the return on government securities. During the study period the greatest return is 6.93 in the year 2012 and the lowest is 2.73% in the year 2007.

Table 4.6
Return on Government Securities of Banking Industry

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	744,934.00	17,082,749.00	4.36
2005	675,127.00	17,915,897.00	3.77
2006	768,139.00	21,390,497.00	3.59
2007	777,023.00	22,627,902.00	3.43
2008	852,954.00	25,131,263.00	3.39

2009	1,303,476.00	24,083,404.00	5.41
2010	1,190,525.00	25,531,996.00	4.66
2011	1,897,322.00	31,669,384.00	5.99
2012	1,939,965.00	32,885,520.00	5.90
Total	10,149,465.00	218,318,612.00	40.51
Average	1,127,718.33	24,257,623.56	4.50

Source: Annex-1

The table no. 4.6 shows that in an average, banking industry generates 4.50% return on an investment made in government securities. It demonstrates a fair decreasing trend of banking industry in the return on government securities. During the study period the greatest return is 5.99% in the year 2011 and the lowest is 3.39% in the year 2008.

The following table 4.7 displays the return on government securities of sample banks and banking industry.

Table 4.7

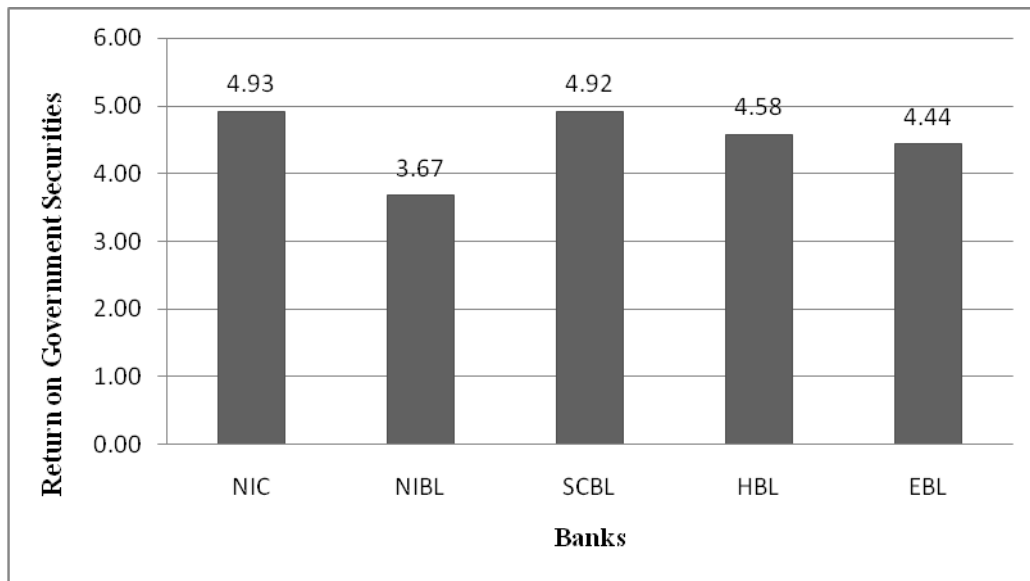
Return on Government Securities of Sample Banks and Banking Industry (%)

Year	NICBL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	5.33	1.79	4.79	4.96	3.75	4.36
2005	5.01	2.9	4.6	2.73	3.71	3.77
2006	3.47	3.27	4.11	3.35	2.93	3.59
2007	4.70	2.41	4.59	2.97	2.73	3.43
2008	3.35	3.17	3.93	2.69	3.74	3.39
2009	5.09	5.56	4.06	8.43	5.63	5.41
2010	3.26	4.04	5.11	4.84	5.49	4.66
2011	7.24	6.01	6.10	6.07	5.07	5.99
2012	6.90	3.92	7.03	5.18	6.93	5.90
Total	44.33	33.07	44.32	41.22	39.98	40.51
Average	4.93	3.67	4.92	4.58	4.44	4.50

Source: Table 4.1 to 4.6

Figure 4.1

Return on Government Securities of Sample Banks



From the above analysis, the average return on government securities of NICBL, NIBL, SCBL, HBL, EBL and Banking Industry is 4.93%, 3.67%, 4.92%, 4.58%, 4.44% and 4.50 % respectively. It can be observed that NICBL is the highest mean return on government securities of the five sample banks. Likewise, SCBL has the moderate mean return on government securities, while NIBL has the lowest mean return on government securities. From the above table, it is evident that NICBL, SCBL and HBL have higher mean return on government securities than mean return on government securities of banking industry while rest have lower mean return in comparison to banking industry.

4.5.1.2 Return on Loan and Advances

Loan and advances are the major source income for commercial banks. The facility of granting loan and advances is one of the important services which customers of commercial banks can enjoy. Hence to realize their objectives, the commercial banks invest in several sectors like agriculture, industry and commercial sectors to earn a good return from loan and advances. The return on loan and advances is computed by dividing total interest earned from loan and advances to total amount of loan and advances. Thus,

$$\text{Return on Loan and Advances } (R_l) = \frac{\text{Interest earned from loan and advances}}{\text{Total Loan and Advances}}$$

Average return on Loan and Advances (R_l) = $\frac{\sum R_l}{n}$, where n= number of years

The following tables (4.8 to 4.13) depict the return on loan and advances of NICBL, NBIL, SCBL, HBL, EBL and banking industry.

Table 4.8
Return on Loan and Advances of NICBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	282,075.00	3,743,091.00	7.54
2005	378,369.00	4,909,355.00	7.71
2006	485,247.00	6,902,124.00	7.03
2007	611,244.00	9,128,649.00	6.70
2008	842,552.00	11,465,334.00	7.35
2009	1,135,067.00	13,915,850.00	8.16
2010	1,599,538.00	12,929,304.00	12.37
2011	1,943,827.00	15,165,516.00	12.82
2012	2,152,462.00	17,523,192.00	12.28
Total	9,430,381.00	95,682,415.00	81.95
Average	1,047,820.11	10,631,379.44	9.11

Source: Annual Reports of NICBL

The table no. 4.8 shows that in an average NICBL generates 9.11% return in the investment made in loan and advances. It indicates fluctuating trend of NICBL in the return on loan and advances. During the study period the greatest return is 12.82% in the year 2011 and the lowest return is 6.70% in the year 2007.

Table 4.9
Return on Loan and Advances of NIBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	663,016.00	7,338,566.00	9.03
2005	769,195.00	10,453,164.00	7.36
2006	964,689.00	13,178,152.00	7.32
2007	1,302,122.00	17,769,100.00	7.33
2008	1,907,261.00	27,529,305.00	6.93
2009	2,906,055.00	36,827,157.00	7.89
2010	4,303,311.00	40,948,440.00	10.51
2011	5,435,843.00	41,887,694.00	12.98
2012	5,643,275.00	42,906,691.00	13.15

Total	23,894,767.00	238,838,269.00	82.50
Average	2,654,974.11	26,537,585.44	9.17

Source: Annual Reports of NIBL

The table no. 4.9 shows that in an average NIBL generates 9.17% return on the investment made in loan and advances. However, it demonstrates inconsistent trend of NIBL in the return on loan and advances. During the study period the greatest return is 13.15% in the year 2012 and the lowest return is 6.93% in the year 2008.

Table 4.10
Return on Loan and Advances of SCBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	558,006.00	6,693,862.00	8.34
2005	581,664.00	8,420,868.00	6.91
2006	596,622.00	9,206,280.00	6.48
2007	728,589.00	10,790,148.00	6.75
2008	872,690.00	13,963,984.00	6.25
2009	1,104,047.00	13,880,703.00	7.95
2010	1,379,284.00	16,176,583.00	8.53
2011	1,930,370.00	18,662,478.00	10.34
2012	2,212,662.00	19,828,509.00	11.16
Total	9,963,934.00	117,623,415.00	72.71
Average	1,107,103.78	13,069,268.33	8.08

Source: Annual Reports of SCBL

The table no. 4.10 shows that in an average SCBL generate 8.08% return in the investment made in loan and advances. It indicates a gradual decreasing and again increasing trend of SCBL in the return on loan and advances. During the study period the greatest return is 11.16% in the year 2012 and the lowest return is 6.25% in the year 2008

Table 4.11
Return on Loan and Advances of HBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	970,166.00	12,919,631.00	7.51
2005	1,122,392.00	13,451,168.00	8.34
2006	1,140,687.00	15,761,977.00	7.24

2007	1,242,850.00	17,793,724.00	6.98
2008	1,444,245.00	20,179,995.00	7.16
2009	1,861,045.00	25,519,519.00	7.29
2010	2,836,251.00	29,123,755.00	9.74
2011	3,843,312.00	32,968,270.00	11.66
2012	4,216,330.00	35,968,473.00	11.72
Total	18,677,278.00	203,686,512.00	77.64
Average	2,075,253.11	22,631,834.67	8.63

Source: Annual Reports of HBL.

The table no. 4.11 shows that in an average HBL generates 8.63% return in the investment made in loan and advances. It shows no fixed trend of HBL in the return on loan and advances. During the study period the greatest return is 11.72% in the year 2012 and the lowest return is 6.98% in the year 2007.

Table 4.12

Return on Loan and Advances of EBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	563,137.00	6,095,841.00	9.24
2005	633,625.00	7,900,015.00	8.02
2006	770,826.00	10,136,254.00	7.6
2007	967,178.00	14,082,686.00	6.87
2008	1,329,695.00	18,836,432.00	7.06
2009	1,852,128.00	24,469,556.00	7.57
2010	2,801,332.00	28,156,400.00	9.95
2011	3,869,810.00	31,661,843.00	12.22
2012	4,504,895.00	36,616,832.00	12.30
Total	17,292,626.00	177,955,859.00	80.83
Average	1,921,402.89	19,772,873.22	8.98

Source: Annual Reports of EBL.

The table no. 4.12 shows that in an average EBL generates 8.98% return in the investment made in loan and advances. It shows a fluctuating trend of EBL in the return on loan and advances. During the study period the greatest return is 12.30% in the year 2012 and the lowest return is 6.87% in the year 2007.

Table 4.13
Return on Loan and Advances of Banking Industry

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	3,036,400.00	36,790,991.00	8.33
2005	3,485,245.00	45,134,570.00	7.67
2006	3,958,071.00	55,184,787.00	7.13
2007	4,851,983.00	69,564,307.00	6.93
2008	6,396,443.00	91,975,050.00	6.95
2009	8,858,342.00	114,612,785.00	7.77
2010	12,919,716.00	127,334,482.00	10.22
2011	17,023,162.00	140,345,801.00	12.00
2012	18,729,624.00	152,843,697.00	12.12
Total	79,258,986.00	833,786,470.00	79.13
Average	8,806,554.00	92,642,941.11	8.79

Source: Banking and Financial Statistics NRB and Annex-2

The table no. 4.13 shows that in an average the banking industry generates 8.82% return on an investment made in loan and advances. It demonstrates an inconsistent trend of banking industry in the return on loan and advances. During the study period the greatest return is 12.25 % in the year 2012 and the lowest return is 6.95% in the year 2008.

The following table 4.14 displays the return on loan and advances of sample banks and banking industry.

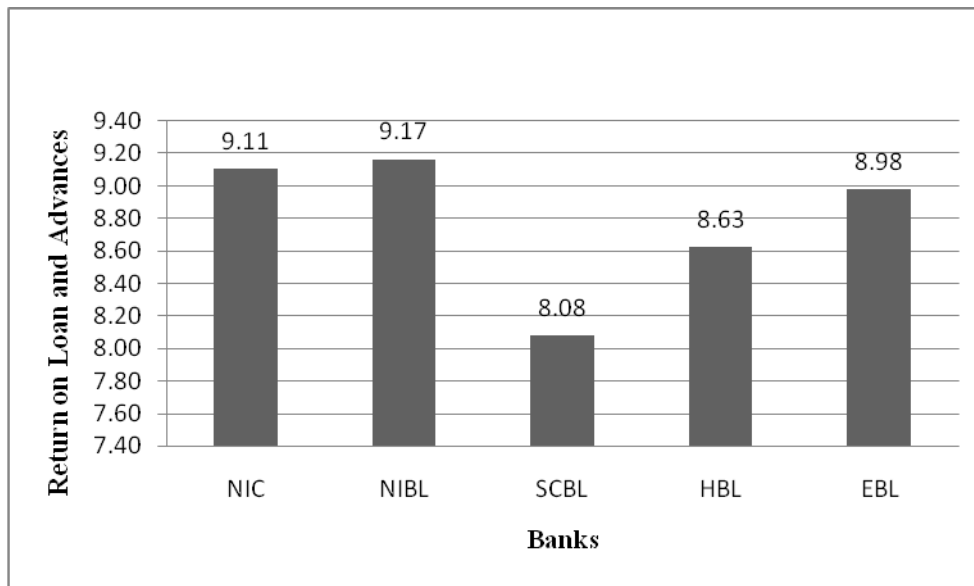
Table 4.14
Return on Loan and Advances of Sample Banks and Banking Industry (%)

Year	NICBL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	7.54	9.03	8.34	7.51	9.24	8.33
2005	7.71	7.36	6.91	8.34	8.02	7.67
2006	7.03	7.32	6.48	7.24	7.6	7.13
2007	6.70	7.33	6.75	6.98	6.87	6.93
2008	7.35	6.93	6.25	7.16	7.06	6.95
2009	8.16	7.89	7.95	7.29	7.57	7.77
2010	12.37	10.51	8.53	9.74	9.95	10.22
2011	12.82	12.98	10.34	11.66	12.22	12.00
2012	12.28	13.15	11.16	11.72	12.30	12.12
Total	81.95	82.50	72.71	77.64	80.83	79.13
Average	9.11	9.17	8.08	8.63	8.98	8.79

Source: Table 4.8 to 4.13

Figure 4.2

Return on Loan and Advances of Sample Banks



From the above analysis, the average return on loan and advances of NICBL, NIBL, SCBL, HBL, EBL and Banking Industry is 9.11%, 9.17%, 8.08%, 8.63%, 8.98% and 8.82% respectively. It can be observed that NIBL is the highest mean return on loan and advances among the five sample banks. Likewise, NICBL has the moderate mean return on loan and advances, while SCBL has the lowest mean return on loan and advances in comparison to banking industry.

