

CHAPTER-ONE

INTRODUCTION

1.1 Background of the study

Nepal has adopted mixed and liberal economic policy with the implicit objective to help the state and private sector. Especially after restoration of the democracy, the concept of liberation policies has been incorporated as directive principal and state policies. This liberation has helped in establishing many companies, banks, finance companies and manufacturing industries.

Banking sector is the most vibrant part of economy which has been playing very vital role in mobilizing the financial resources from the savers to users. It, in general, collects the idle funds from different savers and accumulated funds is further proceeds to the needy centers like households sectors, business sectors. It is the heart of trade, commerce and industry. It makes the smooth flow of funds in the circulation body of economy. It makes various functions like assets and liabilities transformation, security trading, agency functions, and economies of scale, corporate social responsibilities, and other day to day banking functions.

The word 'bank' has been derived from an Italian word 'Banco' which denotes to a bench from where monetary transactions were conducted. In common words, a bank is an institution established under a certain act, which deals with money and credit. It accepts deposits and lends loans to those who are in a position to use it for productive purpose. In the other words, a bank accepts and safeguards the deposits to the customers and grants loans to needy persons or institutions against security. It also provides various financial services like remittance of money, collection of cash from debtors, exchange of foreign currencies, issue of paper notes and coins, etc. Banks are most frequently

established in corporate form and they are owned by individuals, governments or a combination of private and government interest. Bank is a financial institution, which deals with money by accepting various types of deposits, disbursing loan and rendering various types of financial services. Bank is an establishment which makes to individuals such advances of money or other means of payment as may require and safety made and to which individuals entrust money or means of payment not required by them for use.

Nepal Rastra Bank is the central bank of Nepal. Before the establishment of Nepal Rastra Bank in 2013 B.S. under the Nepal Rastra Bank Act, 2012, the Nepal Bank Limited was serving the purpose of central bank of the nation. Nepal Bank Limited is Nepal's first commercial bank. Nepal Industrial Development Corporation is the first development bank of Nepal established in 2016 B.S. to help in the industrial sector. Agricultural Development Bank was established in 2024 B.S. under the Agricultural Development Bank Act 2024. Now there are 31 commercial banks in Nepal.

Nepal has formally adopted the economic liberalization policy which gave more emphasis to private sector an encouraging factor of sustainable economic growth. The policy of economic liberalization and globalization adopted by government resulted in establishment of joint venture as well as private banks and other financial institutions.

Commercial banks have the domination on the security market of Nepal. Security market is a mechanism designed to facilitate the exchange of financial assets or securities by bringing buyers and sellers of securities together. The security exchange centre converted into Nepal Stock Exchange (NEPSE), on 16th May 1993 that brought new environment in Nepalese Capital Market. NEPSE is a nonprofit organization. The objective of NEPSE is to arrange marketability and liquidity to the government and corporate securities by

facilitating transactions in its trading floor through market intermediaries such as brokers, market makers and others.

Securities Board Nepal (SEBON) was established on 26 May, 1993 under the provision of the Securities Exchange Act 1983. The objectives of the SEBON are to promote and protect the interest of investors by regulating the securities market.

Common stock represents an ownership share in a corporation. Common stockholders are the true owners of the corporation. Each share of common stock represents a fractional ownership interest in the firm. In bankruptcy, common stockholders are in principle entitled to any value remaining after all other claimants have been satisfied. Thus, risk is highest with common stock and so must be in its expected return. When investors buy common stock they receive certificates of ownership as a proof of their being part owners of the corporation. The certificate states number of shares and their par value. The common stockholders of a corporation are its residual owners, their claim is to income and assets come after creditors and preferred stock holders. As, the equity share holders is an absolute owner of the corporation, equity shareholders can control the affairs of the corporation by exercising the voting power.

Banks are always faced with different types of risks that may have a potentially negative effect on their business. Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking in business. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the safety of a bank's depositors. Risks are considered warranted when they are understandable, measurable, controllable and within a bank's capacity to readily withstand adverse results. Sound risk management systems enable managers of banks to take risks knowingly, reduce risks where

appropriate and strive to prepare for a future, which by its nature cannot be predicted.

1.2 Introduction of Risk and Return

Risk and return analysis is concerned to identify the sustainable position of financial sector. Risk and return is the basic concept in the corporate finance and it guides the modern theories and principle as well as it assists in taking various financial and qualitative financial decisions. The relationship between risk and return can be defined by the investors' perception about risk and demand for compensation. No investor will take any investment position in risky assets unless they are convinced of adequate compensation for the percept risks. In fact, there is positive relation between risk and return. Risk has been defined as the chance that the actual return deviation from the expected return and risk is the percept fact of life that is the product of uncertainty and its magnitude depend upon the degree of variability in future's uncertain cash flows. Risk and return is an indication of opportunity of losing investment value. It is insensible to talk about returns without talking about risks because investment decision involves the tradeoff between risk and return and the tradeoff between these two variables is positive. There is positive relation between risk and return. Thus an investor, in general, can attain more return through the selection of dominating assets that involves high risks.

Portfolio is the combination of investment in financial assets which help to reduce the degree of risk. The investor attempts to minimize the risk by making a portfolio which raises the value of investment. By the help of portfolio, risk is be diversified. Investor must seek to identify the securities having low risk and having higher return. However, return is not increased but by diversification of the fund in different assets making portfolio diversification or unsystematic risk

reduced and is eliminated if diversification is efficient. The risks which do not diversify are known as market risk or beta risk or systematic risk.

Potential investors are able to analyze risk and return of individual assets and portfolio as well. The study of risk and return enables to get sustainable profit by minimizing the risk for the purpose of realizing expected return, total risk, systematic and unsystematic risk which gives an idea to get sustainable profit and diversifying the risk to avoid future loss of investment in the assets

1.3 Focus of The Study

This study focused in the risk and return analysis of commercial banks. Among various commercial banks five banks are taken as sample, for the study. The study also focuses on how the various commercial banks overcome their risk through strength and tries to gain maximum return through opportunities.

1.4 Profile of Sample Bank

Standard Chartered Bank Nepal Limited

Initially registered as a joint-venture operation. Today the Bank is an integral part of Standard Chartered Group having an ownership of 75% in the company with 25% shares owned by the Nepalese public. The Bank enjoys the status of the largest international bank currently operating in Nepal.

With 18 points of representation, 23 ATMs across the country and with more than 350 local staff, Standard Chartered Bank Nepal Ltd. is in a position to serve its customers through an extensive domestic network. In addition, the global network of Standard Chartered Group gives the Bank a unique opportunity to provide truly international banking services in Nepal.

Standard Chartered Bank Nepal Limited offers a full range of banking products and services in Consumer banking, Wholesale and SME Banking catering to a wide range of customers encompassing individuals, mid-market local

corporate, multinationals, large public sector companies, government corporations, airlines, hotels as well as the comprising of embassies, aid agencies, NGOs and INGOs.

The Bank has been the pioneer in introducing 'customer focused' products and services in the country and aspires to continue to be a leader in introducing new products in delivering superior services. It is the first Bank in Nepal that has implemented the Anti-Money Laundering policy and applied the 'Know Your Customer' procedure on all the customer accounts.

Nepal Investment Bank Limited

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners. The French partner (holding 50% of the capital of NIBL) was Credit Agricole Indosuez, a subsidiary of one the largest banking group in the world. With the decision of Credit Agricole Indosuez to divest, a group of companies comprising of bankers, professionals, industrialists and businessmen, had acquired on April 2002 the 50% shareholding of Credit Agricole Indosuez in Nepal Indosuez Bank Ltd. The name of the bank has been changed to Nepal Investment Bank Ltd. upon approval of bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's office with the following shareholding structure.

A group of companies holding 50% of the capital. Rashtriya Banijya Bank holding 15% of the Capital. Rashtriya Beema Sansthan holding the same percentage. The remaining 20% being held by the General Public (which means that NIBL is a Company listed on the Nepal Stock Exchange)

Himalayan Bank Ltd. (HBL)

After the restoration of democracy in 2046, the number of joint venture bank grew dramatically with introduction of liberal and market oriented economic policy of HMG. HBL is the first joint venture bank managed by Nepali-Chief executive. With a paid up capital of Rs. 60 Million, Himalayan Bank is joint venture bank was incorporated in 1992 under the company act 1964, by the distinguished business personalities of Nepal in partnership with employees' provider fund and Habib Bank Ltd. one of the largest banks of Pakistan. The operation of the bank started from February 1993.

HBL is the first bank to introduce an automatic teller Machine in Nepal and has been a pioneer in introducing Nepalese's domestic credit card and debit card as well as ATM, telebanking, etc. are other special services provided by HBL along with regular commercial bank functions. It introduced interest banking debit card, Master Car, addition ATM, etc.

Nepal bank limited

Nepal Bank Limited, The first bank of Nepal was established in November 15, 1937 A.D (Kartik, 30, 1994). It was formed under the principle of Joint venture (Joint venture between govt. & general public). NBL's authorized capital was Rs. 10 million & issued capital Rs. 2.5 million of which paid-up capital was Rs. 842 thousand with 10 shareholders. The bank has been providing banking through its branch offices in the different geographical locations of the country. Nepal Bank Limited seeks to provide an environment within which the bank can bring unique financial value and services to all customers. It will be a sound institution where depositors continue to have faith in the security of their funds and receive reasonable returns; borrowers are assured of appropriate credit facilities at reasonable prices; other service- seekers receive prompt and attentive service at reasonable cost; employees are paid adequate compensation

with professional career growth opportunities and stockholders receive satisfactory return for their investment.

Shareholding Composition

S.N	Ownership	Percent
1	Government of Nepal	40.49
2	'A' Class Financial Institutions	4.92
3	NRB Licensed Financial Institutions	3.42
4	Other Institutions	0.52
5	General Public	49.94
6	Others	0.71
	Total	100

Laxmi bank limited

Laxmi Bank was incorporated in April 2002 as the 16th commercial bank in Nepal. With total assets of NPR 20 billion at April 2010 and 22 branches across the country Laxmi Bank is amongst the top financial institutions in the country in terms of size and quality of operations. Laxmi Bank is a Category 'A' Financial Institution and re-registered in 2006 under the "Banks and Financial Institutions Act" of Nepal. The Bank's shares are listed and actively traded in the Nepal Stock Exchange (NEPSE).

1.5 Statement of The Problem

Due to high competition in the market, commercial banks are providing more loan and advances against their client's insufficient deposit. Unsecured loan and investment may cause the liquidation of the commercial banks. If the collected funds are wrongly invested without thinking any financial risk, business risk and other risks, the bank cannot make profits and may even lost its existence.

Maximum investors do not have knowledge where to invest or how much risk will be suitable for current project. So, this research gives knowledge to investors to know how much risk is suitable for current project.

1.6 Objectives of The Study

The main objectives of the study are how to minimize risk and maximize return of commercial banks on the basis of selected financial tools. The major objectives of the study are as follows:

- i. To describe the risk and return that directly affects the commercial banks.
- ii. To access the systematic and unsystematic risk.
- iii. To identify the correlation between returns of commercial banks.
- iv. To analyze portfolio of risk and return

1.7 Significance of The Study

The investors seek to get good return in future but they don't have knowledge to analyze the risk and return in order to make investment. Due to the instability in political condition of Nepal, investors are afraid to make investment, which increases the huge amount of unutilized saving funds with general public. How much risk is involved in their investment? What is the real financial condition of the banks that they think to invest money? The investors must have the knowledge of risk and return analysis while making right investment decision. This study is beneficial to the researchers, professors, graduates, undergraduates, and existing as well as potential investors.