4.5.1.3 Return on Share and Debenture

The return on share and debenture comprise dividend yield and capital gain yield (change in market price). In other words, return is the combination of capital gain yield and individual yield. Capital gain yield (loss) can be calculated by the difference the current year price and the last year price with respect to the last year price. However, dividend yield is calculated by dividend per share divided by market price per share. Market price is the mean return on the selected companies which is represented by market return of the study.

The information about the dividend received and the dividend by the commercial banks are insufficiently available. In absence of such information calculation on return on share and debenture is generally infeasible. Hence, it has been assumed to calculate the necessary return on share and debenture by using market return. The average market return on share and debenture is the average return of bank from the investment on share and debenture.

Market return can be calculated by taking difference between the market index divided by the closing market index in time (n-1). Here, the dividend is ignored.

$$\text{Market return } (R_s) = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where R_s = Return on market, P_t = NEPSE index at time t, and P_{t-1} = NEPSE index at time t-1

$$\text{Average Return on Share and Debenture } (R_s) = \frac{\sum R_s}{n}, \text{ where } n = \text{number of years}$$

Table 4.15

Market Return on Share and Debenture of Banking Industry

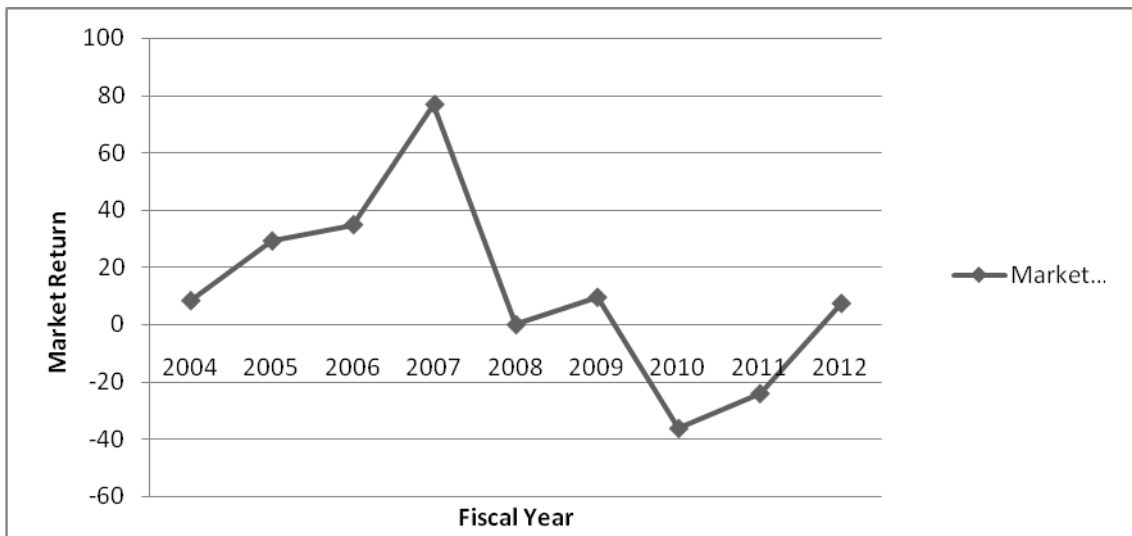
(In Percentage)

FY	NEPSE Index	Market Return
2004	222.04	8.38
2005	286.87	29.19
2006	386.83	34.84
2007	683.95	76.81
2008	683.90	-0.01
2009	749.10	9.53
2010	477.73	-36.23
2011	362.85	-24.05
2012	389.74	7.41
Total		105.88
Average		11.76

Source: Annual Reports SEBON

Figure 4.3

Return on Share and Debenture of Banking Industry



The table 4.15 above depicts the return on share and debenture of banking industry is highly fluctuating 8.38% in the year 2004 to 76.81% in the year 2007. These fluctuations in returns are mainly contributed by the volatility of the share prices in the market. The changes in dividends also lead the variability of return on share to some extent.

The average market return on share and debenture of banking industry is 11.76% during the review period. It is higher than the rate of return on other assets like government securities and loan and advances.

4.5.2 Risk on Individual Investment

4.5.2.1 Risk on Government Securities

The risk on government security is computed as follows:

$$\text{Risk on Government Securities } (\sigma_g) = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}}$$

Where R_g = Return on government securities; \bar{R}_g = Average rate of return on government securities; σ_g = Standard Deviation on government securities; n = no. of years. The following tables 4.16 to 4.21 present the risk (Standard Deviation of return) on government securities of NICBL, NIBL, SCBL, HBL, EBL and banking industry.

Table 4.16
Risk on Government Securities of NICBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	5.33	0.40	0.1599
2005	5.01	0.08	0.0065
2006	3.47	-1.46	2.1253
2007	4.70	-0.23	0.0524
2008	3.35	-1.57	2.4706
2009	5.09	0.16	0.0272
2010	3.26	-1.67	2.7860
2011	7.24	2.31	5.3413
2012	6.90	1.97	3.8850
Total	44.33	0.00	16.8542
Average	4.93		
SD (σ_g)	1.372		
CV	0.284		

Source: Annual Reports of NICBL

The table 4.16 shows that the average return on government securities of NICBL is 4.93% and the standard deviation which represents risk is 1.397. It reveals that the risk on investment on government securities of NICBL is 1.397 which indicates the riskiness of government securities. The coefficient of Variation is 0.284. On observation, NICBL experiences moderate riskiness on government securities as compared to all other sample banks.

Table 4.17
Risk on Government Securities of NIBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	1.79	-1.88	3.5511
2005	2.9	-0.77	0.5998
2006	3.27	-0.40	0.1636
2007	2.41	-1.26	1.5988
2008	3.17	-0.50	0.2545
2009	5.56	1.89	3.5553
2010	4.04	0.37	0.1336
2011	6.01	2.34	5.4548
2012	3.92	0.25	0.0603
Total	33.07	0.00	15.3718
Average	3.67		
SD (σ_g)	1.412		
CV	0.384		

Source: Annual Reports of NIBL

The table 4.17 shows that the average return on government securities of NIBL is 3.67% and standard deviation which represents risk is 1.412. It reveals that the risk on government securities is 1.412 which indicates the riskiness on government securities. Comparing to SCBL and EBL, NIBL exhibits higher riskiness on government securities.

Table 4.18
Risk on Government Securities of SCBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	4.79	-0.13	0.0182
2005	4.6	-0.32	0.1056
2006	4.11	-0.81	0.6640
2007	4.59	-0.33	0.1122
2008	3.93	-0.99	0.9898
2009	4.06	-0.86	0.7480
2010	5.11	0.19	0.0342
2011	6.10	1.18	1.3903
2012	7.03	2.11	4.4315
Total	44.32	0.00	8.4938
Average	4.92		
SD (σ_g)	1.181		
CV	0.240		

Source: Annual Reports of SCBL

The table 4.18 shows that the average return on government securities of SCBL is 4.92% and the standard deviation which represents risk is 1.181. It reveals that the risk on investment on government securities of SCBL is 1.181 which indicates the riskiness on government securities. The standard deviation clearly indicates that there is some minimal risk associated with government securities despite general assumption of no-risk on such type of securities.

Table 4.19
Risk on Government Securities of HBL (In Percentage)

Year	Return on Government Securities (R_g)	\bar{R}_g	$(R_g - \bar{R}_g)^2$
2004	4.96	0.38	0.1444
2005	2.73	-1.85	3.4225
2006	3.35	-1.23	1.5129
2007	2.97	-1.61	2.5921
2008	2.69	-0.99	0.9898
2009	8.43	3.85	14.8225
2010	4.84	0.26	0.0676
2011	6.07	1.49	2.2201
2012	5.18	0.60	0.3600
Total	41.22	0.90	26.1319
Average	4.58		
SD (σ_g)	2.149		
CV	0.469		

Source: Annual Reports of HBL

The table 4.19 shows the average return on government securities of HBL is 4.58% and standard deviation which represents risk is 2.149. It reveals that the risk on investment on government securities of HBL is 2.149 which indicate the riskiness on government securities. It is evident that HBL also displays higher riskiness on government securities than NIBL.

Table 4.20
Risk on Government Securities of EBL (In Percentage)

Year	Return on Government Securities (R_g)	\bar{R}_g	$(R_g - \bar{R}_g)^2$
2004	3.75	-0.69	0.4789
2005	3.71	-0.73	0.5358

2006	2.93	-1.51	2.2861
2007	2.73	-1.71	2.9310
2008	3.74	-0.70	0.4928
2009	5.63	1.19	1.4113
2010	5.49	1.05	1.0983
2011	5.07	0.63	0.3946
2012	6.93	2.49	6.1796
Total	39.98	0.00	15.8084
Average	4.44		
SD (σ_g)	1.372		
CV	0.309		

Source: Annual Reports of EBL

The table 4.20 shows that the average return on government securities of EBL is 4.44% and the standard deviation which represents risk is 1.372. It reveals that the risk on government securities of EBL is 1.372 which indicates the riskiness on government securities. It is visible that EBL displays moderate riskiness on government securities.

Table 4.21
Risk on Government Securities of Banking Industry (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	4.36	-0.14	0.0198
2005	3.77	-0.73	0.5375
2006	3.59	-0.91	0.8289
2007	3.43	-1.07	1.1397
2008	3.39	-1.11	1.2265
2009	5.41	0.91	0.8297
2010	4.66	0.16	0.0261
2011	5.99	1.49	2.2187
2012	5.90	1.40	1.9535
Total	40.51	0.00	8.7804
Average	4.50		
SD (σ_g)	0.873		
CV	0.194		

Source: From Table No: 4.16 to 4.20

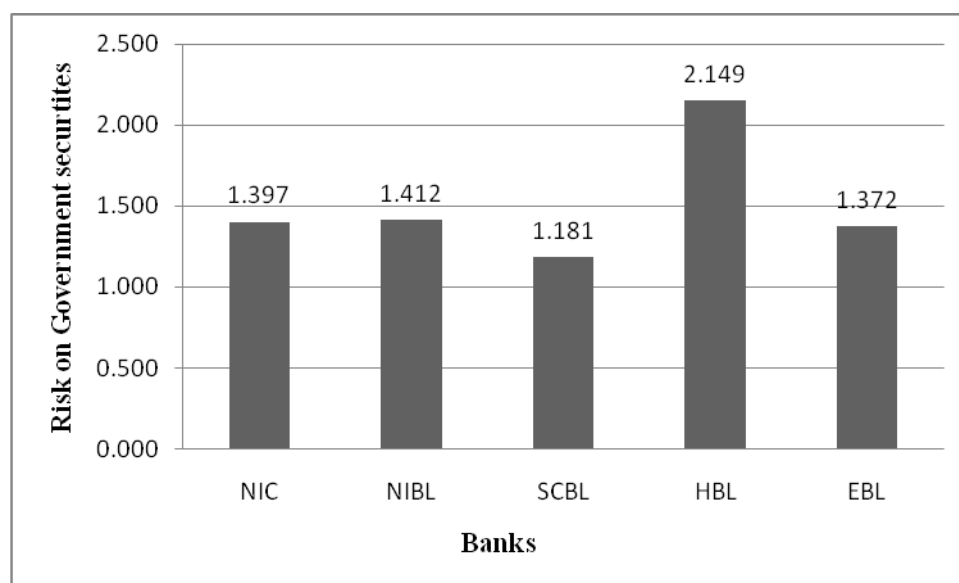
The table 4.21 shows the average return on government securities of banking industry is 4.50%, where as the standard deviation which represents risk is 0.873. It reveals that the risk on investment on government securities of banking industry is 0.873 which indicates the minimum riskiness on government securities in overall banking industry.