1.8 Research Hypothesis

The data collection for analysis of risk and return is secondary data. This study has been made by using certain methodology and based on available data which

is related with the study. For analysis of risk and return financial tools like return on assets and return on equity are used and statistical tools like expected return, standard deviation, coefficient of variation and correlation coefficient are used.

1.9 Limitations of The Study

Every research has its own limitations. So, some limitations are listed below:

- a. Among thirty-one commercial banks, five banks are taken into consideration.
- b. The study is based on secondary data collected from the respective banks and published sources.
- c. The study cover the relevant data from 2003/04A.D. to 2008/09A.D.
- d. The study concerned only with the analysis of risk and return of the banks.

1.10 Organization of The Study

Chapter 1- Introduction, which describes general background, focus of the study, statement of problem, objectives of the study, importance and limitation of the study.

Chapter 2- Review of literature, which includes review of theoretical and review of related studies.

Chapter 3- Research Methodology, which contains research design, population and sample, sources of data, data collection techniques, data analysis tools and limitations of the methodology.

Chapter 4- Data Presentation and Analysis which contains data using different tools and major findings of the study.

Chapter 5- Summary, Conclusions and Recommendations includes summary, conclusion and recommendations regarding the subject matter.

CHAPTER-TWO

REVIEW OF LITERATURE

Review of literature about “risk and return analysis of different commercial banks”. The survey of related literature or the other relevant propositions in the related area of study is review of literature. Review of literature is a summary of writing of recognized authorities of previous research with what is already known and what is still unknown. Review of literature means reviewing research studies or other relevant propositions in the related area of the study so that all the past studies, their conclusions and deficiencies may be known and further research can be conducted. It is an integral and mandatory process in research work.

The main reason for the full review of research of the past is to know the outcomes of those investigations in the area where similar concepts and methodologies had been used successfully. In this process, efforts has been made to examine and review some of the related books, articles published in different economic journals, magazines, newspapers, websites, etc. This study is divided into two parts, one is conceptual framework and another is review of previous study.

2.1 CONCEPTUAL FRAMEWORK

Conceptual framework deals with the theoretical aspects of investment, risk, return, portfolio, etc.

2.1.1 Investment

What motivates a person or an organization to buy securities, rather than spending their money immediately? The most common answer is savings -- the desire to pass money from the present into the future. People and organizations

anticipate future cash needs, and expect that their earnings in the future will not meet those needs. Another motivation is the desire to increase wealth, i.e. make money grow. Sometimes, the desire to become wealthy in the future can make you willing to take big risks. The purchase of a lottery ticket, for instance only increases the probability of becoming very wealthy, but sometimes a small chance at a big payoff, even if it costs a dollar or two, is better than none at all. There are other motives for investment, of course. Charity, for instance. You may be willing to invest to make something happen that might not, otherwise -- you could invest to build a museum, to finance low-income housing, or to reclaim urban neighborhoods. The dividends from these kinds of investments may not be economic, and thus they are difficult to compare and evaluate. For most investors, charitable goals aside, the key measure of benefit derived from a security is the rate of return.

Investment is the commitment of money or capital to purchase financial instruments or other assets in order to gain profitable returns in the form of interest, income (dividend) or appreciation of the value of the instrument. Investment is involved in many areas of the economy, such as business, management and finance no matter for households, firms or governments. An Investment involves the choice by an individual or organization such as a pension fund, after some analysis or thought, to place or lend money in a vehicle, instrument or asset, such as property, commodity, stock, bond, financial derivatives (e.g. futures or options), or the foreign asset dominated in foreign currency, that has certain level of risk and provides the possibility of generating returns over a period of time.

Investment comes with the risk of the loss of the principal sum. The Investment that has not been thoroughly analyzed can be highly risky with respect to the Investment owner because the possibility of losing money is not within the owner's control, but the Investment depends within owner's mind whether the

purpose is for dealing the resource to someone else for economic purpose or not.

In the case of Investment, rather than store the goods produced or its money equivalent, the investor chooses to use that goods either to create a durable consumer or producer goods to another in exchange for either interest or a share of the profits. In the first case, the individual creates durable consumer goods, hoping the services from the goods will make his life better. In the second case, the individual becomes an entrepreneur using the resource to produce goods and services for others in the hope of a profitable sale. The third case describes a leader, and the fourth describes an investor in a share of the business. In each case, the consumer obtains a durable asset or investment and accounts for that asset by recording an equivalent liability. As time passes, and both prices and interest rates change, the value of the asset and liability also change.

An asset is usually purchased, or equivalently a deposit is made in a bank, in hopes of getting a future return or interest from it. The term “investment” is used differently in economics and in finance. Economists refer to a real investment (such as a machine or a house), while financial asset, such as money that is put into bank or the market, which may then be used to buy a real asset.

In finance, investment is the commitment of funds by buying securities or other monetary or paper (financial) assets in the money markets or capital markets, or in fairly liquid real assets, such as gold or collectibles.

2.1.2 Investment Process

The investment process describes how an investor makes decision to invest makes decision to invest, so that it minimize the risk by making a portfolio which raises the value of investment. The investment process is as follows:

- a) Set Investment Policy:** It is rightly said that genuine idea can make a great difference, so implies to policy. Policy is the only thing that differs from one institution to another. A bad or incorrect policy may lead to collapse of institution and a good policy to boom thus well identified and judged policy is the foremost prerequisite for any investor on an institution. Thus, to set investment policy is essential. This step deal while making investment, investor must identify the securities which have low risk and higher return.
- b) Perform Security Analysis:** Security analysis involves examining a number of individual securities within the broad categories of financial assets. The purpose of such examinations is to identify the price of securities whether they are underpriced or overpriced, their expected return and risk and so on.
- c) Construct a Portfolio:** Construction of portfolio involves identification of specific securities in which to invest, along with the proportion of investable wealth to be put into each security. The purpose of constructing portfolio by investor is to maximize return at whatever level of risk.
- d) Revise the Portfolio:** Portfolio revision involves both realizing that the currently held portfolio is not optimal and specifying another portfolio to hold with superior risk-return characteristics. The investor must balance the cost of moving to the new portfolio against the benefits of the revision.
- e) Evaluate the Portfolio Performance:** Evaluate the portfolio performance involves determination of the actual performance of a portfolio in terms of risk and return and compares the performance with that of an appropriate “benchmark” portfolio.

2.1.3 Risk and Return

Risk means simply the probability of something happening. Risks are simply future issues that can be avoided or mitigated, rather than present problem that must be immediately addressed. Total risk of an asset can be divided into two parts. They are systematic risk and unsystematic risk. Systematic risk is also called non-diversifiable risk. It is market related. In other words, it arises from the changes in the economy and market condition. For example, high inflation, recession, impact of political factors, wars, depression, long-term changes, etc, which are beyond the control of company management. It affects all the firms of the market. The portion of risk is non-diversifiable and cannot be reduced. Sometimes, systematic risk is called market risk.

The unsystematic risk is non-market factors related. In other words, it arises from the project specific factors, for example, inefficiency of management, failure in new product in production, employee strikes, and any other event that is unique to the company. The portion of the risk can be diversified away. It is also called diversifiable risk or avoidable risk or company-specific risk or non-market risk.

The concept of return has different meaning to different investor. Some investor seek near term cash inflows and give less value to move distant return such investor might purchase the stock of other firm that pays a large cash dividends. Other investors are concerned primarily with growth. They would seek projects that offer the promise of long term, higher than average growth of sales, earning and capital appreciation.

With some investment, an individual or business spends money today with the expectation of earning even more money in the future. Thus, the concept of return provides investors with the convenient way of expressing the financial performance of an investment.

Return is the benefit associated with ownership includes the cash dividends paid during the year together with an appreciation in market price or capital gain realized. More formally the one period return is:

$$\text{one period return} = \frac{\text{Dividends} + (\text{Ending price} - \text{Beginning price})}{\text{Beginning price}}$$

Risk is a possibility of loss. Investments with greater risk require a higher return than investments with lower risk. A risk-return trade-off is related to the preference of the investor. The most common statistical measure of an asset's risk is the standard deviation, is as follows:

Step 1: Calculate the expected rate of return:

$$\text{Expected return } (\bar{K}_i) = \sum_{i=1}^n K_i P_i$$

Step 2: Subtract expected rate of return from each possible outcome to obtain deviation.

$$\text{Deviation} = K_i - \bar{K}_i$$

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

$$\text{variance } (\sigma^2) = (K_i - \bar{K}_i)^2 \times P_i$$

Step 4: The standard deviation is found by obtaining the square root of the variance.

$$\text{Standard Deviation } (\sigma) = \sqrt{(K_i - \bar{K}_i)^2 \times P_i}$$

Where,

\bar{K}_i = Expected rate of return on stock i.

n = Number of year that the return is taken.

P_i = Probability of stock i.

σ = Standard deviation of returns on stock 'i' during the time period n.

2.1.4 Financial Risk

Entrepreneurial activities and risk-taking are inextricably linked to each other. Risk-taking is an essential component of doing business considering basically every entrepreneurial activity is exposed to a greater or lesser degree of uncertainty. One can think of risk as the uncertainty about the future demand for products and services, changes in the business environment and competition and production technologies. In addition to these general business risks, there also exist risks that are caused by the capital structure of a company such as market risks, credit risks, operational risks and liquidity risks.

Risk is discussed in the context of banks and other financial institutions. Following the regulatory approach in the global banking industry, the three major risk categories are market risk, credit risk as well as operational risk. Nevertheless they do not form an exhaustive list of possible risks affecting a financial institution, as various other risks such as reputation risk, strategic risk, liquidity risk and model risk may occur. Particularly, the latter two (i.e. liquidity risk and model risk) have received a lot of attention recently and thus will be briefly discussed as well.

a)Market Risk

- According to McNeil, Frey and Embrechts (2005) the best known type of risk in banking is market risk, which is the risk of change in the value of a financial security (e.g. a derivative instrument) due to changes in the value of their underlying, such as stock prices, bond prices, exchange rates and commodity prices. In other words, it is risk that changes in financial market prices and rates, which will reduce the value of a security or a portfolio. Market risk usually arises from both unhedged positions as well as imperfect hedged. M.Crouhy, (2005) distinguish four major types of market risks:

- Interest-Rate Risk is caused by changes in the market interest rate. Usually the value of fixed-income securities such as bonds is highly dependent on those interest rates. For instance, when market interest rates raise, the value of owning an instrument offering fixed interests payments falls. Moreover, J.C.Hull (2007) emphasizes that managing interest-rate risk is more complex than managing the risk arising from other market variables such as equity prices, exchange rates and commodity prices. On account of the many different interest rates in a given currency, e.g. treasury rates, interbank borrowing and lending rates, mortgage rates etc. These tend to move together, but are normally not perfectly correlated. Furthermore the term structure is only known with certainty for a few specific maturity dates, while the other maturities must be calculated by interpolation.
- Equity-Price Risk is associated with the volatility of stock prices. The general market risk of equity refers to the sensitivity of the value of a security to change in the market portfolio. According to the portfolio theory, the market risk, i.e. the systematic risk, cannot be eliminated through portfolio diversification, whereas the unsystematic risk can be completely diversified away.
- Foreign-Exchange Risk arises from open or imperfectly hedged positions in a particular foreign currency. These positions may arise due to natural consequences of business operations such as cross-border investments. The major drivers of foreign-exchange risk are imperfect correlations in the movement of currency prices and fluctuations in international interest rates. Therefore, one of the major risk factors large multinational corporations are exposed to, are foreign exchange volatilities, which may on the one hand diminish returns from cross-border investments or on the other hand increase them.

- Commodity-Price Risk differs considerably from interest-rate and foreign-exchange risk, as commodities are usually traded in markets where the supply of most commodities lies in the hands of a just few market participants, which may result in liquidity issues often followed by exacerbating high levels of price volatility. Moreover, storage costs heavily affect commodity prices which vary considerably across commodity markets (e.g. from gold, to electricity, to wheat) on the one hand and on the other hand the benefit of having a certain commodity on stock provides a convenience yield.

b) Credit Risk

Another important risk category is credit risk: The risk that a change in the creditworthiness of a counterparty affects the value of a security or a portfolio. Not receiving all promised repayments on outstanding investments such as loans and bonds due to default of the debtor, is the extreme cases. When a company goes bankrupt, the counterparty usually loses the part of the market value that cannot be recovered following the insolvency. The amount expected to be lost is normally called the loss given default whereas the recovery rate is defined as the market value immediately after default (J.C.Hull, 2007).

A change in the creditworthiness usually does not imply a default, but rather that the probability of a default increases. A deterioration of the credit rating leads to a loss for the creditor since a higher marked yield is required to compensate for the increased risk which results in a value decline of the debts (e.g. bonds). M.Crouhy, (2005) stressed that institutions are also exposed to the risk that counterparty might be downgraded by a rating agency. Rating agencies such as Moody's and Standard & Poor (S&P) provide ratings that describe the creditworthiness of corporate bonds and therefore provide information about default probabilities. If a company is downgraded by a rating agency due to a

negative long-term change in the company's creditworthiness, the value of the counterparty's securities diminishes.

c) Operational Risk

A further important risk category recently receiving a lot of attention is operational risk. Operational risk is not only more complex to quantify than market and credit risk but also more difficult to manage as it is a necessary part of doing business. J.C.Hull (2007) mentions that there are many different definitions to operational risk and that it is tempting to consider it as a residual risk category, covering any risk faced by a bank that is not either market or credit risk. Nevertheless, this definition of operational risk might be too broad. To define it straightforward, as its name implies, it is the risk arising from operations. Thus, the risk relates to potential losses resulting from inadequate systems, management failures, faulty controls, frauds, and human errors.

According to the Basel Committee on Banking Supervision (2004) operational risk is defined "as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events". Apparently the regulator includes, besides the impact of internal risks, the impact of external risks such as natural disasters (e.g. earthquakes and fires).

Operational risk is not independent from other financial risks. Operational risk losses are for instance frequently contingent on market movements, which enhance the complexity of their classification. One can relate it to a trader taking huge risk in order to receive a tremendous bonus at the end of the year. If – as a result of adverse market movements – the bank suffers huge losses, the risk that led to it can be classified as either operational or market risk, depending on whether the trader was allowed to take that much risk or not.

d) Model Risk and Liquidity Risk

While banks have always been exposed to threats such as bank robberies and white-collar frauds, one of today's most serious threats is caused by the valuation of complex derivative products, which has come to be known as model risk. Since Black, Scholes and Merton in 1973 published their famous option-pricing model, there has been a tremendous increase in the complexity of valuation theories. These models allow for a pricing of a huge number of financial innovations such as caps, floors, credit derivatives, and other exotic products. As a negative side effect to the rise in complexity of financial products, the accompanying model risk has increased as well. For instance, E. Derman, (2004) emphasizes in his book "My Life as a Quant" that this increase was essentially caused by the nature of the models used in finance. In principle, most of these applied models, including the Black-Scholes option-pricing model, have been derived from models encountered in physics. While models of physics are highly accurate, models of finance describe the behavior of market variables which in turn unlike in physics depend on the actions of human beings. Therefore, the models are at best approximate descriptions of the market variables. As a result the use of such models in finance is always accompanied – to a greater or lesser extent – by model risk.

J.C.Hull (2007) mentions two main types of model risk. The first type concerns the risk that a valuation model could provide wrong prices, which can lead to an investor to buy or sell a product at a price that is either too high or too low. The second type relates to models that are used to assess risk exposure and to derive an appropriate hedging strategy in order to mitigate losses. For instance, a company may use a wrong or inadequate model to hedge its positions against an adverse movement of the underlying assets. It, however, is important to bear in mind that a theoretical valuation model is only essential for pricing products that are relatively or even completely illiquid. If there is an active market for a

product, market prices are usually the best indicator of an asset's value and therefore pricing models only play a minor role.

The risk that a firm does not have enough cash and cash equivalents in order to meet its financial obligations as well as the risk of not having enough buyers or sellers on the market is known as liquidity risk. M.Crouhy (2005), distinguished two dimensions of liquidity risk, namely funding liquidity risk and asset liquidity risk. Funding liquidity risk relates to a firm's ability to raise the required cash to meet its liabilities. Asset liquidity risk, on the other hand, arises if an institution cannot execute a transaction at the prevailing market price due respectively to a lack of supply and demand.

2.1.5 Risk Management

It is beyond dispute that the future cannot be exactly predicted, as it is always uncertain to a certain degree. However, the risk that is caused by this uncertainty can be managed. Risk management is therefore how financial institutions actively select the overall level of risk that, given their risk taking ability, is optimal for them. Yet it is important to note that risk management also encompasses the duality of the term risk, as risk management is not only about risk reduction.

According to McNeil (2005), a bank's attitude to risk is rather active than defensive, as banker actively and willingly take on risk in order to benefit from return opportunities. Risk management can therefore be seen as the core competence of a bank. Bankers are using their expertise, market position and capital structure to manage risks by restructuring and transferring them to various market participants.

M.Crouhy (2005), on one hand refers risk management to be widely acknowledged as one of the most creative forces in the world's financial markets. An example, is the rapid development of the huge market for credit

derivatives, which emphasize the dispersion of risk (i.e. the credit risk exposure) of an institution to those who are willing, and presumably able, to bear it.

On the other hand, M.Crouhy (2005), mention extraordinary failures in risk management such as Long-Term Capital Management and the string of financial scandals associated with the millennial boom in equity and technology markets (e.g. Enron and WorldCom). These are only a few examples of where risk management has not been able to prevent market disruptions and business accounting scandals.

The reason for this ambiguity lies in the ambivalent nature of the new techniques in risk management. They enhance market liquidity leading to a far more flexible, efficient and resilient financial system. At the same time, however, they are according to N.Instefjord (2005), also a potential threat to bank stability and may expose a financial institution to even more risk.

Today's risk management has changed compared to traditional risk management, which was basically identifying, measuring, managing, and minimizing risk. The role of today's risk management has changed from minimizing risk to efficient capital allocation and become more important, as it can increase business profitability by allocating capital and the entrepreneurial attention on the areas with the highest risk and return ratio. Hence, the application of RAPMs has become popular in the finance industry in order to evaluate and compare different business units.

Risk Management Process

Risk Management is a discipline at the core of every bank and encompasses all activities that affect its risk profile. It involves identification, measurement, monitoring and controlling risks to ensure that:

a) The individuals who take or manage risks clearly understand it.

- b) The organization's Risk exposure is within the limits established by Board of Directors.
- c) Risk taking Decisions are in line with the business strategy and objectives set by Board of Directors.
- d) The expected payoffs compensate for the risks taken.
- e) Risk taking decisions are explicit and clear.
- f) Sufficient capital as a buffer is available to take risk.

Each situation is unique, in terms of roles and capabilities of individuals and the structure, activities and objectives of the bank. Risk management practices considered suitable for one bank may be unsatisfactory for another. Because of the vast diversity in risk that banks take, there is no single prescribed risk management system that works for all. Moreover, in the context of a particular bank, the definition of a sound or adequate risk management system is ever changing, as new technology accommodates innovation and better information and as market efficiency grows. Each bank should tailor its risk management program to its needs and circumstances. To remain competitive, banks must adapt and constantly improve their process.

A sound risk management system should have the following elements:

- Active board and senior management oversight
- Adequate policies, procedures and limits
- Adequate risk measurement, monitoring and management information system; and
- Comprehensive internal controls.

It should not be understood that risk management is only limited to the individual(s), who are responsible for overall risk management function. Business lines are equally responsible for the risks they are taking. Because the line personnel can understand the risks of their activities and any lack of

accountability on their part may hinder the sound and effective risk management.

Financial Risk Management

An important issue is whether there should be any investment in risk management in the first place. Assuming frictionless markets, in equilibrium all risks should be appropriately priced. Hence, if there were no capital market imperfections, Modigliani and Miller's Proposition I – the so-called capital structure irrelevance theorem – would apply and the problem of capital allocation would be nonexistent. As a result there would be no reason of why a financial institution would want to manage risk at all. Yet, financial markets are neither frictionless nor are they always in equilibrium.

As an example, a fundamental role of banks and other financial institutions is to invest in illiquid financial assets (e.g. loans to small or medium sized companies). These assets cannot be traded frictionless in the capital markets, due to their information intensive nature. In fact, financial institutions and banks, in particular, face market imperfections such as costs of financial distress, transactions costs and regulatory constraints, with the consequence that risk management, capital structure and capital budgeting are interdependent (Copeland, 2005).

Consequently, there indeed exist various reasons in reality for managing risk. As stated by McNeil (2005), most stakeholders, including shareholders, management and regulators, have an incentive in the management of risk, since it is usually beneficial for a financial institution. Modern society relies on a smooth functioning of the financial system. It is therefore common in best interest to regulate and manage the risk imperiling such systems in order to avoid systemic risk, which in extreme situations may disrupt the normal functioning of the entire financial system. The literature provides various other

examples which are in favor of investments in risk management, such as it reduces the costs of financial-distress and also the costs of taxes. Reader interested in a more comprehensive overview may refer Froot and Stein (1995).

2.1.6 Risk Measurement

- **Risk Measures**

A central issue in modern risk management is measuring and quantifying risk. To set risk limits as well as determining adequate risk capital as a cushion a financial institution requires against unexpected future losses, belong to the most important functions of risk measurement.

Various methods exist to measure these risks, all with the target of capturing the variation of a company's performance. J. Bessis (2002) distinguishes three categories of risk measures.

- Volatility captures the standard deviation of a target variable around its mean. The standard deviation is the square root of the average squared deviation of a target variable from its expected value. Since volatility captures both upside and downside variations, it is a symmetric risk measure which assigns the same amount of risk to deviations above and below the mean. Therefore, volatility lacks in providing a complete picture of risk in the case the target variable has an asymmetric distribution.
- Sensitivity captures the deviation of a target variable due to a movement of a single underlying parameter. Sensitivities are normally market risk related as they relate value changes to market parameters such as interest-rate risk. Among all sensitivity measures, the most famous ones are the Duration for bond portfolios and the Greeks for portfolios of derivative instruments. Even though these measures provide useful information regarding the robustness of a portfolio with respect to certain events, they fail to quantify

the overall riskiness of a position. Furthermore, they cause problems when risks need to be aggregated (McNeil, 2005).

- Downside Risk Measures are – unlike the volatility – asymmetric risk measures which focus on adverse deviations of a target variable only. The lower partial moments (LPMs) of order and the quantile-risk measures such as the Value-at-Risk and the expected shortfall (ES) are the most widely used downside risk measures, Value-at-Risk being the most prominent one.

These downside risk measures focus exclusively on extreme downside moves of the risk factors, rather than considering both upside gains and downside losses. This makes downside risk measures intuitively the most reasonable risk measure, as they are consistent with the human natural asymmetric perception of risk. Measures based on the concept of downside risk are useful in particular when the target variable has a highly skewed distribution, given that skewed distributions need more than the first two statistic moments to be adequately specified. However, if the distribution of a variable is symmetric and not asymmetric, downside risk measures do not provide a more comprehensive picture than the symmetric volatility measure. Unfortunately, the calculation of most downside risk measures is fairly complex, especially when considering derivative financial products with asymmetric payoffs. Already Markowitz (1959) recognized the limitations of the mean-variance approach and suggested to use downside risk measures rather than the volatility measure. Recent risk management literature has focused on downside risk measures such as the Value-at-Risk, whereas average risk measures, in particular the volatility measure, play a minor role (Martellini, Priaulet & Priaulet, 2003). Intuitively this makes sense, as in risk management it is usually most important to obtain a feeling of what deteriorating a financial situation can become in the case certain risk factors turn out to be adverse.