Table 4.22
Risk on Government Securities of Sample Banks and Banking Industry (%)

Year	NIC	NIBL	SCBL	HBL	EBL	Banking Industry
2004	5.33	1.79	4.79	4.96	3.75	4.36
2005	5.01	2.9	4.6	2.73	3.71	3.77
2006	3.47	3.27	4.11	3.35	2.93	3.59
2007	4.70	2.41	4.59	2.97	2.73	3.43
2008	3.35	3.17	3.93	2.69	3.74	3.39
2009	5.09	5.56	4.06	8.43	5.63	5.41
2010	3.26	4.04	5.11	4.84	5.49	4.66
2011	7.24	6.01	6.10	6.07	5.07	5.99
2012	6.90	3.92	7.03	5.18	6.93	5.90
Total	44.33	33.07	44.32	41.22	39.98	40.51
Average	4.93	3.67	4.92	4.58	4.44	4.50
SD (σ_g)	1.397	1.412	1.181	2.149	1.372	0.873
CV	0.2836	0.3842	0.2398	0.4692	0.3089	0.1940

Source: From Table No: 4.16 to 4.21

Figure 4.4
Risk on Government Securities of Sample Banks



The above table 4.22 shows the risk (Standard deviation of return) on government securities of banking industry is 0.873. Similarly the risk on government securities of NICBL, NIBL, SCBL, HBL and EBL are 1.397, 1.412, 1.181, 2.149 and 1.372 respectively. From the above analysis, it is evident that HBL has the highest risk on government securities among five commercial banks. NICBL, NIBL and EBL have moderate risk and SCBL has the lowest risk on government securities.

4.5.2.2 Risk on Loan and Advances

The risk on loan and advances can be calculated as follows:

$$\text{Standard Deviation on Loan and Advances } (\sigma_l) = \sqrt{\frac{\sum (R_l - \bar{R}_l)^2}{n-1}}$$

Where, R_l = Return on Loan and Advances

\bar{R}_l = Average Return on Loan and Advances

σ_l = Standard Deviation on Loan and Advances

n = Number of year

The following tables 4.23 to 4.28 present the risk (Standard Deviation of return) on Loan and Advances of NICBL, NIBL, SCBL, HBL, EBL and banking industry.

Table 4.23
Risk on Loan and Advances of NICBL (In Percentage)

Year	Return on Loan and Advances (R_l)	$(R_l - \bar{R}_l)$	$(R_l - \bar{R}_l)^2$
2004	7.54	-1.57	2.4628
2005	7.71	-1.40	1.9547
2006	7.03	-2.07	4.3049
2007	6.70	-2.41	5.8049
2008	7.35	-1.76	3.0854
2009	8.16	-0.95	0.8998
2010	12.37	3.27	10.6681
2011	12.82	3.71	13.7804
2012	12.28	3.18	10.1015
Total	81.95	0.00	53.0624
Average	9.11		
SD (σ_l)	2.132		
CV	0.2342		

Source: Annual Reports of NICBL

The table 4.23 shows that the average return on loan and advances of NICBL is 9.11% and the standard deviation which represents risk is 2.132. It reveals that the risk on investment on Loan and Advances of NICBL is 2.132 which indicates the riskiness on loan and advances. Observing the status of riskiness on loan and advances, NICBL displays third highest step than EBL and SCBL.

Table 4.24
Risk on Loan and Advances of NIBL (In Percentage)

Year	Return on Loan and Advances (R_i)	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$
2004	9.03	-0.14	0.0186
2005	7.36	-1.81	3.2635
2006	7.32	-1.85	3.4097
2007	7.33	-1.84	3.3728
2008	6.93	-2.24	5.0020
2009	7.89	-1.28	1.6295
2010	10.51	1.34	1.8025
2011	12.98	3.81	14.5211
2012	13.15	3.99	15.8875
Total	82.50	0.00	48.9073
Average	9.17		
SD (σ)	2.392		
CV	0.2610		

Source: Annual Reports of NIBL

The table 4.24 shows that the average return on loan and advances of NIBL is 9.17% and the standard deviation which represents risk is 2.392. It reveals that the risk on investment on Loan and Advances of NIBL is 2.392 which indicates the riskiness on loan and advances. On comparison, NIBL exhibits highest riskiness than NICBL and EBL.

Table 4.25
Risk on Loan and Advances of SCBL (In Percentage)

Year	Return on Loan and Advances (R_i)	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$
2004	8.34	0.26	0.0682
2005	6.91	-1.17	1.3660
2006	6.48	-1.60	2.5561
2007	6.75	-1.33	1.7657
2008	6.25	-1.83	3.3444
2009	7.95	-0.13	0.0166
2010	8.53	0.45	0.2004
2011	10.34	2.26	5.1294
2012	11.16	3.08	9.4877
Total	72.71	0.00	23.9345
Average	8.08		
SD (σ)	1.752		
CV	0.2169		

Source: Annual Reports of SCBL

The table 4.25 shows that the average return on loan and advances of SCBL is 8.08% and the standard deviation which represents risk is 1.752. It reveals that the risk in investment on loan and advances of SCBL is 1.752 which indicates comparatively lower riskiness on loan and advances than that of other sample banks and banking industry.

Table 4.26
Risk on Loan and Advances of HBL (In Percentage)

Year	Return on Loan and Advances (R_i)	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$
2004	7.51	-1.12	1.24658
2005	8.34	-0.29	0.08208
2006	7.24	-1.39	1.92239
2007	6.98	-1.65	2.71097
2008	7.16	-1.47	2.15063
2009	7.29	-1.34	1.78624
2010	9.74	1.11	1.2368
2011	11.66	3.03	9.18761
2012	11.72	3.10	9.58392
Total	77.64	0.00	29.9072
Average	8.63		
SD (σ_1)	1.875		
CV	0.2173		

Source: Annual Reports of HBL

The table 4.26 shows that the average return on loan and advances of HBL is 8.63% and the standard deviation which represents risk is 1.875. It reveals that the risk on investment on loan and advances of HBL is 1.875 which indicates the riskiness on loan and advances. It is evident that HBL has lower riskiness on loan and advances except SCBL.

Table 4.27
Risk on Loan and Advances of EBL (In Percentage)

Year	Return on Loan and Advances (R_i)	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$
2004	9.24	0.26	0.0668
2005	8.02	-0.96	0.9247
2006	7.6	-1.38	1.9088
2007	6.87	-2.11	4.4588
2008	7.06	-1.92	3.6925
2009	7.57	-1.41	1.9926
2010	9.95	0.97	0.9362
2011	12.22	3.24	10.502
2012	12.30	3.32	11.0304
Total	80.83	0.00	35.5131
Average	8.98		

SD (σ)	2.026		
CV	0.2255		

Source: Annual Reports of EBL

The table 4.27 shows that the average return on loan and advances of EBL is 8.98% and the standard deviation which represents the risk is 2.026. It reveals that the risk on investment on Loan and Advances of EBL is 2.026 which indicates the riskiness on loan and advances. EBL has higher riskiness on loan and advances than HBL.

Table 4.28
Risk on Loan and Advances of Banking Industry (In Percentage)

Year	Return on Loan and Advances (R_i)	$(R_i - \bar{R}_i)$	$(R_i - \bar{R}_i)^2$
2004	8.25	-0.56	0.3158
2005	7.72	-1.09	1.1950
2006	7.17	-1.64	2.6983
2007	6.97	-1.84	3.3865
2008	6.95	-1.86	3.4615
2009	7.73	-1.09	1.1797
2010	10.15	1.33	1.7725
2011	12.13	3.31	10.9851
2012	12.25	3.44	11.827
Total	79.34	0.00	36.8211
Average	8.82		
SD (σ)	2.069		
CV	0.2315		

Source: From Table No: 4.23 to 4.27

The table 4.28 shows that the average return on loan and advances of banking industry is 8.82% and the standard deviation which represents risk is 2.069. It reveals that the risk on investment on loan and advances of banking industry is 2.069 which indicate the riskiness on loan and advances.

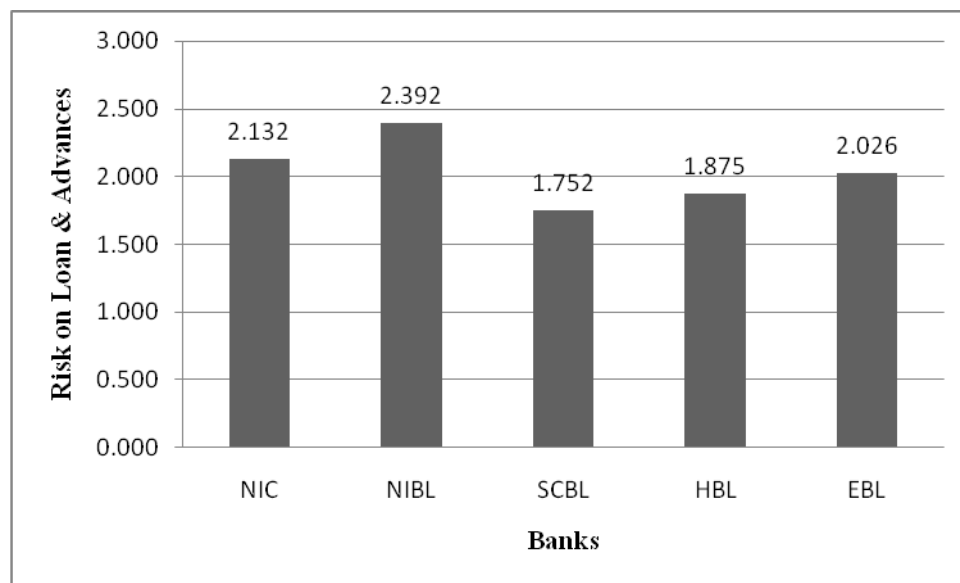
Table 4.29
Risk on Loan and Advances of Sample Banks and Banking Industry (%)

Year	NIC	NIBL	SCBL	HBL	EBL	Banking Industry
2004	7.54	9.03	8.34	7.51	9.24	8.25
2005	7.71	7.36	6.91	8.34	8.02	7.72
2006	7.03	7.32	6.48	7.24	7.60	7.17
2007	6.70	7.33	6.75	6.98	6.87	6.97
2008	7.35	6.93	6.25	7.16	7.06	6.95
2009	8.16	7.89	7.95	7.29	7.57	7.73
2010	12.37	10.51	8.53	9.74	9.95	10.15
2011	12.82	12.98	10.34	11.66	12.22	12.13
2012	12.28	13.15	11.16	11.72	12.30	12.25
Total	81.95	82.50	72.71	77.64	80.83	79.34
Average	9.11	9.17	8.08	8.63	8.98	8.82
SD (σ)	2.132	2.392	1.752	1.875	2.026	2.07
CV	0.2342	0.2610	0.2169	0.2173	0.2255	0.2315

Source: From Tables 4.23 to 4.28

Figure 4.5

Risk on Loan and Advances of Sample Banks



The above table 4.29 shows the risk (Standard Deviation of return) on loan and advances of banking industry is 2.069. Similarly the risk on loan and advances of NICBL, NIBL, SCBL, HBL and EBL are 2.132, 2.392, 1.752, 1.875 and 2.026 respectively. From the above analysis, it is evident that NIBL has the highest risk on loan and advances among five commercial banks. NICBL, EBL have moderate risk and SCBL, HBL has the lowest risk on loan and advances.

4.5.2.3 Risk on Share and Debenture

Market Risk can be calculated as follows.

$$\text{Risk on Share and Debenture } (\sigma_s) = \sqrt{\frac{\sum (R_s - \bar{R}_s)^2}{n-1}}$$

Where R_s = Return on share and debenture

\bar{R}_s = Average rate of return on share and debenture

σ_s = Standard Deviation on return on share and debenture

n = number of years

Table 4.30

Risk on Share and Debenture of Banking Industry (In Percentage)

Year	NEPSE Index	Market Return	\bar{R}_s ($R_s - \bar{R}_s$)	$(R_s - \bar{R}_s)^2$
2004	222.04	8.38	-3.3841	11.45
2005	286.87	29.19	17.4259	303.66
2006	386.83	34.84	23.0759	532.50
2007	683.95	76.81	65.0459	4230.96
2008	683.90	-0.01	-11.7740	138.63
2009	749.10	9.53	-2.2341	4.99
2010	477.73	-36.23	-47.9900	2303.07
2011	362.85	-24.05	-35.8110	1282.44
2012	389.74	7.41	-4.3537	18.95
Total	4243.01	105.88	0.00	8826.66
Average	11.76		0	
SD (σ)	37.95			
CV	3.2257			

Source: Annex -3

The table 4.30 listed above reveals the risk (Standard Deviation) of return on share and debenture of banking industry. The standard deviation of return on share and debenture of banking industry is 37.95. The standard deviation portrays more risk than investment on loan and advances and government securities. Thus it is clear that investment on share and debenture is more risky.

4.5.3 Return on Investment Portfolio

The return on portfolio is the weighted average of the expected returns of the individual stock in the portfolio, with the weights being the proportion of the investment on each security in the portfolio equation. Commercial banks invest their funds in government securities, share and debenture and loan and advances. The weight of investment on various assets and their portfolio of returns can be calculated as below:

Calculation of Portfolio Return (R_p)

$$\text{Portfolio Return } (R_p) = \sum W \times R$$

$$= \sum W_1R_1 + W_2R_2 + W_3R_3$$

$$\text{Proportion Weight (W)} = \frac{\text{Investment in each asset}}{\text{Total Investment}}$$

Where,

R_p = Portfolio Return

W_1 = Proportion of investment on government securities.

W_2 = Proportion of investment on loan and advances

W_3 = Proportion of investment on share and debenture.

R_1 , R_2 and R_3 = Return on government securities, loan and advances, share and debenture respectively.