- **Approaches of Risk Measurement**

In order to provide a comprehensive overview of this subject, it is useful to refer to a slightly different approach mentioned by McNeil et al. (2005), which give an overview of existing techniques to measure risk in financial institutions. Moreover, these approaches are grouped into four different categories:

- The Notional-Amount Approach is the oldest approach quantifying the risk of a portfolio of risky assets. The calculation of the risk is fairly simple and the sum up of the notional values is weighted by each security's risk factor class. However, even though this approach seems to be crude, McNeil (2005) mention that some "variants of this approach are still in use in the standardized approach of the Basel Committee rules on banking regulation".
- Factor-Sensitivity Measures are an approach identical to the risk measure category sensitivity mentioned above. A further explanation is therefore not necessary.
- Risk Measures Based on a Loss Distribution are the most popular approach, being that most modern risk measures are based on a profit and loss (P&L) distribution. A P&L distribution tries to provide an accurate picture of the existing risk in a portfolio or even of the financial institution's overall position in risky assets. The P&L distribution is the distribution of the change in value. Since the focus is on the probability of the occurrence of large losses or more formal the upper tail of the loss distribution, it is according to McNeil et al. (2005) common to drop the P from P&L and to simply use the term loss distribution. Both variance and Value-at-Risk are based on such a loss distribution and accordingly rely on historic data.
- Scenario-Based Risk Measures are a rather new approach to measure the risk of a portfolio, even though it actually pre-dates Value-at-Risk modeling approach. As a matter of fact, the first commercial application of scenario

stress testing was already established in the 1980s with the Chicago Mercantile Exchange to determine its margin requirements. The risk of a portfolio is measured by considering possible future scenarios (i.e. risk-factor changes) such as a rise in the exchange rate and a simultaneous drop in an underlying stock. The total portfolio risk is then defined as the maximum loss of the portfolio taking all scenarios into consideration. This corresponds more or less to a sensitivity analysis that examines the loss profile of a portfolio, by considering a number of changes in certain risk factors. Given the tremendous number of possible historical and hypothetical scenarios, it is important to distinguish between the major risks drivers of a portfolio and the minor ones. Commonly, these major risk factors are based on the market risk since these risk factors are relatively easy to obtain, especially as compared with credit risk and operational risk. Today, loss distributions are the most popular approach to quantify risk. Yet, when working with loss distributions, two major problems emerge. First, loss distributions are based on historical asset returns. This historical data might be of limited use in predicting future risks. Second, it is difficult to accurately estimate loss distributions; in particular for large portfolios whereas their calculation becomes extremely complex. Nevertheless, these issues are according to McNeil (2005) not arguments against the use of loss distributions. Rather, it is important to improve the way these loss distributions are estimated and to use more caution when applying risk measures based on loss distributions.

Besides the approaches presented above, another approach, the Extreme Value Theory (EVT) has received a lot of attention recently. EVT provides a framework to formalize the study of behavior in the tails of a distribution. Similar to the scenario stress tests, EVT tries to capture extreme events (also referred to as low probability events) that according to the loss distribution

have a probability of virtually zero percent. For instance, a move of five standard deviations in a market variable is such a rare event that under the assumption of normal distribution this should occur only once every 7'000 years. Yet, they actually do occur from time to time.

Best example is the subprime crisis that began in mid-2007, revealing that the current regulatory capital framework for banks does not capture some key risks. Moreover, the crisis showed that a quantile-based estimation of risk capital usually cannot cover the extreme losses that can incur in unexpected exceptional circumstances. As a result, new approaches have been developed in the last years that look beyond volatility and Value-at-Risk. (Alexander, 2008b; Haan and Ferreira, 2006).

2.1.7 Portfolio Theory and Diversification

Portfolio is an appropriate mix or collection of investments held by an institution or an individual. Holding a portfolio is a part of an investment and risk-limiting strategy called diversification. Portfolio theory is a theory of investment which attempts to maximize portfolio expected return for a given level of expected return, by carefully choosing the proportions of various assets. An optimal stock portfolio is a stock portfolio consisting of those stocks that an individual wishes to own, configured in such a way that they generate the greatest or optimal return statistically possible for the particular amount of risk an investor is willing to accept.

Harry Markowitz introduced this theory in a 1952 article and a 1959 book. This theory assumes that investors are risk averse, meaning that given two portfolios that offer the same expected return, investors will prefer the less risky one. Thus, an investor will take on increased risk only if compensated by higher expected returns. Conversely, an investor who wants higher expected returns must accept more risk.

Diversification means reducing risk by investing in a variety of assets. If the assets value does not move up or down in perfect synchrony, a diversified portfolio will have less risk than the weighted average risk of its constituents. Therefore, any risk-averse investor will diversify to at least some extent, with more risk-averse investors diversifying more completely than less risk-averse investors.

Diversification is one of two general techniques for reducing investment risk. The other is hedging. Diversification relies on the lack of a tight positive relationship among assets' returns and works even when correlation are near zero or somewhat positive. Hedging relies on negative correlation among assets, or shorting assets with positive correlation. The risk reduction from diversification does not mean anyone else has to take more risk.

The simplest example of diversification is provided by the proverb "don't put all your eggs in one basket." Dropping the basket will break all the eggs. Place each egg in a different basket is more diversified. There is more risk of losing one egg, but less risk of losing all of them.

Diversification techniques for reducing a portfolio's risk:

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

b) Diversification Across Industries: Some investment counselors advocate selecting from different industries to achieve better diversification. It is certainly better to follow this advice than 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.

c) Superfluous Diversification: Such portfolio diversification that has excess number of assets is 10-15 known as superfluous diversification. It refers to the investors spreading himself in so many investments on his portfolio. The investor finds it impossible to manage the assets on his portfolio because the management of a large number of assets requires knowledge of the liquidity of each investment, return; the tax liability and this will become impossible without specialized knowledge. He also finds it both difficult and expensive to look after a large number of investments. If he plans to switch over investments by often selling and buying assets expecting a high rate of return, he involves himself in high transaction costs and more money will be spent in managing superfluous diversification.

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

The Markowitz model is based on several assumptions regarding investor behavior.

- 1) Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.
- 2) Investors maximize one-period expected utility, and their utility curves demonstrate diminishing marginal utility of wealth.

- 3) Investors estimate the risk of the portfolio on the basis of the variability of expected returns.
- 4) Investors base decisions solely on expected return and risk, so their utility curves are a function of expected return and the expected variance or standard deviation of returns only.
- 5) For a given risk level, investors prefer higher returns to lower returns. Similarly, for a given level of expected return, investors prefer less risk to more risk.

2.1.8 Portfolio's Return and Risk

The expected return on a portfolio is simply weighted average of the expected returns on the individual assets in the portfolio. The standard deviation and variance measured the portfolio risk.

Expected return of portfolio

$$E(R_p) = \sum_{i=1}^n E(R_i) \times W_i$$

Where, $E(R_i)$ = Expected return of security i,

W_i = Weight of security i,

$E(R_p)$ = Expected return on portfolio,

n = Number of stock in the portfolio.

Standard deviation of portfolio

$$\text{Standard deviation of portfolio, } \sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 \text{Cov}_{AB} W_A W_B}$$

Where,

$W_A W_B$ = Weight of security 'A' and weight of security 'B'.

$\sigma_A \sigma_B$ = Standard deviation of security 'A' and standard deviation of security 'B'.

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

Covariance

The covariance is a statistical measure of how the returns of two-assets move together. A covariance between the rate of return for the assets that is positive indicates that the rate of return tend to move to the same direction at the same time. If covariance is negative the rate of return of the assets tend to move in opposite direction and zero value of covariance means there is no relationship between two assets at all.

Covariance between stock A and B,

$$\text{COV}_{(A,B)} = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N-1}$$

Where, \bar{R}_A and \bar{R}_B = mean return on stock 'A' and stock 'B'.

R_A = return on stock A,

R_B = return on stock B,

N = number of observations.

Correlation

The correlation measure the relationship between two assets

$$\text{Correlation coefficient between two stocks, } r_{AB} = \frac{C_{ov_{AB}}}{\sigma_A \sigma_B}$$

Where,

σ_A, σ_B = Standard deviation of asset A, Standard deviation of asset B.

COV_{AB} = Covariance between assets A and B.

Capital Asset Pricing Model (CAPM)

William F. Sharpe, John Lintner and Jan Mossin simultaneously and independently developed the capital asset pricing model (CAPM). The relationship between an asset's return and its systematic risk can be expressed by the CAPM, which is also called the security market line (SML). The CAPM

is model for pricing an individual security or a portfolio. For individual securities, we make use of the security market line (SML) and its relation to expected return and market-related risk or systematic risk (beta) to show how market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. The equation for the SML is;

$$E(R_i) = R_f + [E(R_m) - R_f] \beta_i$$

Where, $E(R_i)$ = Required rate of return,

R_f = Risk-free rate,

$E(R_m)$ = Expected return on the market,

$[E(R_m) - R_f]$ = Market premium or risk premium,

β_i = Beta or systematic risk.

$\beta_m = 1$

M = Market risk

Figure (2.1)

A graph of the SML is given in the figure below.

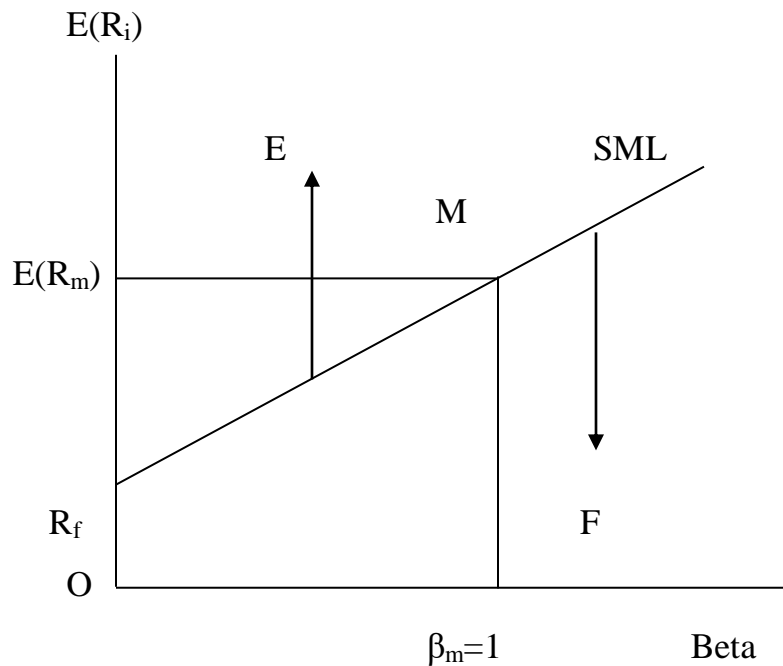


Figure (2.1): The CAPM or Security Market Line

In the above figure (2.1), two assets are listed i.e. E and F. Share E lies above the SML, its expected return is greater than its required return, share E is undervalued. Share F lies below SML, its expected return is less than its required return, share F is overvalued.

2.2 Review of Empirical Studies

Several studies have been completed on Risk and Return by applying different tools of data. This section briefly reviews the literature on risk and return.