Table 4.31

Portfolio Return on Investment of NICBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.93	0.1762
2	Return on Loan and Advances (R_l)	9.11	0.8224
3	Return on Share and Debenture (R_s)	11.76	0.0014
	Portfolio Return (R_p)	8.3772	1

Source: Annual Reports of NICBL

From the above table 4.31 the expected return on portfolio of NICBL is 8.3772 which is more than that of mean rate of return on investment on government securities i.e. $8.3772 > 4.93$, but less than that of mean rate of return on investment on loan and advances i.e. $8.3772 < 9.11$ and share and debenture i.e. $8.3772 < 11.76$.

Table 4.32**Portfolio Return on Investment of NIBL (In Percentage)**

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	3.67	0.1116
2	Return on Loan and Advances (R_l)	9.17	0.8864
3	Return on Share and Debenture (R_s)	11.76	0.002
	Portfolio Return (R_p)	8.5614	1

Source: Annual Reports of NIBL

From the above table 4.32 the expected return on portfolio of NIBL is 8.5614 which is more than that of mean rate of return on investment on government securities i.e. $8.5614 > 3.67$, but less than that of mean rate of return on investment on loan and advances i.e. $8.5614 < 9.17$ and share and debenture i.e. $8.5614 < 11.76$.

Table 4.33**Portfolio Return on Investment of SCBL (In Percentage)**

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.92	0.3893
2	Return on Loan and Advances (R_l)	8.08	0.6073
3	Return on Share and Debenture (R_s)	11.76	0.0034
	Portfolio Return (R_p)	6.8626	1

Source: Annual Reports of SCBL

From the above table 4.33 the expected return on portfolio of SCBL is 6.8626 which is more than that of mean rate of return on investment on government securities i.e. $6.8626 > 4.92$, but less than that of mean rate of return on investment on loan and advances i.e. $6.8626 < 8.08$ and share and debenture i.e. $6.8626 < 11.76$.

Table 4.34**Portfolio Return on Investment of HBL (In Percentage)**

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.58	0.2036
2	Return on Loan and Advances (R_l)	8.63	0.7940
3	Return on Share and Debenture (R_s)	11.76	0.0025
	Portfolio Return (R_p)	7.8133	1

Source: Annual Reports of HBL

From the above table 4.34 the expected return on portfolio of HBL is 7.8133 which is more than that of mean rate of return on investment on government securities i.e. $7.8133 > 4.58$, but less than that of mean rate of return on investment on loan and advances i.e. $7.8133 < 8.63$ and share and debenture i.e. $7.8133 < 11.76$.

Table 4.35

Portfolio Return on Investment of EBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.44	0.1835
2	Return on Loan and Advances (R_l)	8.98	0.8137
3	Return on Share and Debenture (R_s)	11.76	0.0028
	Portfolio Return (R_p)	8.1546	1

Source: Annual Reports of EBL

From the above table 4.35 the expected return on portfolio of EBL is 8.1546 which is more than that of mean rate of return on investment on government securities i.e. $8.1546 > 4.44$, but less than that of mean rate of return on investment on loan and advances i.e. $8.1546 < 8.98$ and share and debenture i.e. $8.1546 < 11.76$.

Table 4.36

Portfolio Return on Investment of Banking Industry (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.51	0.2070
2	Return on Loan and Advances (R_l)	8.79	0.7906
3	Return on Share and Debenture (R_s)	11.76	0.0025
	Portfolio Return (R_p)	7.9113	1

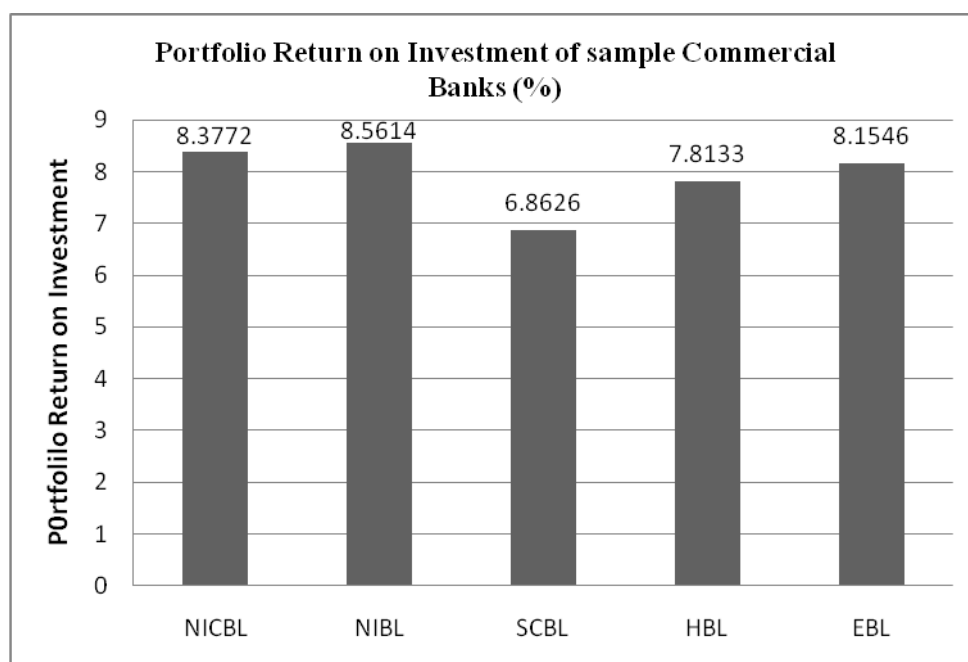
Source: Banking and Financial Statistics of NRB

From the above table 4.36 the expected return on portfolio of Banking Industry is 7.9113 which is more than that of mean rate of return on investment on government securities i.e. $7.9113 > 4.51$, but less than that of mean rate of return on investment on loan and advances i.e. $7.9113 < 8.79$ and share and debenture i.e. $7.9113 < 11.76$.

Table 4.37**Portfolio Return on Investment of sample commercial banks and banking industry (%)**

S.No.	Assets	NICBL	NIBL	SCBL	HBL	EBL	Banking Industry
1	Return on Government Securities (R_g)	4.93	3.67	4.92	4.58	4.44	4.51
2	Return on Loan and Advances (R_l)	9.11	9.17	8.08	8.63	8.98	8.79
3	Return on Share and Debenture (R_s)	11.76	11.76	11.76	11.76	11.76	11.76
	Portfolio Return (R_p)	8.3772	8.5614	6.8626	7.8133	8.1546	7.9113

Source: Banking and Financial Statistics of NRB, Tables from 4.31 to 4.36

Figure 4.6**Portfolio Return on Investment of Sample Banks**

The above table 4.37 displays the portfolio returns of NICBL, NIBL, SCBL, HBL, EBL and Banking Industry are 8.3772%, 8.5614%, 6.8626%, 7.8133%, 8.1546% and 7.9113% respectively. From the above analysis, it is seen that NIBL has highest portfolio return i.e. 8.5614% and SCBL has lowest portfolio return i.e. 6.8626%.

4.5.4 Risk on Investment Portfolio

Expected risk on a portfolio is the function of the proportions invested in the components, the riskiness of the components and correlation of returns on the component securities. It is measured by standard deviation. However the standard deviation of portfolio is not simply the weighted average of standard deviation of individual securities. The portfolio risk is affected by the association of movement of returns of two securities. The degree to which the assets return move together is measured by the covariance. Hence, by combining the measures of individual assets risk, relative asset weights and covariance the risk of the portfolio can be estimated. Thus prior to the calculation of portfolio risk on investment, covariance between two assets return should be calculated.

Table 4.38

Portfolio Risk on Investment of NICBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.397	$r_{gl} = 0.5531$
2	Risk on Loan and Advances (σ_l)	2.132	$r_{gs} = -0.0872$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.6926$
Portfolio Risk (σ_p)		1.8664	

Source: Annual Reports of NICBL, Annex-4

The above table 4.38 shows that, the expected risk of portfolio (Standard deviation) of NICBL is 1.8664% which is considerably less than the expected risk on investment of share and debenture i.e, 1.8664% < 37.95% and loan and advances 1.8664% < 2.132% whereas the portfolio risk is higher than risk on government securities i.e, 1.8664% > 1.397. The risk of investment portfolio of NICBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.0872$), returns of investment on loan and advances and share and debenture ($r_{ls} = -0.6926$) and returns on investment on government securities and loan and advances ($r_{gl} = 0.5531$). Hence it is clear from the above analysis that the lower the correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation ($r < 0$) will significantly reduce the risk of the portfolio.

Table 4.39**Portfolio Risk on Investment of NIBL (In Percentage)**

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.412	$r_{gl} = 0.4553$
2	Risk on Loan and Advances (σ_l)	2.392	$r_{gs} = -0.4132$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.4679$
Portfolio Risk (σ_p)		2.161	

Source: Annual Reports of NIBL, Annex-5

The above table 4.39 shows that, the expected risk of portfolio (standard deviation) of NIBL is 2.161% which is considerably less than the expected risk on investment on share and debenture 2.161% < 37.95% and loan and advances 2.161% < 2.392%. The risk of investment portfolio of NIBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.4132$), returns of investment on loan and advances and share and debenture ($r_{ls} = -0.4679$) and returns on investment on government securities and loan and advances ($r_{gl} = 0.4553$). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio.

Table 4.40**Portfolio Risk on Investment of SCBL (In Percentage)**

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.181	$r_{gl} = 0.7121$
2	Risk on Loan and Advances (σ_l)	1.752	$r_{gs} = -0.2287$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.3988$
Portfolio Risk (σ_p)		1.3857	

Source: Annual Reports of SCBL, Annex-6

The above table 4.40 shows that, the expected risk of portfolio (standard deviation) of SCBL is 1.3857% which is considerably less than the expected risk on investment on share and debenture 1.3857% < 37.95%, loan and advances 1.3857% < 1.752% but higher than investment on government securities i.e. 1.3857% > 1.181%. The risk of investment portfolio of SCBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.2287$), returns of

investment on loan and advances and share and debenture ($r_{ls} = -0.3988$) and returns of investment on government securities and loan and advances ($r_{gl} = 0.7121$). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio.

Table 4.41
Portfolio Risk on Investment of HBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	2.149	$r_{gl} = 0.2419$
2	Risk on Loan and Advances (σ_l)	1.875	$r_{gs} = -0.3021$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.4608$
Portfolio Risk (σ_p)		1.6052	

Source: Annual Reports of HBL, Annex-7

The above table 4.41 shows that, the expected risk of portfolio (standard deviation) of HBL is 1.6052% which is considerably less than the expected risk on investment on share and debenture $1.6052\% < 37.95\%$, loan and advances $1.6052\% < 1.875\%$ and investment on government securities i.e. $1.6052\% < 2.149\%$. The risk of investment portfolio of HBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.3021$) and returns of investment on loan and advances and share and debenture ($r_{ls} = -0.4608$) and returns of investment on government securities and loan and advances ($r_{gl} = 0.2419$). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation ($r < 0$) will significantly reduce the risk of the portfolio.

Table 4.42
Portfolio Risk on Investment of EBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.372	$r_{gl} = 0.6875$
2	Risk on Loan and Advances (σ_l)	2.026	$r_{gs} = -0.5002$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.4885$
Portfolio Risk (σ_p)		1.7791	

Source: Annual Reports of EBL, Annex- 8

The above table 4.42 shows that, the expected risk of portfolio (standard deviation) of EBL is 1.7791% which is considerably less than the expected risk on investment on share and debenture 1.7791% <37.95% and loan and advances 1.7791% <2.026%, but it shows that portfolio risk is higher than risk on government securities i.e. 1.7791% >1.372%. The risk of investment portfolio of HBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.5002$) and returns of investment on loan and advances and share and debenture ($r_{ls} = -0.4885$) and returns of investment on government securities and loan and advances ($r_{gl} = 0.6875$). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation ($r < 0$) will significantly reduce the risk of the portfolio.

Table 4.43

Portfolio Risk on Investment of Banking Industry (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	0.873	$r_{gl} = 0.9467$
2	Risk on Loan and Advances (σ_l)	2.04	$r_{gs} = -0.5330$
3	Risk on Share and Debenture (σ_s)	37.95	$r_{ls} = -0.5048$
Portfolio Risk (σ_p)		1.7384	

Source: Annual Reports of all sample banks, Annex-9

The above table 4.43 shows that, the expected risk of portfolio (standard deviation) of banking industry is 1.7384% which is considerably less than the expected risk on investment on share and debenture 1.7384% <37.95 and loan and advances 1.7384% <2.04% but portfolio risk is higher than risk on government securities i.e. 1.7384% >0.873%. The risk of investment portfolio of sample banking industry has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture ($r_{gs} = -0.5330$) and returns of investment on loan and advances and share and debenture ($r_{ls} = -0.5048$) and returns of investment on government securities and loan and advances ($r_{gl} = 0.9467$). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation ($r < 0$) will significantly reduce the risk of the portfolio.

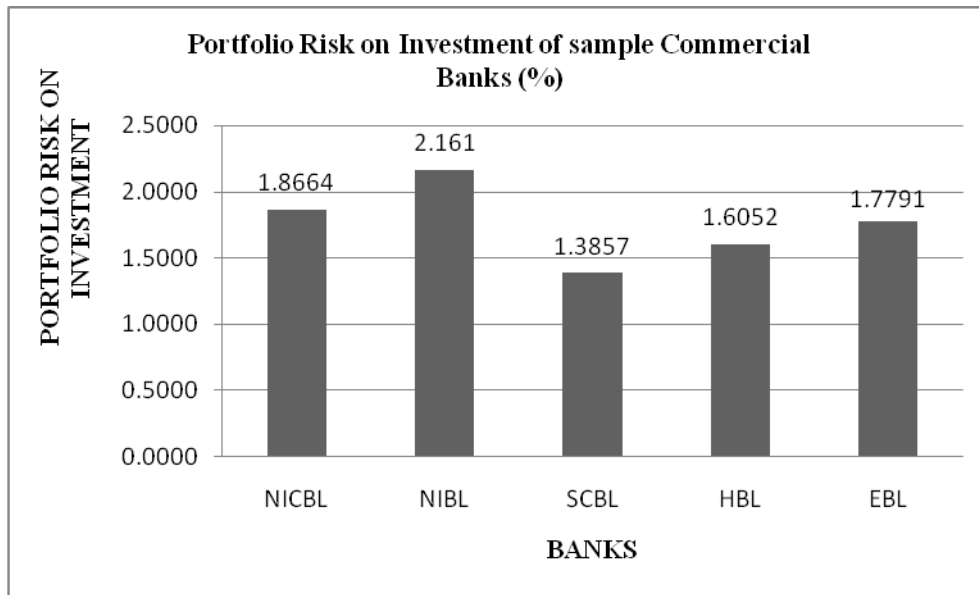
Table 4.44

Portfolio Risk on Investment of Sample Banks (In Percentage)

Asset	NICBL	NIBL	SCBL	HBL	EBL	Banking Industry
Risk on Government Security (σ_g)	1.397	1.412	1.181	2.149	1.372	0.873
Risk on Loan and Advances (σ_l)	2.131	2.392	1.752	1.875	2.026	2.04
Risk on Share and Debenture (σ_s)	37.95	37.95	37.95	37.95	37.95	37.95
Portfolio Risk (σ_p)	1.8664	2.161	1.3857	1.6052	1.7791	1.7384

Figure 4.7

Portfolio Risk on Investment of Sample Banks



The above table 4.44 presents the portfolio risk on investment of NICBL, NIBL, SCBL, HBL, EBL and banking industry as 1.8664%, 2.161%, 1.3857%, 1.6052%, 1.7791% and 1.7384% respectively. From the above analysis, it is found that NIBL has the highest portfolio risk on investment on various assets, while SCBL has the lowest portfolio risk on investment on various assets.

From the above calculation, it is evident that investing the total funds on loan and advances and share and debenture is more risky than that of investment on government securities. However, average return on investment on loan and advances and share and debenture is more than that of average return on investment on government securities. Thus, investing wealth is more than one security helps minimize the risk.

4.6 Analysis of Ratio and Interpretation

Ratio analysis is the process of establishing the significant relationship between the variables of financial statement to provide a meaningful understanding of the performance and the financial position of a firm. As a tool of financial analysis, ratio can be expressed in percentage. With the help of ratio analysis, the quantitative judgment can be obtained very easily and timely with respect to financial performance of the firm. In this section, major ratios related to the investment mechanism of commercial banks are calculated and analyzed.

4.6.1 Total Investment to Total Deposit Ratio

The ratio is used to measure the ability of banks to successfully mobilize the total deposits of investment. This ratio is obtained by dividing total investment by total deposit as expressed below.

$$\text{Total Investment to Total Deposit Ratio} = \frac{\text{Total Investment}}{\text{Total Deposit}}$$

In general, the high ratio is the indicator of high success to mobilize the banking funds as investment and vice-versa.

The following table (4.45) shows the ratios of total investment to total deposit of sample commercial banks.

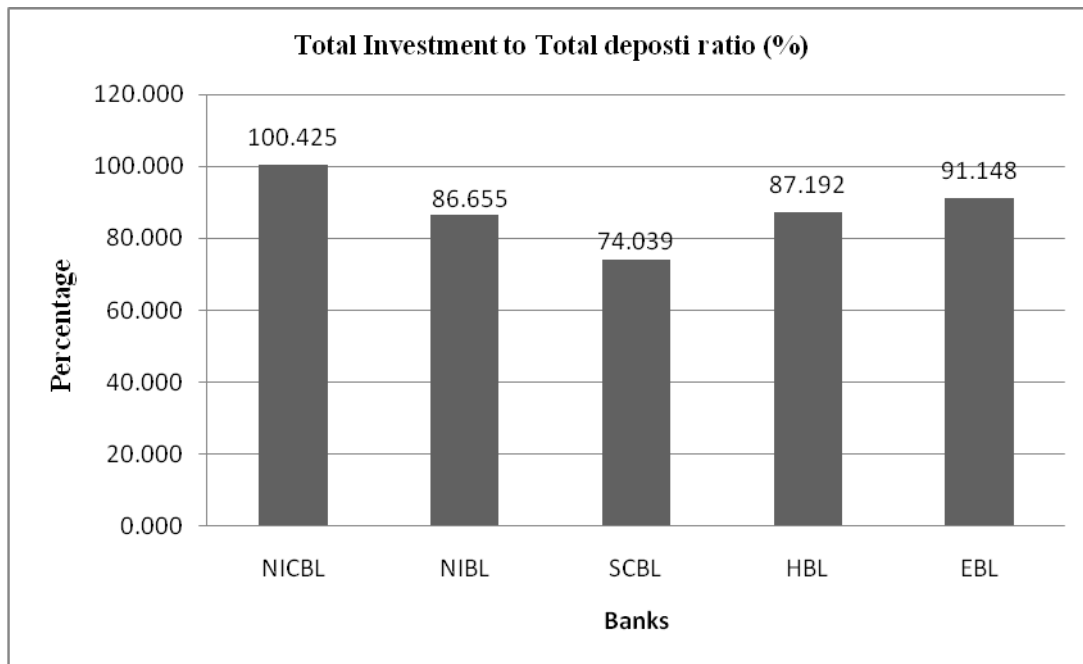
Table 4.45
Total Investment to Total Deposit Ratio (%)

FY	NICBL	NIBL	SCBL	HBL	EBL	BANKING INDUSTRY
2004	96.749	81.161	69.245	74.445	81.814	80.683
2005	97.818	87.126	80.757	76.412	80.664	84.555
2006	98.798	83.045	77.475	79.070	97.654	87.208
2007	101.798	86.001	72.800	100.989	103.414	93.001
2008	99.637	89.239	74.691	87.119	99.094	89.956
2009	103.578	84.420	67.876	85.997	89.181	86.211
2010	106.056	90.263	70.556	89.516	88.304	88.939
2011	103.625	92.256	75.627	96.441	94.623	92.514
2012	95.767	86.388	77.321	94.741	85.583	87.960
Total	903.826	779.899	666.348	784.730	820.330	791.027
Average	100.425	86.655	74.039	87.192	91.148	87.892
SD	1.876	1.880	2.064	3.041	2.823	1.965
CV	1.868	2.170	2.788	3.488	3.097	2.235

Source: Annual Reports of related banks from year 2004 to 2012 and Annex-10

Figure 4.8

Total Investment to Total Deposit Ratio



The comparative table 4.45 and figure 4.8 reveal that the ratio of total investment to total deposit of sample commercial banks has quite fluctuating trend during the study period of year 2004 to 2012. The mean investment to total deposit of NICBL is the highest at the 100.425%. Likewise EBL has the second highest of investment to total deposit with 91.148%. HBL stood at the third position with 87.192%. Measuring the average ratio it can be inferred that NICBL and EBL has capacity of mobilizing deposit on investment is more than others, since their mean ratio are higher than the average ratio on commercial banks 87.892%. However, the mobilization of deposit on investment by NIBL and SCBL is comparatively lower than overall commercial banks.

Nevertheless, the coefficient of variation (C.V) indicates lower the CV lower the risk and according to the table the ratio of NICBL is the lowest i.e, 1.868%.

4.7 Trend Analysis

Trend analysis is a statistical tool to highlight the previous trend and forecast the future. The purpose of the trend analysis in this section is to analyze the trend of investment to deposit of the banking industry and forecast for next five years.

In this method, curvilinear model is used to determine the trend line between the dependent variable y and the independent variable x (time) and constant variable c is represented by,

$y = a+bx+cx^2$, where y = dependent variable, a = y intercept, b = slope of the trend line, x = independent variable (time) c = constant variable

To determine the straight line trend, we should determine the value of a , b and c .

To make the calculation easy the deviation of the independent variable is taken from the middle of the time period so that, $\sum x = 0$, then the values of a and b are calculated.

4.7.1 Trend Analysis of Investment to Deposit of Banking Industry

In this section it has been endeavored to calculate the trend values of investment to deposit ratio of banking Industry. Efforts are directed towards analyzing the ratio of total deposit to total investment for 9 years from 2004 to 2012.

Table no 4.46

Growth Trend of Total Investment Against Total Deposit of Banking Industry In Percentage

Year	X	Y = Total Investment to Total Deposit(%)	xy	x ²	x ³	x ⁴	x ² y
2004	1	80.68	81	1	1	1	81
2005	2	84.56	169	4	8	16	338
2006	3	87.21	262	9	27	81	785
2007	4	93.00	372	16	64	256	1,488
2008	5	89.96	450	25	125	625	2,249
2009	6	86.21	517	36	216	1,296	3,104
2010	7	88.94	623	49	343	2,401	4,358
2011	8	92.51	740	64	512	4,096	5,921
2012	9	87.96	792	81	729	6,561	7,125
Total	$\Sigma x=45$	$\Sigma y=791$	$\Sigma xy=4,004.79$	$\Sigma x^2 =281$	$\Sigma x^3 =2025$	$\Sigma x^4 =15,333$	$\Sigma x^2y=25,448$

Source: Table no: 4.45 and Annex-10

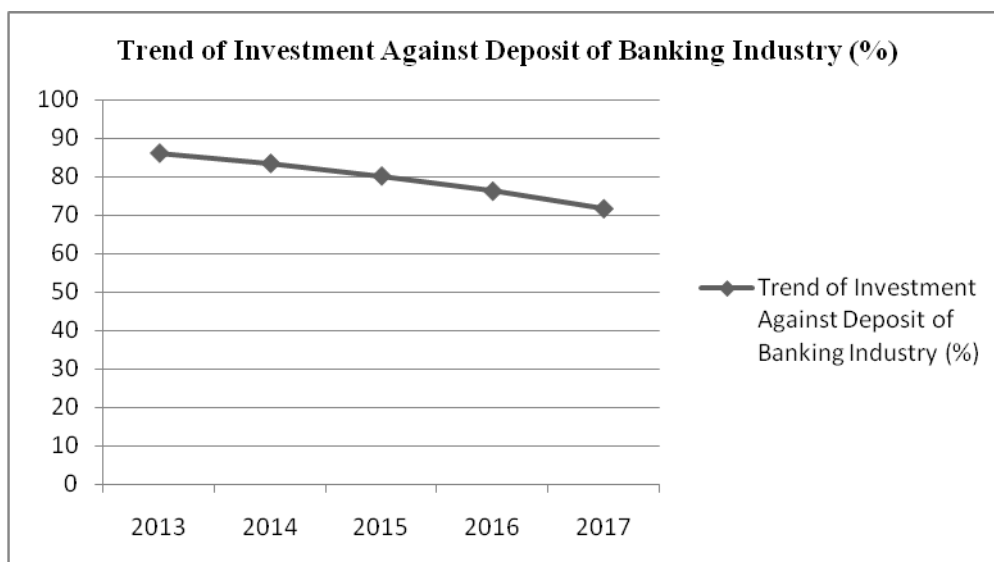
The above table 4.46 shows the calculation to derive the trend value of total investment to total deposit ratio for the next five years from 2013 to 2017 and the future forecast is presented below:

Table 4.47

Year	X	Trend Line & Trend Value
		Total Investment to Total Deposit (Y) = $77.9321 + 4.00308x + (-0.3175)x^2$
2013	10	$77.9321 + 4.00308 \times 10 + (-0.3175)10^2 = 86.21\%$
2014	11	$77.9321 + 4.00308 \times 11 + (-0.3175)11^2 = 83.54\%$
2015	12	$77.9321 + 4.00308 \times 12 + (-0.3175)12^2 = 80.24\%$
2016	13	$77.9321 + 4.00308 \times 13 + (-0.3175)13^2 = 76.31\%$
2017	14	$77.9321 + 4.00308 \times 14 + (-0.3175)14^2 = 71.74\%$

Source: Table no 4.46

Figure 4.9



Above table 4.47 and figure 4.9 shows the decreasing trend of total investment to total deposit 'Y' has shown the trend value of total investment to total deposit which is calculated in percentage. On the basis of this calculation, it can be forecasted that the ratio of total investment to total deposit will become 86.21% in the year 2013 and it will become 71.74% in the year 2017. This does not mean that the total investment of banking industry is decreasing in nationwide scenario but the ratio of investment decreasing against the deposit of the banks. The investment of the banks is ever increasing and similarly the deposit collection of the banks is also increasing and increasing more than the investment. The trend line seems decreasing. The term investment here embraces only the banks' investment in

three sectors, i.e. loan, government security and Share & Debentures. It has excluded “Other Investment” and “Foreign Investment” of the banking sector and which are also in accelerating trend in recent years.