Sharpe (1964) Study

William F. Sharpe studied a capital assets pricing model(CAPM) The capital asset pricing model (CAPM) is used to determine a theoretically appropriate required rate of return of an asset, if that asset is to be added to an already well-diversified portfolio, given that asset's non-diversifiable risk. The model takes into account the asset's sensitivity to non-diversifiable risk (also known as systematic risk or market risk), often represented by the quantity beta (β) in the financial industry, as well as the expected return of the market and the expected return of a theoretical risk-free The CAPM is a model for pricing an individual security or a portfolio. For individual securities, we make use of the security market line (SML) and its relation to expected return and systematic risk (beta) to show how the market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. Therefore, when the expected rate of return for any security is deflated by its beta coefficient, the reward-to-risk ratio for any individual security in the market is equal to the market reward-to-risk ratio. Thus, the market reward-to-risk ratio is effectively the market risk premium and by rearranging the above equation and solving for $E(R_i)$, we obtain the Capital Asset Pricing Model (CAPM).

$$E(R_i) = R_f + [E(R_m) - R_f] \beta_i$$

Where:

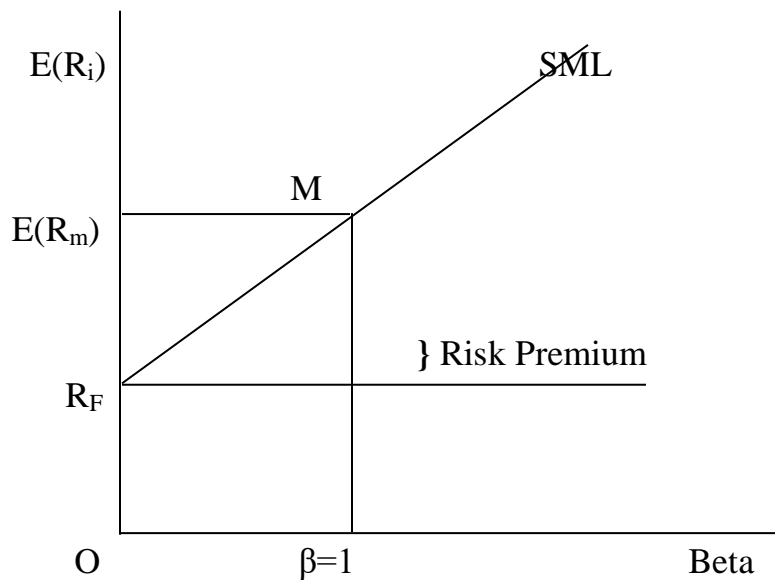
$E(R_i)$ is the expected return on the capital asset

R_f is the risk-free rate of interest such as interest arising from government bonds

β is the sensitivity of the expected excess asset returns to the expected excess market returns.

M is market risk.

Figure (2.2)
Security Market Line



The Security Market Line, seen here in a graph, describes a relation between the beta and the asset's expected rate of return.

Bowman (1980) Study

Bowman discovered that within most industries, risk and return were negatively correlated. He describes that research outcome as a paradox for strategic management, since the findings ran counter to the conventional wisdom that argued for a positive association. He also argued that firm's risk attitudes may influence risk-return profiles and that more troubled firms may take greater risks.

This study attempted to explore the role of attitudes toward risk in the management of strategic risk and thus to enrich understanding of Bowman's risk-return paradox. Recent research in behavioral decision theory and prospect theory (Kahneman & Tversky, 1979; Laughunn, Payne, & Crum, 1980) has suggested that individuals use target, or reference, points in evaluating risky choices. Further, individuals are uniformly risk averse but adopt a mixture of risk-seeking and risk-averse behaviors.

Elton and Gruber (1979) Study

This study named "Expected Return, realized Return and Asset Pricing Tests" one of the fundamental issues in finance is what the factors that are affect expected return on assets, the sensitivity of expected return to those factors, and the reward for bearing this sensitivity. The data set covers the period from July1, 1991 through December 31, 1997. The history shows almost all the testing is done realized return as a proxy for expected return. Using realized return, as a proxy for expected return is that the unexpected returns are independent, so that as the observation interval increases they tend to a mean of zero.

The purpose of this article is to convince the reader there is a distinction and worth to find out alternative ways to estimate expected returns.

Following preliminary tests are done in the study:

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

According to the researchers “Realized Returns are a very poor measure of expected return and that information surprises highly influence a number of factors in asset pricing model.” The empirical use of judgment and factor dependability can be used to draw implication which will govern the great extent the pricing decision fix and accurate.

Pandey (2000) Study

The study conducted by Mrs. Pramina Pandey also related with research study. The main objective of the study was to identify the “risk and return situation of the insurance companies’ common stock” which concluded that,

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

Pandey (2000) Study

Sijapathi Pandey has conducted a study on risk and return analyze of common stock investment by taking six insurance companies as sample. Analytical tools like rate of return, standard deviation, coefficient of variance, beta coefficient and t-test have been used. According to this study, the main objectives are to calculate the risk and return of the common stocks and portfolio and also to understand and identify the problem faced by the individual and insurance companies. The major findings of the study are generally public have least understanding about the risk of the investments which may be due to poor education, lack of adequate information, etc., that may obstruct the development of stock market. There is no significant different between the performance of common stock of insurance companies and overall market portfolio. The study covered five years period.

Upadhyaya (2001) Study

The study “Risk and Return on Common Stock Investment of Commercial Banks in Nepal” conducted by Mr. Sudeep Upadhyaya. This study has taken eight commercial of banks with covering five years period 1994/95 to 1998/99. The main objectives of the study were to assess the risk associated with returns on common stock investment of the listed commercial banks on the basis of selective financial tools to evaluate common stocks of listed commercial banks in terms of risk and return and analyze the volatility of common stocks and other relevant variables as an affecting factor in portfolio construction of common stocks.

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

- 1) Common stock of Nepal Grindlays Bank Ltd. is most risky and of SBI is least risky. This proves ‘high risk high return’.

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

Paudel (2002) Study

The study by Mr. Narayan Prasad Paudel entitled "Investing in Shares of Commercial Banks in Nepal: An assessment of Risk and Return Elements" is found to be relevant in the context of the study. This study conducted with the objective of whether the shares of commercial banks were correctly priced by analyzing the realized rates of returns and the required rates of return using CAPM.

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

On the basis of this study, it was found that the shares of BOK offered the highest realized rate of return. It was also found that none of the share prices were in equilibrium. Based on the standard deviation of the returns on shares, the share of EBL could be considered as high-risk security and the standard deviation of the returns on shares of HBL was the lowest one. On the basis of CV, the shares of BOK had the lowest risk per unit of return, the highest being with the shares of NABIL. It was also observed that the systematic risk was negative with the shares of NABIL. Therefore, the total risk on the returns on shares of NABIL was due to company specific characteristics rather than market pervasive. Returns on all the shares except NABIL had positive correlation with the returns on market. Most of the shares appeared to be defensive as beta coefficients are less than one. Only the return on shares of BOK had beta coefficients of greater than one, indicating that the share was more risky than the market.

This study concluded, “The shares of commercial banks in Nepal are heavily traded in the stock market and therefore, these shares play a key role in the determination of stock exchange indicators. All the shares produced higher rate of return than the return on market portfolio. However, risk-return characteristics do not seem to be the same for all the shares reviewed”. The study further concludes, “Most of the shares fall under the category of defensive stocks, except the shares of BOK. From the analysis, it appears that none of the shares are correctly priced”.

Thapa (2003) Study

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

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

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

CHAPTER-THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a way for systematically solving the research problem; it indicates the method and process employed in the entire aspect of the study. In other words, research methodology describes the method and the process applied in the entire aspects of the study focus of the data, data gathering instrument and procedures, data tabulating and processing and method's of analysis. Research methodology refers to the various technical steps to be adopted by researcher in studying problem with certain object in view.

The basic objective of this study is to analyze the risk and return of the five commercial banks namely Standard Chartered Bank Nepal Limited (SCBNL), Nepal Investment Bank Limited (NIBL), Himalayan Bank Limited (HBL), Nepal Bank Limited (NBL) and Laxmi Bank Limited (LBL).

3.2 Research Design

Research design is an architect prepares a blue print or a plan before approving a construction. Research design is the arrangement of collections for collection and analysis of data. Research design is the conceptual structure within which research is conducted.

Research design happens to be in respect of:

- What is the study about?
- Why is the study being made?
- What type of data is required?
- What is the sample design?

- What tools are to be used for collecting data?

The design may be a specific presentation of the various steps in the problems, conceptual clarity, methodology, survey of literature and documentation, bibliography, data collection, interpretation, presentation and report writing. Generally, a common research design possesses the five basis elements viz. (i) selection of problem, (ii) methodology, (iii) data gathering, (iv) data analysis and (v) report writing. If it is a good design, it will ensure that the information obtained is relevant to the research questions and that it was collected objective and economical procedures (Paul and Donald, 1981:211).

To analysis risk and return the annual reports and financial statement of the relative commercial banks will be collected from last six years.

3.3 Population and Sample

Population is the whole group which is believed to represent. Population is the totally or aggregate of all individuals with the specific characteristics. Sample is the small group that is chosen for study. A group of individuals chosen from the population is a sample.

Currently there are thirty one banks in Nepal viz.

1. Standard Chartered Bank Ltd.
2. Nepal Investment Bank Ltd.
3. Himalayan Bank Ltd.
4. Nepal Bank Ltd.
5. Laxmi Bank Ltd.
6. Nepal Rastrya Banijya Bank
7. Bank of Asia Nepal Ltd.
8. Bank of Kathmandu
9. Citizens Bank International Ltd.
10. Development and Credit Bank Ltd.

11. Everest Bank Ltd.
12. Kumari Bank Ltd.
13. KIST Bank Ltd.
14. Lumbini Bank Ltd.
15. Machhapuchhre Bank Ltd.
16. Nabil Bank Ltd.
17. Nepal Industrial and Co Bank
18. Nepal Merchant Bank Ltd.
19. Prime Commercial Bank Ltd.
20. Nepal SBI Bank Ltd.
21. Siddhartha Bank Ltd.
22. Sunrise Bank Ltd.
23. Nepal Credit and Commerce Bank Ltd.
24. Nepal Bangladesh Bank Ltd.
25. Global Bank Ltd.
26. Mega Bank Ltd.
27. Janta Bank Ltd.
28. Civil Bank Ltd
29. Commerze and Trust Bank Ltd.
30. Prime Commercial Bank Ltd.
31. Century Commercial Bank Ltd.

Five banks have been taken as sample, they are as follows;

- Standard Chartered Bank Ltd.
- Nepal Investment Bank Ltd.
- Himalayan Bank Ltd.
- Nepal Bank Ltd.
- Laxmi Bank Ltd.

3.4 Nature and Sources of Data

To fulfill the objective of the study, secondary data have been used. The necessary data are collected from the various sources covering period 2003/04 to 2008/09.

The data collection sources are as follows:

- The profit and loss account and balance sheet of the banks.
- Annual report of selected banks.
- Website of Nepal Rastra Bank.

Other sources of data like financial reports, annuals reports, periodicals and other information provided by the institutions as well as business news and magazine.

3.5 Method of Data Analysis

The collected data are analyzed by using various financial tools as well as statistical tools.

3.5.1 Financial Tools

The financial tools include ratio analysis. It is the best tools in analyzing and comparing the time series accounting data of different firms.

Ratio Analysis

This ratio is used to measure the return of the sampled organizations in the following ways.

a)Return on Assets (ROA)

Return on assets gives an idea as to how efficient management is at using its assets to generate earnings. Return on assets ratio illustrates how well management is employing the organization's total assets to make a profit. The higher the return on assets number, the better, because the organization is earning more money on less investment.

Formula:

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

b) Return on Equity (ROE)

The return on equity measures how much the shareholders earned for their investment in the organization. The higher the ratio percentage, the more efficient management is in utilizing its equity base and the better return is to investors

Formula:

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Shareholders' Equity}}$$

3.5.2 Statistical Tools

The statistical tools used in this study are arithmetic mean, variance, standard deviation, coefficient of correlation.

a) Arithmetic Mean (\bar{X})

The value obtained by dividing the sum of a set of quantities by the number of quantities in the set is called average mean. It has been used to compute the company wise average rate of return in terms of return on assets and return on equity.

Symbolically:

$$\text{Arithmetic Mean}(\bar{X}) = \frac{\sum X}{N}$$

Where, $\sum X$ = Sum of values of variables,
N = Total number of observations.

b) Variance (σ^2)

It is a statistical measure of the variability of a set of observations. It is the sum of the square difference between each return and arithmetic mean.

Symbolically:

$$\text{Variance } (\sigma^2) = \frac{\sum(X-\bar{X})^2}{N-1}$$

Where,

$\sum (X - \bar{X})^2$ = Variance of return on stock.

N = Number of observations.

c) Standard Deviation (σ)

The square root of variance of return is called the standard deviation.

Symbolically:

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N-1}}$$

d) Coefficient of Variation

Coefficient of variation is used to standardize the risk per unit of return i.e. measure the risk per rupee of return. The coefficient of variation captures the effects of both risk and returns, it is a better measure for evaluating risk in situations where investment differ with respect to both their amounts of total risk and their expected return. A project with a low coefficient of variation has less risk than a project with a high coefficient of variation. Symbolically,

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

Where,

σ = Standard Deviation,

\bar{X} = Mean rate of return.

e) Correlation Coefficient

Correlation coefficient measure the relationship between two variables denoted by X and Y.

$$r_{XY} = \frac{\text{Cov}(X,Y)}{\sigma_X \sigma_Y}$$

Where, $\text{Cov}(X, Y)$ = Covariance between X and Y ,

$$\text{Cov}(X, Y) = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{N-1}$$

σ_X, σ_Y = Standard deviation of variables X and Y ,

N = Number of total observations,

\bar{X}, \bar{Y} = Arithmetic mean of X and Y .

The correlation coefficient ranges from -1 to +1. When $r = +1$, it means there is perfect positively correlation between two variables, risk does not reduce. When $r = -1$, the two variables move together in opposite direction. In this condition, risk can be completely eliminated. When $r = 0$, there is no relationship between two returns, they are independent.

f) Optimal Weight

Optimal weight is used to find the optimal result which is defined by,

$$\text{Optimal Weight } (W_A) = \frac{\sigma_B^2 - \text{Cov}_{AB}}{\sigma_A^2 + \sigma_B^2 - \text{Cov}_{AB}}$$

$$W_A + W_B = 1$$

$$\therefore W_B = 1 - W_A$$

Where, W_A = Optimal weight of security 'A',

W_B = Optimal weight of security 'B',

σ_A^2 = Variance of security 'A',

σ_B^2 = Variance of security 'B',

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

After the identification of risk, return, correlation coefficient between the assets and optimal weight of sampled organizations, we further calculate the portfolio risk to clarify whether the risk can be reduced by investing in portfolio or not.

Bar Diagram

A bar diagram is a chart with rectangular bars with lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. It is very useful to record certain information whether it is continuous or not continuous data.

- **Multiple bar Diagrams**

Multiple bar diagram is used to present two or more sets of related data. In this study it is used to measure risk, return, portfolio risk, portfolio return, average risk and average return of commercial banks under return on assets and return on equity.

CHAPTER-FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation and Analysis

Data analysis is the process of looking at and summarizing data with the intent to extract useful information and develop conclusions. Analysis of data is a process of inspecting, cleaning, transforming and modeling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making. The main objective of the study is to analyze the risk and return of commercial banks of Nepal. Now, this chapter analyzes risk and return and also compares it in sector wise.

This study analyze descriptive as well as analytical. First part shows mean standard deviation and coefficient of variation on the basis of return on assets and return on equity. Second parts deals with the portfolio analysis which presents portfolio risk and return as well as correlation between the firms on the basis of return on assets and return on equity ratio.

a) Risk and return on the basis of Return on Assets Ratio

Return on assets ratio measures the profitability with respect to the total assets invested in commercial banks. The higher the return, the more efficient management is in utilizing its assets. It is best to compare it against a company's previous ROA numbers or the ROA of a similar company. The ROA figure gives investors an idea of how effectively the company is converting the money it has to invest into net income. The higher the ROA number, the better, because the company is earning more money on less investment. The return is measure by arithmetic mean (\bar{X}), total risk is measure

by standard deviation (σ) and coefficient of variation (C.V) calculates risk per unit which is presented under this topic.

The table (4.1) shows the risk and return on the basis of return on assets under commercial banks like Standard Chartered Bank Nepal Limited (SCBNL), Nepal Investment Bank Limited (NIBL), Himalayan Bank Limited (HBL), Nepal Bank Limited (NBL) and Laxmi Bank Limited (LBL).

Table 4.1

Risk and Return on the basis of Return on Assets (%) under commercial banks

Year	SCBNL	NIBL	HBL	NBL	LBL
2003/04	2.27	1.19	1.98	2.72	0.99
2004/05	2.18	1.42	1.58	3.17	1.10
2005/06	2.05	1.61	1.46	3.04	1.02
2006/07	2.02	1.79	1.43	2.81	0.99
2007/08	2.04	1.77	1.40	2.67	0.98
2008/09	2.03	1.68	1.38	2.64	1.03
\bar{X}	2.09	1.58	1.54	2.84	1.02
σ	0.10	0.23	0.23	0.22	0.04
C.V	0.05	0.15	0.15	0.08	0.04

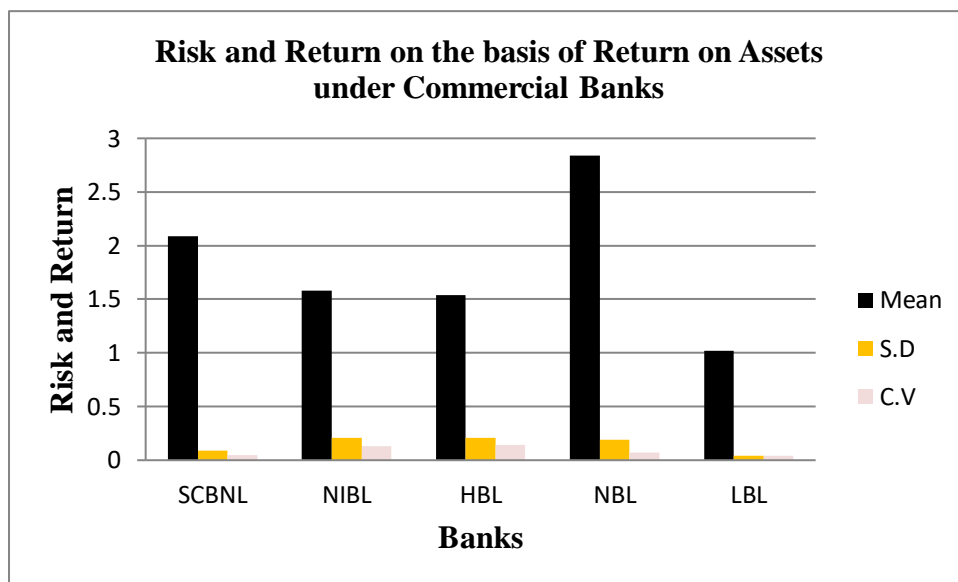
Source: - Appendix 'A'

Table 4.1 shows that the relationship of mean return, standard deviation and covariance between banks. The mean return and standard deviation of NBL are 2.84 percent and 0.22 percent which are higher than others with moderate coefficient of variation 0.08 risks per unit. So, NBL has better financial performance. The mean return, standard deviation and coefficient of variation of LBL are 1.02 percent, 0.04 percent and 0.04 risks per unit respectively, which are lower than others. So, LBL has lower financial performance. The

mean return of SCBNL, NIBL and HBL are 2.09, 1.58 and 1.54 percent respectively, the standard deviation of SCBNL, NIBL and HBL are 0.10, 0.23 and 0.23 percent respectively and the coefficient of variation of SCBNL, NIBL and HBL are 0.05, 0.15 and 0.15 risk per unit respectively. The above table shows higher the risk, higher the return and lower the risks lower the return is justified.

Risk and return on the basis of return on assets under commercial banks like Standard Chartered Bank Nepal Limited (SCBNL), Nepal Investment Bank Limited (NIBL), Himalayan Bank Limited (HBL), Nepal Bank Limited (NBL) and Laxmi Bank Limited (LBL) are presented in figure 4.1.

Figure: 4.1



Source: - Table 4.1

The bar diagram shown above shows risk and return on the basis of return on assets, where x-axis represents commercial banks under consideration and y-axis represents risk and return. The mean return, standard deviation and coefficient of variation of LBL is lower than others i.e. 1.02 percent, 0.04 percent and 0.04 risk per unit respectively, which shows LBL is poor

performer. Whereas, mean return and standard deviation of NBL is higher than others i.e. 2.84 percent and 0.22 percent with moderate coefficient of variation i.e. 0.08 risks per unit respectively, which shows NBL has better financial performance. The mean return of SCBNL, NIBL and HBL are 2.09, 1.58 and 1.54 percent, the standard deviation of SCBNL, NIBL and HBL are 0.10, 0.23 and 0.23 percent and the coefficient of variation of SCBNL, NIBL and HBL are 0.05, 0.15 and 0.15 per unit respectively. The figure shows, NIBL and HBL are comparable as each of them have same risk but different return. NIBL has 1.58 percent and HBL has 1.54 percent of return, which shows NIBL's return is higher than HBL's return.

b) Risk and return on the basis of Return on Equity Ratio

The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

The table (4.2) shows the risk and return on the basis of return on equity under commercial banks like Standard Chartered Bank Nepal Limited (SCBNL), Nepal Investment Bank Limited (NIBL), Himalayan Bank Limited (HBL), Nepal Bank Limited (NBL) and Laxmi Bank Limited (LBL).