4.8 Major Findings of the study

Based on the analysis of various data remarkable findings are gathered. The analysis has been done according to the nature and quality of the available data. Some simple financial as well as statistical tools have been used to reveal the entire position of Investment of various commercial banks. The major findings are presented below:

a) Findings from Risk and Return Analysis

- 1) The above study shows the average return on government securities of NICBL, SCBL and HBL is 4.93%, 4.92% and 4.58% resp. which are comparatively higher than that of banking industry i.e. 4.50% which means the banks are enjoying higher return from investing in Government securities.
- 2) Return on loan and advance of NIBL is 9.17% which is higher than that of other sample commercial banks and Banking Industry. The banks must have higher interest rate in loan and advances.
- 3) The study indicates that the Return on share & Debenture of Banking Industry is highly fluctuating. The return was calculated 8.38% in the year 2004 while the highest return was calculated in the year 2007 i.e., 76.81%. It is also observed that in the year 2008 the market return of share and debenture was negative i.e. -0.01%. The unstable political situation in nation during the years has great negative impact in share pricing and thus, capital gain from the investment in share and debenture.
- 4) The above analysis shows that the HBL has the highest risk of 2.149% on government security than that of banking industry and SCBL has the lowest risk on government security. And as we know that where there is more risk there is more return.
- 5) Risk on loan & advance of NIBL is 2.392% which is higher than Banking industry and SCBL has the lowest risk of 1.752%.
- 6) The analysis reveals that the risk of Banking Industry on Share & Debenture is higher than that of risk on government securities and loan & advances.

- 7) The Return on Portfolio of Banking Industry is 7.9113% which is more than portfolio return on government securities and less than portfolio return on investment on loan & advances and share & debenture.
- 8) The above analysis of Portfolio risk on Investment of Banking Industry shows that NIBL has the highest Portfolio Risk with comparison to other sample banks.
Therefore, it is evident that investing the fund on loan & advance and share & debenture is more risky than investment on government security but also gives more return.
Thus, the risk and return analysis of the banks' investment proves that "Higher the rate of risk, higher is the return".

b) Findings from Ratio Analysis

- 1) The Ratio analysis of total Investment to total Deposit of Sample banks shows quite fluctuating trend during the study period of year 2004 to 2012. The deposit and investment, both are increasing in trend but the volume based increment in deposit and investment differs and so is the ratio of investment to deposit.
- 2) The study shows that the mobilization of deposit on investment of NICBL is comparatively higher than other sample commercial bank i.e. 100.42%. The deposit volume of NICBL is comparatively low than the investment.
- 3) Thus, the coefficient of variation of NICBL is 1.868% which indicates that the growth of deposit and investment volume of NICBL is most consistently parallel among sample banks.

c) Findings from Trend Analysis

The trend analysis shows the declining trend of the ratio of investment to deposit of the Banking Industry. On the basis of calculation, it is forecasted that the ratio of investment to deposit will be 86.21% in the year 2013 and will decline to 71.74% in the year 2017. This shows that the pace of increment in investment of the banks slower than that of deposit collection of the commercial banks.

CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter summarizes the entire study, draws the conclusions from the study and presents the recommendation for further improvement. Summary incorporates a brief description of the whole study. Conclusions are drawn on the analysis of relevant data using various financial and statistical tools that presents strength, weakness, opportunities and threats of the commercial banks. Recommendations are presented in terms of suggestions prepared based on findings and conclusion.

5.1 Summary

Commercial banks are the major financial institutions which occupy very important place in the framework of every economy. They contribute in the process of capital formation by converting dispersed saving into meaningful capital investments in order to aid industry, trade, commerce, agriculture and other sectors for the economic development of a nation. Commercial banks collect money from the public providing sound interest and subsequently gain profit through lending. Hence it can be stated the main task of commercial banks is to mobilize idle resources in productive areas by collecting it from scattered sources for generation of the profit. Thus it is evident that the efficient and stable banking systems are essential for an orderly economic growth of country like Nepal .

Commercial banks must allocate the funds in different loan and advances and investment. Successful formulation and effective implementation of the investment policy is the prime requisite for refined performance of the commercial banks. In the similar manner, a good investment policy has a positive impact on the economic development of the country and vice-versa. Bank should attract its customers through implementing the best or competitive investment policy. It helps increase the quality of the banking service as well as quality deposit and investment in various sectors. Investment management of a bank is guided by the investment policy adopted by the bank. The bank investment policy fosters the investment operation of the bank to be efficient and profitable by minimizing the interest risk. Thus, the commercial bank should mobilize its deposits and the other funds to profitable, secured, stable and marketable sectors to earn a good profit.

Investment portfolio is the collection of securities. It simply represents the practice among investors having their funds on more than one asset. Portfolio theory deals with the selection of optimal portfolio. In other words, portfolio provides the highest possible return for any specified return. The income or profit of the bank entirely depends upon the investment decision. Considering the fact, the bank should never invest its funds in individual security alone, which is subject to massive depreciation and fluctuations. Banks should accept those types of securities which are commercial, marketable, stable, liquid and profitable. A bank should not lay all its eggs in one basket, which means, to minimize risk a bank must diversify its investment on different sectors and different securities.

To achieve the objective of the study, various analysis, such as risk and return analysis of individual assets as well as investment portfolio, ratio analysis and trend analysis have been launched. Five commercial banks are taken as reference for analysis. During the research work, a brief review of literature has been conducted. In this connection various textbooks and published journals have been reviewed. The required data for the study were collected from the concerned banks, NRB, NEPSE and SEBO. To meet the need and objectives, the secondary data were compiled, processed, and tabulated for the better presentation.

With respect to risk and return analysis, return on the government securities is low but it is lower risk. In the similar manner, the loan and advances give more return than the government securities, but it has also higher risk than government securities. Likewise, share and debentures are also high risky securities which provide higher return.

Regarding ratio analysis, different ratios related with investment portfolio have been used. The total investment to total deposit ratio of NICBL is found to be the highest in comparison to the other four sample commercial banks. The analysis indicates the commercial banks invested very nominal percentage of total outside investment on share and debenture of the other companies.

5.2 Conclusion

It can be concluded from the observance and analysis of above data the commercial bank should move as per the direction given by the central bank. Bank should have optimum policy to collect the deposit in various accounts.

Regarding the analysis and interpretation of data, following conclusions have been derived.

- The standard deviation of the government securities is the lower than standard deviation of other securities which proves the general assumption, that there is little risk on government securities.
- The risk and return and the standard deviation both, on investment in Share & debenture, are higher than other assets. Hence it is clear from the analysis that the investment on share and debenture is highly risky and more return giving than the other assets.
- Portfolio return is slightly lower than the average return from loan and advances, and share and debenture, but higher than that of government securities. Likewise, the risk on investment portfolio is less than that of risk on share and debenture and loan and advances, but is higher than that of risk on government securities.

It again clarifies that investment in government securities in Nepal is less risky than other investments from Investment Portfolio point of view.

- The Ratio analysis of total Investment to total Deposit of Sample banks shows quite fluctuating trend during the study period of year 2004 to 2012 which means variable increment in deposit and investment of Banks.
- Based on the analysis and findings of the study, commercial banks are weak to invest their resources in more liquid assets and less risky sectors. The Trend of total investment to total deposit is declining. Furthermore, the commercial banks are unable to capitalize the opportunities by making suitable combination of investment portfolio.
- From risk and return analysis and individual investment assets, it can be inferred that investment on loan and advances is better than investment on share and debenture or investment on government securities, because loan and advances provides fixed interest income and the rate of return is also higher. This shows that commercial banks are more interested to invest their funds in the less risky sectors.
- From the resource utilization point of view, commercial banks mostly mobilize their resources on loan and advances. They provide low priority to mobilize their funds on government securities.
- The trend analysis of commercial banks depicts that investment on government securities, that on loan and advances, and investment on share and debenture are gradually increasing. In comparison, increasing ratio on share and debenture is the highest among loan and advances and government securities. In the similar manner,

investment on loan and advances is more rapidly increasing than government securities during the period of years 2004 to 2012 A.D.

5.3 Recommendation

Based on the analysis, findings and conclusions of study following recommendations are put forth to counteract the weak situation.

- During the study period, all selected sample banks invested a very low proportion of their total outside investment on share and debenture of the other companies. Therefore all selected sample banks are suggested to accord more priority to investment on share and debenture.
- All sample banks have ineffectively utilized portfolio management concept. The investment of these banks is strongly dominated by loan and advances. They generate inadequate return for the banks. Hence they should have a collection of optimum portfolios of different securities.
- The sample commercial banks are inefficiently utilizing resources particularly in the productive sectors. Hence, they should identify new investment sectors through efficient investment programs in retail banking such as education loan, housing loan, automobile loan, small-medium enterprise loan, youth self-employment loan, green energy sector oriented consortium loan etc.
- The total investment fund with respect to total deposit of SCBL is pretty low. Hence, it calls for identifying the new investment sectors, and efficient as well as effective investment in those sectors.
- The profitability position of EBL is near to satisfaction. However, its investment on various assets is less stable. Hence the bank should upgrade its stability status and decrease the variability of investment.
- NICBL has utilized its total deposits more efficiently than other sample banks. Hence, it should keep up its current investment position and endeavor to diversify its investment on various assets.
- The portfolio return of SCBL should augment its investment on loan and advance to increase its return.

All sample commercial banks have more than 60% of their investment in Loan & Advance sector which is risky and high return giving. Similarly, around 20% or less investment of banks is involved in Government securities. Rest very few, below 1% of investment is in Share & Debenture sector. All banks seem to have more investment in Loan & Advance sector, which is because of being a prime job of commercial banks and also because it is averagely riskier and averagely high return giving. Among sample Banks, NIBL and NIC seem to having highest portfolio return among peer banks i.e. 8.5614% and 8.3772% respectively. Banks should focus and increase investment in Share & Debenture sector too as to achieve higher return.

From Study it is proved that government Securities are safest investment options from risk point of view. However, it possesses least return level. Similarly, Loan & Advance is averagely risky with average return giving investment alternative. The investment in Share & Debentures is high return giving and highly riskier. The study shows SCBL has strongest position among peer banks regarding portfolio risk which is 1.3857% only. In another hand, NIBL seems most earning bank which is 8.5614%. However, banks, as investors, must emphasize more investment in less risky investment options which provides comparatively more return like Loan & Advances.

The commercial banks in Nepal have not properly utilized the investment portfolio concept. More than 60% to 89% of investments have been put up in Loan & Advance and limitedly very few levels in Government Securities and Share and Debentures of other Companies. Bank must increase investment in government securities so as to minimize the investment risk level. Similarly, there is need of more investments in Share and Debentures which increases the investment return level. This both sided increase in investment will help to grow the return level from share and debentures and maintain acceptable risk level in investment. Banks must endeavor to achieve their best level of investment portfolio level remaining with various constraints and opportunities.

Finally, the success of the commercial banks heavily depends on planning of investment. The successful formulation and effective implementation of investment policy should be developed by adopting portfolio concept. Commercial banks should mobilize their resources on secured, stable, profitable, liquid and marketable securities for achieving their goal. However, it is not feasible to achieve such goal in absence of the portfolio

concept. Investment portfolio is the risk mitigating mechanism, which helps minimize risk and maximize return through diversification. So, commercial banks should explore secured investment opportunities and plan to maintain a sound portfolio of their investments for sustainable growth.

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Annex-1**Calculation of interest on govt. security for banking industry**

Banks\FY	2004	2005	2006	2007	2008	2009	2010	2011	2012
NIBL	35,868.00	56,550.00	82,420.00	78,494.00	99,991.00	140,698.00	169,620.00	258,387.00	241,878.00
SCBL	380,441.00	331,663.00	355,291.00	326,550.00	319,606.00	406,326.00	436,305.00	607,859.00	552,917.00
HBL	170,332.00	149,131.00	172,242.00	191,559.00	201,310.00	354,949.00	216,036.00	389,104.00	474,916.00
EBL	92,509.00	77,993.00	97,272.00	128,566.00	180,219.00	289,765.00	238,993.00	362,263.00	420,444.00
NIC	65,784.00	59,790.00	60,914.00	51,854.00	51,828.00	111,738.00	129,571.00	279,709.00	249,810.00
Total	744,934.00	675,127.00	768,139.00	777,023.00	852,954.00	1,303,476.00	1,190,525.00	1,897,322.00	1,939,965.00

Calculation of investment on govt. security for banking industry

Banks\FY	2004	2005	2006	2007	2008	2009	2010	2011	2012
NIBL	2,001,100.00	1,948,500.00	2,522,300.00	3,256,400.00	3,155,000.00	2,531,300.00	4,201,850.00	4,294,600.00	6,169,486.00
SCBL	7,948,217.00	7,203,066.00	8,644,856.00	7,107,937.00	8,137,615.00	9,998,754.00	8,531,520.00	9,957,261.00	7,862,717.00
HBL	3,431,728.00	5,469,729.00	5,144,313.00	6,454,873.00	7,471,668.00	4,212,300.00	4,465,372.00	6,407,362.00	9,162,223.00
EBL	2,466,428.00	2,100,289.00	3,322,443.00	4,704,632.00	4,821,605.00	5,146,046.00	4,354,353.00	7,145,018.00	6,068,876.00
NIC	1,235,276.00	1,194,313.00	1,756,585.00	1,104,060.00	1,545,375.00	2,195,004.00	3,978,901.00	3,865,143.00	3,622,218.00
Total	17,082,749.00	17,915,897.00	21,390,497.00	22,627,902.00	25,131,263.00	24,083,404.00	25,531,996.00	31,669,384.00	32,885,520.00