Table 4.2
Risk and Return on the basis of Return on Equity (%) of Commercial Banks

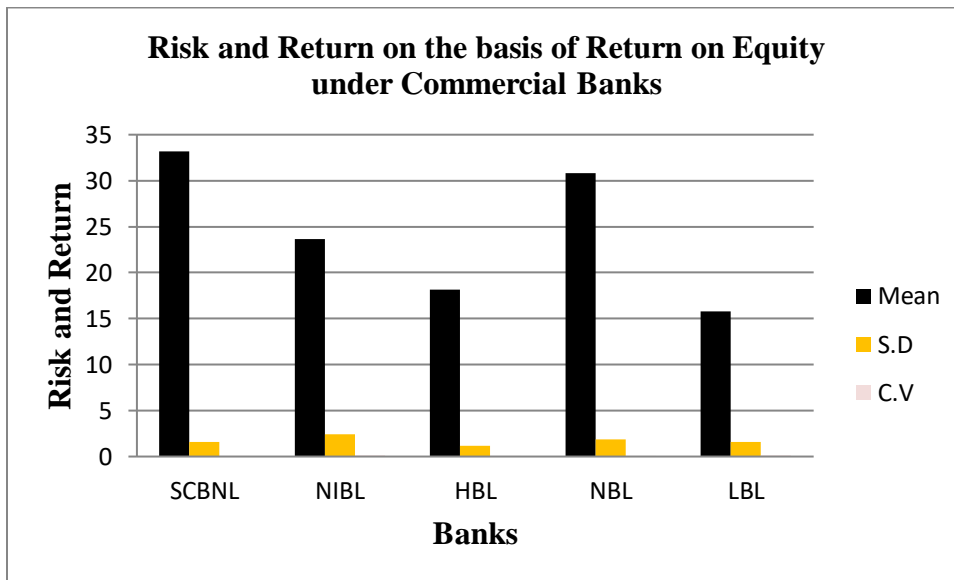
Year	SCBNL	NIBL	HBL	NBL	LBL
2003/04	35.96	21.63	19.87	30.73	12.75
2004/05	34.40	19.67	19	33.60	14.81
2005/06	33.04	24.77	18.67	32.62	15.87
2006/07	32.60	26.70	17.54	30.73	16.54
2007/08	31.40	25.93	17.40	28.72	17.35
2008/09	31.55	23.05	16.36	28.40	17.21
\bar{X}	33.15	23.63	18.14	30.80	15.76
σ	1.75	2.68	1.27	2.06	1.74
C.V.	0.05	0.11	0.07	0.07	0.11

Sources: - Appendix 'B'

Table 4.2 shows relationship of mean return, standard deviation and coefficient of variation between banks. The mean return and standard deviation SCBNL is 33.15 percent, which are higher than others with lowest standard deviation and coefficient of variation i.e. 1.75 percent and 0.05 per unit which seem SCBNL has better financial performance. The mean return, standard deviation and coefficient of variation of LBL are 15.76 percent, 1.74 percent respectively, which are lower than others with highest coefficient of variation i.e. 0.11. So, LBL has lower financial performance. The mean return of NIBL, NBL and HBL are 23.63, 30.80 and 18.14 percent respectively, the standard deviation of NIBL, NBL and HBL are 2.68, 2.06 and 1.27 percent respectively and the coefficient of variation of NIBL, NBL and HBL are 0.11, 0.07 and 0.07 risk per unit respectively. The above table shows higher the risk, higher the return and lower the risks lower the return is justified.

Risk and return on the basis of return on equity under commercial banks like Standard Chartered Bank Nepal Limited (SCBNL), Nepal Investment Bank Limited (NIBL), Himalayan Bank Limited (HBL), Nepal Bank Limited (NBL) and Laxmi Bank Limited (LBL) are presented in figure 4.2.

Figure 4.2



Source:- Table 4.2

The bar diagram shown above shows risk and return on the basis of return on equity, where x-axis represents commercial banks under consideration and y-axis represents risk and return. The mean return and standard deviation of LBL are lower than others i.e. 15.76 percent and 1.74 percent respectively, with highest coefficient of variation i.e.0.10 risk per unit respectively, which shows LBL is poor performer. Whereas, mean return, standard deviation and coefficient of variation of SCBNL is higher than others i.e. 33.15 percent and 1.75 percent respectively, with lowest coefficient of variation that is 0.05 risk per unit, which shows SCBNL has better financial performance. The mean return of NIBL, HBL and NBL are 23.63, 18.14 and 30.80 percent, the standard deviation of NIBL, HBL and NBL are 2.68, 1.27 and 2.06 percent and the

coefficient of variation of NIBL, HBL and NBL are 0.11, 0.07 and 0.07 per unit respectively.

4.2 Portfolio Analysis

Analyzing elements of a firm's product mix to determine the optimum allocation of its resources is portfolio analysis. It includes portfolio risk comparison with weighted average risk and portfolio return.

a) Portfolio Risk and Return on the basis of Return on Assets

Portfolio risk and return on the basis of return on assets are presented in the table below, which represents correlation, respective weight, average return and risk and portfolio risk and return calculated under different banks.

The given Table 4.3 represents portfolio risk and return on the basis of return on assets of commercial banks.

Table 4.3
Portfolio Risk and Return on the basis of Return on Assets under
Commercial Banks

Combination of Banks	Correlation	Respective Weight (%)	Average Return (%)	Portfolio Return (%)	Average Risk (%)	Portfolio Risk (%)
NIBL and SCBNL	-0.97	29.15,70.85	1.84	1.94	0.17	0.04
NIBL and HBL	-0.92	3,97	1.56	1.54	0.23	0.05
NIBL and NBL	-0.23	48,52	2.21	2.24	0.23	0.14
NIBL and LBL	-0.28	7,93	1.30	1.06	0.14	0.04
SCBNL and HBL	0.97	164,-64	1.82	2.44	0.17	0.05
SCBNL and NBL	0.21	89,11	2.47	2.81	0.16	0.10
SCBNL and LBL	0.24	5,95	1.07	1.07	0.07	0.04
NBL and LBL	0.91	-24,124	1.93	0.58	0.13	0.01
HBL and NBL	0.14	47,53	2.19	2.23	0.23	0.17
HBL and LBL	-0.05	6,94	1.28	1.05	0.13	0.04

Source: - Appendix 'A'

The portfolio result present in Table 4.3 indicate the combination of banks such as NIBL and SCBNL, NIBL and HBL, NIBL and NBL, NIBL and LBL and HBL and LBL shows negative correlation i.e. -0.97, -0.92, -0.23, -0.28 and -0.05 whereas other combination of banks such as SCBNL and HBL, SCBNL and NBL, SCBNL and NBL, NBL and LBL and HBL and NBL shows positive correlation i.e. 0.97, 0.21, 0.24, 0.91 and 0.14 respectively in terms of return on assets. The risk are highly diversified, the combination of banks which have negative correlation in comparison to positive correlated firms.

The combination of NIBL and SCBNL, NIBL and NBL, SCBNL and HBL, SCBNL and NBL, SCBNL and LBL and HBL and NBL shows portfolio return is higher than average return whereas the combination of NIBL and HBL, NIBL and LBL, NBL and LBL and HBL and LBL shows portfolio return is lower than average return. The portfolio risk of all combination of banks is less than average risk.

b) Portfolio Risk and Return on the basis of Return on Equity

Portfolio risk and return on the basis of return on equity are presented in the table below, which represents correlation, respective weight, average return and risk and portfolio risk and return calculated under different banks.

The given Table 4.4 represents portfolio risk and return on the basis of return on equity of commercial banks.

Table 4.4
Portfolio Risk and Return on the basis of Return on Equity under
Commercial Banks

Combination of Banks	Correlation	Respective Weight (%)	Average Return (%)	Portfolio Return (%)	Average Risk (%)	Portfolio Risk (%)
NIBL and SCBNL	-0.66	37,63	28.39	29.63	2.22	0.75
NIBL and HBL	-0.52	27,73	20.87	19.62	1.98	0.83
NIBL and NBL	-0.45	41,02,59	27.21	27.86	2.37	1.97
NIBL and LBL	0.64	1,99	19.70	15.83	2.21	1.73
SCBNL and HBL	0.93	-85,185	25.66	5.68	3.02	3.77
SCBNL and NBL	0.59	69,31	31.98	32.42	1.91	1.67
SCBNL and LBL	-0.99	50,50	24.46	24.46	1.75	0.06
NBL and LBL	-0.51	44,56	23.28	22.38	1.90	0.93
HBL and NBL	0.70	120,-20	24.47	16.46	1.67	1.25
HBL and LBL	-0.92	58,42	16.95	17.14	1.51	1.13

Source: - Appendix 'A'

Based on the table 4.4, the combination of banks such as NIBL and SCBNL, NIBL and HBL, NIBL and NBL, SCBNL and LBL, NBL and LBL and HBL and LBL shows negative correlation i.e. -0.66, -0.52, -0.45, -0.99 and -0.92 respectively, whereas the other combination of banks such as NIBL and LBL, SCBNL and HBL, SCBNL and NBL and NBL and HBL shows positive correlation i.e. 0.64, 0.93, 0.59 and 0.70 respectively, in terms of return on equity. The risk has highly diversified the combination of banks which have negative correlation rather than the combination banks which have positive correlation.

The portfolio return of NIBL and SCBNL, NIBL and NBL, SCBNL and NBL, and HBL and LBL are higher than average return, whereas the portfolio return of NIBL and HBL, NIBL and LBL, SCBNL and HBL, SCBNL and LBL, NBL and HBL and NBL and LBL are lower than average return. The portfolio risk of all combination of banks is lower than average risk.

4.3 Major Finding of the Study

The major findings of the study are as follows.

a) On the basis of Return on assets

1. The mean return of NBL is 2.84 percent which is higher than others and have moderate standard deviation and coefficient of variation i.e. 0.22 percent and 0.08 risks per unit.
2. When total risk is considered, HBL and NIBL with 0.23 percent showed highest risk whereas LBL with 0.04 percent showed lowest risk.
3. Among selected banks, the combination of NIBL and SCBNL has highest negative correlation i.e. -0.97 which diversified more risk than others combination of banks.
4. The portfolio risk was diversified in all combination of banks.
5. Among all combination of banks, the portfolio return of SCBNL and HBL have moderate portfolio return and lower portfolio risk i.e. 2.44 percent and 0.05 percent.

b) On the basis of Return on Equity

1. Among selected banks, SCBNL has highest mean return i.e. 33.15 percent lowest standard deviation and coefficient of variation i.e. 1.75 percent and 0.05 risks per unit.
2. The combination of SCBNL and LBL has highest negative correlation i.e. -0.99 which diversified more risk than all combination of banks.
3. The portfolio risk reduced in all combination.
4. The combination of NIBL and SCBNL has moderate portfolio return i.e. 29.63 percent, with lowest portfolio risk i.e. 0.75 percent.

CHAPTER-FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Commercial banks are legally formed financial institution, which accept deposits and makes loan for commercial and non commercial purpose. Main focus of this study is to analyze the risk and return of commercial banks. Almost the investors are risk averters. Analyzing risk and return gives the idea to the investors for the proper investment of their fund to get maximum return bearing minimum risk.

First chapter of the study paper deals about the basis concept and plan of the study. This chapter basically presented research issues, basic objectives, limitations of the study and brief introduction of the study.

Second chapter deals with the literature review, helped the researcher to provide knowledge about the development and progress made by the earlier scholars on the concerned field of study. It also summarized the findings of previous literature to provide knowledge about background of the work done by earlier research work and step duplicate of the previous work.

Various research methods to analyze the data related were followed by the researcher in third chapter. Research Methodology basically signifies research design, sample survey design, data collection and processing techniques and procedures, and various tools and techniques applied to analyze the data.

Presentation and analysis of data are studied in the fourth chapter. In this chapter, the generated data were presented in tabular and in figure form as per requirement. The researcher attempted to analyze the risk and return of commercial banks of Nepal on the basis of return on assets and return on equity by arithmetic mean, standard deviation and coefficient of variation.

5.2 Conclusions

The result of risk and return analysis lead to important conclusion.

Among selected banks, the mean return and standard deviation of NBL were higher than others with moderate coefficient of variation. It showed NBL has better financial performance. Whereas the mean return, standard deviation and coefficient of variation of LBL were lower than others, LBL has poor financial performance on the basis of return on assets. The mean return of SCBNL was higher than others with lowest standard deviation and coefficient of variation, which showed SCBNL was better financial performer. The mean return and standard deviation of LBL were lower than others with highest coefficient of variation, which showed LBL was poor financial performer on the basis of return on equity. It showed there were positive relationship between risk and return, if risk decreased than return also decreased and if risk increased than return also increased.

While portfolio analysis is considered, the portfolio risk is less than average risk, which showed investing in combination of banks reduced more risk than individuals on the basis of return on assets and on the basis of equity.

The negative correlation coefficient of combination of banks diversified more risk than positive correlation of coefficient on the basis of return on assets and return on equity ratios.

5.3 Recommendations

The following recommendations have been forwarded on the basis of analysis and conclusion of entire research study.