Annex-2

Calculation of interest on loan and advances in banking industry

Banks\FY	2004	2005	2006	2007	2008	2009	2010	2011	2012
NIBL	663,016.00	769,195.00	964,689.00	1,302,122.00	1,907,261.00	2,906,055.00	4,303,311.00	5,435,843.00	5,643,275.00
SCBL	558,006.00	581,664.00	596,622.00	728,589.00	872,690.00	1,104,047.00	1,379,284.00	1,930,370.00	2,212,662.00
HBL	970,166.00	1,122,392.00	1,140,687.00	1,242,850.00	1,444,245.00	1,861,045.00	2,836,251.00	3,843,312.00	4,216,330.00
EBL	563,137.00	633,625.00	770,826.00	967,178.00	1,329,695.00	1,852,128.00	2,801,332.00	3,869,810.00	4,504,895.00
NIC	282,075.00	378,369.00	485,247.00	611,244.00	842,552.00	1,135,067.00	1,599,538.00	1,943,827.00	2,152,462.00
Total	3,036,400.00	3,485,245.00	3,958,071.00	4,851,983.00	6,396,443.00	8,858,342.00	12,919,716.00	17,023,162.00	18,729,624.00
Average	607,280.00	697,049.00	791,614.20	970,396.60	1,279,288.60	1,771,668.40	2,583,943.20	3,404,632.40	3,745,924.80

Calculation of investment on loan and advances in banking industry

Banks\FY	2004	2005	2006	2007	2008	2009	2010	2011	2012
NIBL	7,338,566.00	10,453,164.00	13,178,152.00	17,769,100.00	27,529,305.00	36,827,157.00	40,948,440.00	41,887,694.00	42,906,691.00
SCBL	6,693,862.00	8,420,868.00	9,206,280.00	10,790,148.00	13,963,984.00	13,880,703.00	16,176,583.00	18,662,478.00	19,828,509.00
HBL	12,919,631.00	13,451,168.00	15,761,977.00	17,793,724.00	20,179,995.00	25,519,519.00	29,123,755.00	32,968,270.00	35,968,473.00
EBL	6,095,841.00	7,900,015.00	10,136,254.00	14,082,686.00	18,836,432.00	24,469,556.00	28,156,400.00	31,661,843.00	36,616,832.00
NIC	3,743,091.00	4,909,355.00	6,902,124.00	9,128,649.00	11,465,334.00	13,915,850.00	12,929,304.00	15,165,516.00	17,523,192.00
Total	36,790,991.00	45,134,570.00	55,184,787.00	69,564,307.00	91,975,050.00	114,612,785.00	127,334,482.00	140,345,801.00	152,843,697.00
Average	7,358,198.20	9,026,914.00	11,036,957.40	13,912,861.40	18,395,010.00	22,922,557.00	25,466,896.40	28,069,160.20	30,568,739.40

Annex-3
Calculation of Standard Deviation (Risk on share & debenture) for Banking industry

Year	NEPSE Index	Market Return(R_s)	$(R_s - \bar{R}_s)$	$(R_s - \bar{R}_s)^2$
2004	222.04	8.38	-3.3841	11.45
2005	286.87	29.19	17.4259	303.66
2006	386.83	34.84	23.0759	532.50
2007	683.95	76.81	65.0459	4230.96
2008	683.90	-0.01	-11.774	138.63
2009	749.10	9.53	-2.2341	4.99
2010	477.73	-36.23	-47.99	2303.07
2011	362.85	-24.05	-35.811	1282.44
2012	389.74	7.41	-4.3537	18.95
Total	4243.01	105.88	0.00	8826.66
Average		11.76	0	
SD (σ_s)		37.95		
CV		3.2257		

Where,

N = number of years = 9

R_s = Return on share and debenture

$$\begin{aligned} \bar{R}_s &= \frac{\sum R}{N} = \frac{105.88}{9} \\ &= 11.76 \end{aligned}$$

$$\begin{aligned}
 (\sigma_s) &= \sqrt{\frac{\sum (R_s - \bar{R}_s)^2}{n-1}} \\
 &= \sqrt{\frac{8826.66}{9-1}} \\
 &= 37.95\%
 \end{aligned}$$

Coefficient of Variation (CV)

Where,

σ_s = Standard deviation of securities s = 37.95

\bar{R}_s = Average return on securities s = 11.76

$$\begin{aligned}
 C.V &= \frac{\sigma_s}{R_s} = \frac{37.95}{11.76} \\
 &= 3.2257
 \end{aligned}$$

Risk on Government Security and Loan & Advances is calculated same as Annex-3

Annex-4

Calculation of Correlation for Portfolio Risk

NICB

Year	Rg	Rl	Rs	Rg-E(Rg)	Rl-E(Rl)	Rs-E(Rs)	$\frac{[Rg-E(Rg)]}{[Rl-E(Rl)]}$	$\frac{[Rg-E(Rg)]}{[Rs-E(Rs)]}$	$\frac{[Rl-E(Rl)]}{[Rs-E(Rs)]}$
2004	5.3254	7.5359	8.3800	0.3999	(1.5686)	(3.3844)	-0.6273	-1.3534	5.3087

2005	5.0062	7.7071	29.1900	0.0807	(1.3973)	17.4256	-0.1127	1.4057	-24.3495
2006	3.4678	7.0304	34.8400	(1.4578)	(2.0740)	23.0756	3.0235	-33.6396	-47.8597
2007	4.6967	6.6959	76.8100	(0.2289)	(2.4086)	65.0456	0.5513	-14.8883	-156.6660
2008	3.3537	7.3487	(0.0100)	(1.5718)	(1.7558)	(11.7744)	2.7597	18.5071	20.6730
2009	5.0906	8.1566	9.5300	0.1650	(0.9478)	(2.2344)	-0.1564	-0.3687	2.1178
2010	3.2565	12.3714	(36.2261)	(1.6691)	3.2670	(47.9906)	-5.4529	80.1013	-156.7839
2011	7.2367	12.8174	(24.0471)	2.3111	3.7130	(35.8115)	8.5812	-82.7657	-132.9670
2012	6.8966	12.2800	7.4105	1.9710	3.1756	(4.3540)	6.2592	-8.5819	-13.8263
Total	$\sum R_g =$ 44.3302	$\sum R_l =$ 81.94	$\sum R_s =$ 105.88	0.00	0.00	0.00	14.8257	-41.5836	-504.3528

Here,

N=Number of Years =9

Calculation of Mean

For Government Securities

$$\begin{aligned} \bar{R}_g &= \frac{\sum R_g}{N} = \frac{44.3302}{9} \\ &= 4.9256 \end{aligned}$$

For Loan and Advance,

$$\begin{aligned} \bar{R}_l &= \frac{\sum R_l}{N} = \frac{81.94}{9} \\ &= 9.1044 \end{aligned}$$

For Share and Debenture

$$\bar{R}_s = \frac{\sum R_s}{N} = \frac{105.88}{9}$$

$$= 11.7644$$

**Calculation of Standard Deviation (σ)
For Government Securities**

$$(\sigma_g) = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{16.8542}{9-1}}$$

$$= 1.397$$

For Loan and Advances

$$(\sigma_l) = \sqrt{\frac{\sum (R_l - \bar{R}_l)^2}{n-1}} = \sqrt{\frac{53.0624}{9-1}}$$

$$= 2.132$$

For Share and Debenture

$$(\sigma_s) = \sqrt{\frac{\sum (R_s - \bar{R}_s)^2}{n-1}} = \sqrt{\frac{8826.66}{9-1}}$$

$$= 37.95$$

Calculation of Covariance

1) Between Return on government securities and loan & advances

$$Cov_{gl} = \frac{[R_g - E(R_g)][R_l - E(R_l)]}{N} = \frac{14.8257}{9} = 1.6473$$

2) Between Return on government securities and Share & Debenture

$$Cov_{gs} = \frac{[R_g - E(R_g)][R_s - E(R_s)]}{N} = \frac{-41.5836}{9} = -4.6204$$

3) Between Return on Loan & advance and Share & Debenture

$$Cov_{ls} = \frac{[R_l - E(R_l)][R_s - E(R_s)]}{N} = \frac{-504.3528}{9} = -56.0392$$

Calculation of Correlation

1) Correlation between return on government securities and loan & advances

$$\text{Correlation } (r_{gl}) = \frac{Cov(Rg, Rl)}{\sigma_g \times \sigma_l} = \frac{1.6473}{1.397 \times 2.132} = 0.5531$$

2) Correlation between return on government securities and Share & Debenture

$$\text{Correlation } (r_{gs}) = \frac{Cov(Rg, Rs)}{\sigma_g \times \sigma_s} = \frac{-4.6204}{1.397 \times 37.95} = -0.0872$$

3) Correlation between return on Loan & advance and Share & Debenture

$$\text{Correlation } (r_{ls}) = \frac{Cov(Rl, Rs)}{\sigma_l \times \sigma_s} = \frac{-56.0392}{2.132 \times 37.95} = -0.6926$$

Calculation of Portfolio Risk

Where,

W_g = Weight of investment in government securities = 0.1762

W_l = Weight of investment in loan and advance = 0.8224

W_s = Weight of investment in share and debenture = 0.0014

$$\sigma_p = \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2Cov_{gl} \times W_g \times W_l + 2Cov_{gs} \times W_g \times W_s + 2Cov_{ls} \times W_l \times W_s}$$

Substituting the value in the above formula we get,

$$\sigma_p = 1.8664$$

Therefore, the Portfolio Risk of NICBL is 1.8664.

Similarly,

The portfolio Risk of other sample banks are calculated as above solution

Annex-5

Calculation of Correlation for Portfolio Risk
NIBL

Year	Rg	Rl	Rs	Rg-E(Rg)	Rl-E(Rl)	Rs-E(Rs)	[Rg-E(Rg)] [Rl-E(Rl)]	[Rg-E(Rg)] [Rs-E(Rs)]	[Rl-E(Rl)] [Rs-E(Rs)]
2004	1.7924	9.0347	8.3800	(1.8820)	(0.1320)	(3.3844)	0.2484	6.3696	0.4467
2005	2.9022	7.3585	29.1900	(0.7722)	(1.8082)	17.4256	1.3963	-13.4562	-31.5085
2006	3.2677	7.3204	34.8400	(0.4068)	(1.8463)	23.0756	0.7511	-9.3869	-42.6044
2007	2.4105	7.3280	76.8100	(1.2640)	(1.8387)	65.0456	2.3240	-82.2170	-119.5962
2008	3.1693	6.9281	(0.0100)	(0.5052)	(2.2386)	(11.7744)	1.1308	5.9480	26.3577
2009	5.5583	7.8911	9.5300	1.8839	(1.2756)	(2.2344)	-2.4031	-4.2094	2.8503
2010	4.0368	10.5091	(36.2261)	0.3623	1.3424	(47.9906)	0.4864	-17.3893	-64.4240
2011	6.0166	12.9772	(24.0471)	2.3421	3.8105	(35.8115)	8.9247	-83.8745	-136.4603
2012	3.9206	13.1524	7.4105	0.2461	3.9858	(4.3540)	0.9809	-1.0716	-17.3540
Total	$\sum R_g =$ 33.07	$\sum R_l =$ 82.50	$\sum R_s =$ 105.88	0.00	0.00	0.00	13.8396	-199.2874	-382.2927

N=9

	Rg	Rl	Rs
Mean	3.6744	9.1667	11.7644
SD	1.412	2.392	37.95

	Rg and Rl	Rg and Rs	Rl and Rs
Covariance	1.5377	-22.1430	-42.4770
Correlation	0.4553	-0.4132	-0.4679

Therefore, portfolio risk of NIBL $\sigma_p = 2.161$

Annex-6

Calculation of Correlation for Portfolio Risk
SCBL

Year	Rg	RI	Rs	Rg-E(Rg)	RI-E(RI)	Rs-E(Rs)	$\frac{[Rg-E(Rg)]}{[RI-E(RI)]}$	$\frac{[Rg-E(Rg)]}{[Rs-E(Rs)]}$	$\frac{[RI-E(RI)]}{[Rs-E(Rs)]}$
2004	4.7865	8.3361	8.3800	(0.1394)	0.2572	(3.3844)	-0.0359	0.4718	-0.8705
2005	4.6045	6.9074	29.1900	(0.3214)	(1.1715)	17.4256	0.3765	-5.6011	-20.4136
2006	4.1099	6.4806	34.8400	(0.8160)	(1.5983)	23.0756	1.3043	-18.8307	-36.8814
2007	4.5942	6.7524	76.8100	(0.3317)	(1.3265)	65.0456	0.4401	-21.5782	-86.2852
2008	3.9275	6.2496	(0.0100)	(0.9984)	(1.8293)	(11.7744)	1.8264	11.7554	21.5391
2009	4.0638	7.9538	9.5300	(0.8621)	(0.1251)	(2.2344)	0.1078	1.9264	0.2794
2010	5.1140	8.5264	(36.2261)	0.1881	0.4475	(47.9906)	0.0842	-9.0288	-21.4775
2011	6.1047	10.3436	(24.0471)	1.1788	2.2647	(35.8115)	2.6696	-42.2139	-81.1023
2012	7.0321	11.1590	7.4105	2.1062	3.0801	(4.3540)	6.4874	-9.1705	-13.4107
Total	$\sum Rg=$ 44.32	$\sum RI=$ 72.71	$\sum Rs=$ 105.88	0.00	0.00	0.00	13.2604	-92.2696	-238.6227

N=9

	Rg	RI	Rs
Mean	4.9259	8.0789	11.7644
SD	1.181	1.752	37.95

	Rg and RI	Rg and Rs	RI and Rs
Covariance	1.4734	-10.2522	-26.5136
Correlation	0.7121	-0.2287	-0.3988

Therefore, Portfolio Risk of SCBL (σ_p)= 1.3857

Annex-7

Calculation of Correlation for Portfolio Risk

HBL

Year	Rg	RI	Rs	Rg-E(Rg)	RI-E(RI)	Rs-E(Rs)	$\frac{[Rg-E(Rg)]}{[RI-E(RI)]}$	$\frac{[Rg-E(Rg)]}{[Rs-E(Rs)]}$	$\frac{[RI-E(RI)]}{[Rs-E(Rs)]}$
2004	4.9634	7.5092	8.3800	0.3834	(1.1174)	(3.3844)	-0.4285	-1.2978	3.7819
2005	2.7265	8.3442	29.1900	(1.8535)	(0.2825)	17.4256	0.5236	-32.2986	-4.9222
2006	3.3482	7.2370	34.8400	(1.2318)	(1.3897)	23.0756	1.7118	-28.4244	-32.0684
2007	2.9677	6.9848	76.8100	(1.6123)	(1.6419)	65.0456	2.6473	-104.8752	-106.7983
2008	2.6943	7.1568	(0.0100)	(1.8857)	(1.4699)	(11.7744)	2.7717	22.2029	17.3067
2009	8.4265	7.2926	9.5300	3.8465	(1.3340)	(2.2344)	-5.1313	-8.5948	2.9808
2010	4.8380	9.7386	(36.2261)	0.2580	1.1120	(47.9906)	0.2869	-12.3830	-53.3632
2011	6.0728	11.6576	(24.0471)	1.4928	3.0309	(35.8115)	4.5245	-53.4581	-108.5426
2012	5.1834	11.72229	7.4105	0.6034	3.0956	(4.3540)	1.8679	-2.6273	-13.4783
Total	$\sum Rg=$ 41.22	$\sum RI=$ 77.64	$\sum Rs=$ 105.88	0.00	0.00	0.00	8.7739	-221.7562	-295.1036

N=9

	Rg	Rl	Rs
Mean	4.5800	8.6267	11.7644
SD	2.149	1.875	37.95

	Rg and Rl	Rg and Rs	Rl and Rs
Covariance	0.9749	-24.6396	-32.7893
Correlation	0.2419	-0.3021	-0.4608

Therefore, Portfolio Risk of HBL (σ_p)= 1.6052

Annex-8

Calculation of Correlation for Portfolio Risk
EBL

Year	Rg	Rl	Rs	Rg-E(Rg)	Rl-E(Rl)	Rs-E(Rs)	$\frac{[Rg-E(Rg)]}{[Rl-E(Rl)]}$	$\frac{[Rg-E(Rg)]}{[Rs-E(Rs)]}$	$\frac{[Rl-E(Rl)]}{[Rs-E(Rs)]}$
2004	3.7507	9.2380	8.3800	(0.6915)	0.2569	(3.3844)	-0.1777	2.3403	-0.8696
2005	3.7134	8.0206	29.1900	(0.7288)	(0.9606)	17.4256	0.7000	-12.6994	-16.7382
2006	2.9277	7.6046	34.8400	(1.5145)	(1.3765)	23.0756	2.0847	-34.9479	-31.7628
2007	2.7328	6.8679	76.8100	(1.7095)	(2.1133)	65.0456	3.6126	-111.1933	-137.4581
2008	3.7377	7.0592	(0.0100)	(0.7045)	(1.9219)	(11.7744)	1.3540	8.2949	22.6298
2009	5.6308	7.5691	9.5300	1.1886	(1.4120)	(2.2344)	-1.6783	-2.6559	3.1550
2010	5.4886	9.9492	(36.2261)	1.0464	0.9681	(47.9906)	1.0130	-50.2163	-46.4584
2011	5.0701	12.2223					2.0352	-22.4870	-116.0724

			(24.0471)	0.6279	3.2412	(35.8115)			
2012	6.9279	12.3028	7.4105	2.4857	3.3217	(4.3540)	8.2566	-10.8225	-14.4626
Total	$\sum R_g =$ 39.98	$\sum R_I =$ 80.83	$\sum R_s =$ 105.88	0.00	0.00	0.00	17.2000	-234.3870	-338.0371

N=9

	Rg	RI	Rs
Mean	4.4422	8.9811	11.7644
Std	1.372	2.026	37.95

	Rg and RI	Rg and Rs	RI and Rs
Covariance	1.9111	-26.0430	-37.5597
Correlation	0.6875	-0.5002	(0.4885)

Therefore, Portfolio Risk of EBL (σ_p)= 1.7791

Annex-9

Calculation of Correlation for Portfolio Risk
BANKING INDUSTRY

Year	Rg	RI	Rs	Rg-E(Rg)	RI-E(RI)	Rs-E(Rs)	$\frac{[Rg-E(Rg)]}{[RI-E(RI)]}$	$\frac{[Rg-E(Rg)]}{[Rs-E(Rs)]}$	$\frac{[RI-E(RI)]}{[Rs-E(Rs)]}$
2004	4.3607	8.3312	8.3800	(0.1404)	(0.4610)	(3.3844)	0.0647	0.4751	1.5604
2005	3.7683	7.6674	29.1900	(0.7328)	(1.1248)	17.4256	0.8243	-12.7694	-19.6003
2006	3.5910	7.1341	34.8400	(0.9101)	(1.6581)	23.0756	1.5090	-21.0006	-38.2625

2007	3.4339	6.9252	76.8100	(1.0672)	(1.8670)	65.0456	1.9925	-69.4163	-121.4430
2008	3.3940	6.9497	(0.0100)	(1.1071)	(1.8425)	(11.7744)	2.0398	13.0357	21.6942
2009	5.4123	7.7713	9.5300	0.9112	(1.0209)	(2.2344)	-0.9303	-2.0361	2.2811
2010	4.6629	10.2189	(36.2261)	0.1618	1.4267	(47.9906)	0.2308	-7.7631	-68.4694
2011	5.9910	12.0036	(24.0471)	1.4899	3.2114	(35.8115)	4.7847	-53.3562	-115.0050
2012	5.8991	12.1240	7.4105	1.3980	3.3318	(4.3540)	4.6580	-6.0870	-14.5065
Total	$\sum R_g =$ 40.51	$\sum R_I =$ 79.13	$\sum R_s =$ 105.88	0.00	0.00	0.00	15.1736	-158.9181	-351.7510

N=9

	Rg	RI	Rs
Mean	4.5011	8.7922	11.7644
Std	0.873	2.04	37.95

	Rg and RI	Rg and Rs	RI and Rs
Covariance	1.6860	-17.6576	-39.0834
Correlation	0.9467	-0.5330	-0.5048

Therefore, Portfolio Risk of Banking Industry (σ_p)= 1.7384

Annex-10

Calculation of Total Investment to Total Deposit Ratio
Investment To Deposit of NIC

FY	Deposit	Total Investment	% of Total Investment to Total Deposit
2004	5,146,483,050.00	4,979,167,000.00	96.7489
2005	6,241,378,160.00	6,105,175,000.00	97.8177
2006	8,765,950,638.00	8,660,548,000.00	98.7976
2007	10,068,230,869.00	10,249,303,000.00	101.7985
2008	13,084,688,672.00	13,037,175,500.00	99.6369
2009	15,579,930,904.00	16,137,445,500.00	103.5784
2010	15,968,917,926.00	16,935,996,500.00	106.0560
2011	18,394,435,547.00	19,061,201,500.00	103.6248
2012	22,111,851,286.00	21,175,952,500.00	95.7674
Total	115,361,867,052.00	116,341,964,500.00	903.8263
Average	12,817,985,228.00	12,926,884,944.44	100.4251

Here,

$$\text{Total Investment to Total Deposit Ratio} = \frac{\text{Total Investment}}{\text{Total Deposit}}$$

Similarly

The Investment to Deposit ratio of other sample bank is calculated as above table in Annex-10

Annex-11

Calculation of Trend Line using Curvilinear Model of Regression

N = 9

ln

Percentage

Growth Trend of Total Investment Against Total Deposit of Banking

Industry

Year	X	Y = Total Investment to Total Deposit	xy	x ²	x ³	x ⁴	x ² y
2004	1	80.68	81	1	1	1	81
2005	2	84.56	169	4	8	16	338
2006	3	87.21	262	9	27	81	785
2007	4	93.00	372	16	64	256	1,488
2008	5	89.96	450	25	125	625	2,249
2009	6	86.21	517	36	216	1,296	3,104
2010	7	88.94	623	49	343	2,401	4,358
2011	8	92.51	740	64	512	4,096	5,921
2012	9	87.96	792	81	729	6,561	7,125
Total	Σx=45	Σy=791	Σxy=4,004.79	Σx²=281	Σ x³ =2025	Σ x⁴ =15,333	Σ x²y= 25,448

The equation of curvilinear model is as below:

$$y = a + bx + cx^2 \dots\dots\dots 1$$

$$\Sigma y = Na + b\Sigma x + c\Sigma x^2 \dots\dots\dots 2 (791=9a+45b+281c)$$

$$\Sigma xy = a\Sigma x + b\Sigma x^2 + c\Sigma x^3 \dots\dots\dots 3 (4004.79=45a+281b+2025c)$$

$$\Sigma x^2y = a\Sigma x^2 + b\Sigma x^3 + c\Sigma x^4 \dots\dots\dots 4 (25448=281a+2025b+15333c)$$

Where,

$$\Sigma y = 791$$

$$\Sigma x = 45$$

$$\Sigma x^2 = 281$$

$$\Sigma xy = 4,004.79$$

$$\Sigma x^3 = 2,025$$

$$\Sigma x^2y = 25,448$$

$$\Sigma x^4 = 15,333$$

Substituting the value in equation 2, 3 and 4 equations,

$$791=9a+45b+281c \dots\dots\dots 5$$

$$4004.79=45a+281b+2025c \dots\dots\dots 6$$

$$25448=281a+2025b+15333c \dots\dots\dots 7$$

Solving equation 5 and 6, multiplying equation 5 by 45 and 9 respectively

$$\begin{array}{r}
 405a+2025b+12825c = 35596.215 \\
 405a+2565b+18225c = 36043.128 \\
 \hline
 +540b+5400c = 446.913 \text{ (Taking (-) as common,)}
 \end{array}$$

$$540b+5400c = 446.913 \dots\dots\dots 8$$

Solving equation 5 and 7, multiplying equation 5 by 285 and equation 7 by 9,

$$\begin{array}{r}
 2565a+12825b+81225c = 255442.695 \\
 2565a+18225b+137997c = 229031.586 \\
 \hline
 +56772c = 3588.891 \dots\dots\dots \text{eqn 9 (Taking (-) as common),}
 \end{array}$$

Solving equation 8 and 9, multiplying equation 8 by 5400 and equation 9 by 540,

$$\begin{array}{r}
 2916000b+29160000c = 241333.02 \\
 2916000b+30656880c = 1938001 \\
 \hline
 +1496880c = -475329.06 \\
 c = -475329.06/1496880 \\
 c = -0.3175
 \end{array}$$

Now, substituting the value of C in equation (9),

$$5400b + 56772c = 3588.891 \dots\dots\dots 9$$

$$5400b + 56772x - 0.3175 = 3588.891$$

$$b = 4.00308$$

Now putting the value of b, and c in equation (5),

$$791 = 9a + 45b + 281c \dots\dots\dots 5$$

$$791 = 9a + 45 \times 4.00308 + 281 \times -0.3175$$

$$a = 77.9321$$

Therefore the value of **a** = 77.9321

$$\mathbf{b = 4.00308}$$

$$\mathbf{c = -0.3175}$$

Now, substituting the value of a, b, and c in the equation (1), the curvilinear model will be,

$$y = 77.9321 + 4.00308x + (-0.3175)x^2$$

Forecast of total investment to total deposit of Banking Industry

The above equation is used to forecast the ratio of total investment to total deposit of Banking Industry for the year, 2013, 2014, 2015, 2016 and 2017.

For,

$$\mathbf{Year\ 2013,\ x = 10}$$

$$\mathbf{Year\ 2014,\ x = 11}$$

Year 2015, x = 12

Year 2016, x = 13

Year 2017, x = 14

The forecasted % total investment to total deposit of Banking Industry for 2013:

$$\begin{aligned}y &= 77.9321 + 4.00308x + (-0.3175)x^2 \\ &= 77.9321 + 4.00308 \times 10 + (-0.3175)10^2 \\ &= 86.21\%\end{aligned}$$

The forecasted % total investment to total deposit of Banking Industry for 2014:

$$y = 83.54 \%$$

The forecasted % total investment to total deposit of Banking Industry for 2015:

$$\tilde{y} = 80.24\%$$

The forecasted % total investment to total deposit of Banking Industry for 2016:

$$\tilde{y} = 76.31\%$$

The forecasted % total investment to total deposit of Banking Industry for 2017:

$$\tilde{y} = 71.74\%$$