Generally, it is believed that higher the return, higher will be the risk. Investment risks are better covered through a large and diversified portfolio. Investors need to diversify their funds to reduce risk. Proper construction of

portfolio will reduce considerable potential loss which can be defined in terms of risk. Efficient portfolio depends on market movement. For the portfolio construction select the firm that have higher return with negative correlated firm.

The return on assets ratio of LBL is lowest among the five sample banks. So, LBL is to recommend increasing net profit to get better financial performance.

The return on equity ratio of HBL and LBL are lowest among sample banks. So, HBL and LBL are recommended to manage share and increase net profit to achieve better performance.

Inefficient management system, lack of transparency and slow decision making caused low return with high risk of the firms. So, such types of firms are recommended to change their policy and strategy to make quick decision.

This study suggests constructing an efficient risk and return analysis to minimize risk and to get sustainable future expected returns. Investors have to choose those firms which have higher returns, minimum proportion of systematic risk and negative correlation to make efficient portfolio.

The result of correlation between risk and return is insignificant. The result is unsatisfactory because the sample size of the study is too small and the data for the study is used from annual report and website which may not be sufficient so it is suggested that for the further researcher will recommend including sufficient sample size.

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APPENDICES

Appendix 'A'

List of variable of five commercial banks relating net income, shareholders equity and total assets for the periods 2003/2004 to 2008/2009 (Rs. in thousands)

S.N.	Banks	Years	Net Income	Net Worth	Total Assets
1	SCBNL	2003/2004	537800	1495700	23642060
2	SCBNL	2004/2005	547905	1592810	25190455
3	SCBNL	2005/2006	552500	1672102	26912507
4	SCBNL	2006/2007	561255	1721455	27811055
5	SCBNL	2007/2008	579175	1844417	28411257
6	SCBNL	2008/2009	590055	1900045	2900057
7	NIBL	2003/2004	157670	729040	13255500
8	NIBL	2004/2005	232147	1180173	16390652
9	NIBL	2005/2006	350563	1415440	21732082
10	NIBL	2006/2007	501399	1878124	28073517
11	NIBL	2007/2008	696732	2686786	39405959
12	NIBL	2008/2009	900619	3907840	53596754
13	HBL	2003/2004	263050	1324170	13241705
14	HBL	2004/2005	271555	1429155	17215455
15	HBL	2005/2006	280075	1500045	19246555
16	HBL	2006/2007	292255	1666677	20452255
17	HBL	2007/2008	299955	1723205	21369455
18	HBL	2008/2009	310055	1895555	22439955
19	NBL	2003/2004	455325	1481688	16745495
20	NBL	2004/2005	545928	1624528	17245228

21	NBL	2005/2006	554528	1700025	18244455
22	NBL	2006/2007	560045	1822295	19945417
23	NBL	2007/2008	572245	1992245	21434595
24	NBL	2008/2009	579995	2042545	21999345
25	LBL	2003/2004	121628	953757	12242817
26	LBL	2004/2005	142525	962259	14282255
27	LBL	2005/2006	155525	979959	15267238
28	LBL	2006/2007	162428	982257	16259525
29	LBL	2007/2008	172555	994475	17451625
30	LBL	2008/2009	188998	1098086	18386412

Source: - Annual Statement of six years of the respective banks.

Appendix – ‘B’

Calculation of mean, standard deviation, coefficient of variation, correlation coefficients, optimal weight, portfolio risk and return on return on assets.

Return on assets of NIBL in 2003/2004

$$(\text{ROA}_{\text{NIBL in 2003/2004}}) = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$(\text{ROA}_{\text{NIBL in 2003/2004}}) = \frac{157670}{13255500}$$

$$\therefore (\text{ROA}_{\text{NIBL in 2003/2004}}) = 0.01189$$

or, 1.19% and so on.

Arithmetic mean of NIBL

$$\bar{X}_{\text{NIBL}} = \frac{\sum x}{N}$$

$$\bar{X}_{\text{NIBL}} = \frac{1.19+1.42+1.61+1.79+1.77+1.68}{6}$$

$$\therefore \bar{X}_{\text{NIBL}} = 1.58\% \text{ and so on.}$$

Standard Deviation of NIBL

$$\sigma_{\text{NIBL}} = \sqrt{\frac{\sum (X - \bar{X})^2}{N-1}}$$

$$\sigma_{\text{NIBL}} = \sqrt{\frac{0.2688}{5}}$$

$$\therefore \sigma_{\text{NIBL}} = 0.2317\% \text{ and so on.}$$

Coefficient of variation of NIBL

$$(\text{C.V}_{\text{NIBL}}) = \frac{\sigma}{\bar{X}}$$

$$(C.V_{NIBL}) = \frac{0.2317}{1.58}$$

$$(C.V_{NIBL}) = 0.1466 \text{ and so on.}$$

Correlation Coefficient between NIBL and SCBNL

$$(r_{NIBL,SCBNL}) = \frac{Cov(NIBL,SCBNL)}{\sigma_{NIBL}\sigma_{SCBNL}}$$

Where,

$$\begin{aligned} COV_{(NIBL,SCBNL)} &= \frac{\sum(X_{NIBL}-\bar{X}_{NIBL})(Y_{SCBNL}-\bar{Y}_{SCBNL})}{N-1} \\ &= \frac{-0.116}{5} \end{aligned}$$

$$\therefore COV_{(NIBL,SCBNL)} = -0.0232 \text{ and so on.}$$

$$(r_{NIBL,SCBNL}) = \frac{-0.0232}{0.02389}$$

$$\therefore (r_{NIBL,SCBNL}) = -0.97 \text{ and so on.}$$

Optimal weight of NIBL

$$\begin{aligned} (W_{NIBL}) &= \frac{\sigma_{SCBNL}^2 - Cov_{NIBL,SCBNL}}{\sigma_{NIBL}^2 + \sigma_{SCBNL}^2 - 2Cov_{NIBL,SCBNL}} \\ &= \frac{(0.10)^2 - (-0.02)}{(0.23)^2 + (0.10)^2 - 2(-0.02)} \end{aligned}$$

$$\therefore (W_{NIBL}) = 0.2915 \text{ or } 29.15\% \text{ and so on.}$$

Weight of SCBNL

$$\begin{aligned} (W_{SCBNL}) &= 1 - (W_{NIBL}) \\ &= 1 - 0.2915 \end{aligned}$$

$$\therefore (W_{SCBNL}) = 0.7085 \text{ or } 70.85\% \text{ and so on.}$$

Return on portfolio of NIBL and SCBNL

$$R_P = W_{NIBL}\bar{X}_{NIBL} + W_{SCBNL}\bar{X}_{SCBNL}$$

$$= 0.30 \times 1.58 + 0.70 \times 2.09$$

$\therefore R_p = 1.937\%$ and so on.

Standard Deviation of NIBL and SCBNL on Portfolio

$$\begin{aligned}\sigma_p &= \sqrt{[W_{\text{NIBL}}^2 \sigma_{\text{NIBL}}^2 + W_{\text{SCBNL}}^2 \sigma_{\text{SCBNL}}^2 + 2\text{Cov}_{\text{NIBL,SCBNL}} W_{\text{NIBL}} W_{\text{SCBNL}}]} \\ &= \sqrt{[0.30^2 \times 0.23^2 + 0.70^2 \times 0.10^2 + 2(-0.02) \times 0.30 \times 0.70]}\end{aligned}$$

$\therefore \sigma_p = 0.0355\%$ and so on.

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

Return on assets of NIBL in 2003/2004

$$\begin{aligned}(\text{ROE}_{\text{NIBL in 2003/2004}}) &= \frac{\text{Net Income}}{\text{Shareholder's equity}} \\ &= \frac{157670}{729040}\end{aligned}$$

$$\begin{aligned}\therefore (\text{ROE}_{\text{NIBL in 2003/2004}}) &= 0.2163 \\ &\text{or, 21.63\% and so on.}\end{aligned}$$

Arithmetic mean of NIBL

$$\begin{aligned}\bar{X}_{\text{NIBL}} &= \frac{\sum X}{N} \\ &= \frac{21.63+19.67+24.77+26.70+25.93+23.05}{6}\end{aligned}$$

$$\therefore \bar{X}_{\text{NIBL}} = 23.63\% \text{ and so on.}$$

Standard Deviation of NIBL

$$\sigma_{\text{NIBL}} = \sqrt{\frac{\sum(X-\bar{X})^2}{N-1}}$$

$$\sigma_{\text{NIBL}} = \sqrt{\frac{36.03}{5}}$$

$$\therefore \sigma_{\text{NIBL}} = 2.68\% \text{ and so on.}$$

Coefficient of variation of NIBL

$$\begin{aligned}\text{C.V}_{\text{NIBL}} &= \frac{\sigma}{\bar{X}} \\ &= \frac{2.68}{23.63}\end{aligned}$$

$$\therefore \text{C.V}_{\text{NIBL}} = 0.1134 \text{ and so on.}$$

Correlation Coefficient between NIBL and SCBNL

$$r_{\text{NIBL,SCBNL}} = \frac{\text{Cov}(\text{NIBL,SCBNL})}{\sigma_{\text{NIBL}}\sigma_{\text{SCBNL}}}$$

$$\begin{aligned}\text{Where, Cov}(\text{NIBL,SCBNL}) &= \frac{\sum(X_{\text{NIBL}} - \bar{X}_{\text{NIBL}})(X_{\text{SCBNL}} - \bar{X}_{\text{SCBNL}})}{N-1} \\ &= \frac{-15.48}{5}\end{aligned}$$

$$\therefore \text{Cov}(\text{NIBL,SCBNL}) = -3.096 \text{ and so on.}$$

$$r_{\text{NIBL,SCBNL}} = \frac{-3.096}{2.68 \times 1.75}$$

$$\therefore r_{\text{NIBL,SCBNL}} = -0.66 \text{ and so on.}$$

Optimal weight of NIBL

$$\begin{aligned}W_{\text{NIBL}} &= \frac{\sigma_{\text{SCBNL}}^2 - \text{Cov}_{\text{NIBL,SCBNL}}}{\sigma_{\text{NIBL}}^2 + \sigma_{\text{SCBNL}}^2 - 2\text{Cov}_{\text{NIBL,SCBNL}}} \\ &= \frac{(1.75)^2 - (-3.10)}{(2.68)^2 + (1.75)^2 - 2(-3.10)} \\ &= 0.37 \text{ or } 37\% \text{ and so on.}\end{aligned}$$

Weight of SCBNL

$$\begin{aligned}W_{\text{SCBNL}} &= 1 - W_{\text{NIBL}} \\ &= 1 - 0.37\end{aligned}$$

$$\therefore W_{\text{SCBNL}} = 0.63 \text{ or } 63\% \text{ and so on.}$$

Return on portfolio of NIBL and SCBNL

$$\begin{aligned}R_p &= W_{\text{NIBL}}\bar{X}_{\text{NIBL}} + W_{\text{SCBNL}}\bar{X}_{\text{SCBNL}} \\ &= 0.37 \times 23.63 + 0.63 \times 33.15\end{aligned}$$

$$\therefore R_p = 29.63\% \text{ and so on.}$$

Standard Deviation of NIBL and SCBNL on Portfolio

$$\begin{aligned}\sigma_P &= \sqrt{[W_{\text{NIBL}}^2 \sigma_{\text{NIBL}}^2 + W_{\text{SCBNL}}^2 \sigma_{\text{SCBNL}}^2 + 2\text{Cov}_{\text{NIBL,SCBNL}} W_{\text{NIBL}} W_{\text{SCBNL}}]} \\ &= \sqrt{[0.37^2 \times 2.68^2 + 0.63^2 \times 1.75^2 + 2(-3.10) \times 0.37 \times 0.63]}\end{aligned}$$

$\therefore \sigma_P = 0.7536\%$ and so on.