

CHAPTER - I

1.1 BACKGROUND OF THE STUDY

With the starting of man life on the earth till very end of his life he wants security. Need of the financial support in difficult situation or in unfavorable circumstances has always remained appealing across all communities and societies all over the world. And it is obvious that people in difficult situations like to get remedy of that as early as possible. In the distant past period, when people faced poverty and insecurity, turned to their family members, relatives, community members or religious institutions for help and securities. These days too, the countries where agriculture has the dominant role, still this system is found being continued.

But industrialization and urbanization have brought about a drastic change in the traditional structure. This has led to the birth of anew group of ideas or system concerning security in many societies. With the establishment of social security system dawned anew age or organized support for the majority of employees and workers, who used to find themselves in awkward predicament due mainly to shortage of money. The new system also made provision for contingencies like old age, invalidity and death.

The employees or working people, who have nothing to live on except their earning, when they become sick, disabled or retired, needed a regular flow of income to replace the earning that was previously main source of support. The social security system aims at fulfilling this need. It provides financial resource to the employee having fixed income by organized method of collecting into an additional contribution from the employer.

With the introduction of industrialization the concept of provident fund was started in 1889A.D. in Germany with the goal of providing the financial security to the disable and old aged people.(Chundal & Bimal;2056:51). In Nepal the history of Provident Fund(PF) dates back to 1934A.D.when the PF scheme came into existence with the establishment of Sainik Drabya Kosh. (Army Provident Fund) during the Rana regime. The scheme was initiated with the intention of removing financial hardships to the army personnel after their retirement. Under the scheme, the army staffs were required to contribute a specific percentage of their salary to their provident fund account in Sainik Drabaya Kosh.

A decade later the scheme was broadened to cover the employees of civil services. A separate organization named 'Nijamati Provident Fund' was established in 1944A.D. to manage the scheme for civil workers serving within Kathmand Valley.

In 1948 the coverage of the scheme was extended to the entire civil servants working throughout the country.

In 1959 Employee Provident Fund Department was established under the Ministry of Finance and Economic Affairs. This department was entrusted with the management of both Sainik Drabaya Kosh and Nijamati Provident Fund. With this, the scope of the scheme was extended to cover all government employees including the policy.

Three years later the establishment of Employee Provident Fund Department a special act called "Karmachari Sanchaya Kosh" or Employee Provident Fund Act was legislated in the year 1962A.D. In the same year the present Karmachari Sanchaya Kosh (KSK) established under the act as an autonomous provident fund organization.

After the establishment of EPF the erstwhile Sainik Drabaya Kosh, Nijamati Provident Fund and Provident fund Department were merged into the EPF. Since then EPF has grown by leaps and bounds and today it stands as a strong Social security provident organization in Nepal. At present EPF extends service to 4, 15000 employees comprising of civil service, military, Police Corporation and teachers which has been increasing at on average growth rate of 4.8% per annum.

As the only institution designed for providing social security through the means of compulsory saving with an equal matching contribution from the government employees, it has been playing an extremely important role. With the continued expansion of fund, it is increasingly emerging as the institution with a significant role not only in social security term but also as an institution with notable responsibilities as an important player in the financial capital market of the country. Accordingly, EPF has developed an aura of an institution, where one can lean upon as a source of financing.(EPF at a glance;2007,1-2). The EPF has been providing the following loan facilities to its members during their service period.

- special loan
- House loan
- Educational loan
- Housing

Besides, EPF also offers a number of other social security schemes to its contributors with the objectives of furthering the benefits to its contributors. These are mostly EPF's own initiatives and sources. The various social securities offered by EPF are:

- Additional Benefit Scheme
- Accident Indemnity Scheme
- Funeral Grants Scheme
- Employees Welfare Scheme (Insurance)

EPF is only the social security providing institution in Nepal. It has been an associated member of the ISSA since 1980. Since then, it has been taking active participation in the meeting, seminars and trainings organized by ISSA.

ISSA, in the collaboration with the EPF had organized its fifth regional training seminar for Asia Pacific in Kathmandu in 1984.

With the membership of ISSR and by the way of participation in its general assembly, various meetings and seminars EPF has been able to acquire useful knowledge and experience in the field of social security and provident fund management. These experiences have allowed EPF to introduce various social security schemes to its members.

But meanwhile it is obvious that the EPF has to make its investment act very prudent. Since it has the responsibility of acting as a good supporter to the retired employees and their family members, it must construct an optimal investment portfolio which helps EPF to achieve its goal. The investment decision depends upon two factors, i.e. risk and return. The basic objective of portfolio analysis is to minimize the risk at the given rate of return. The reduction of risk is possible by investing in two or more securities. Investing in two or more securities is called portfolio.

Portfolio investment refers to an investment that combines several assets. It is a collection of securities. The portfolio theory is concerned with the selection of optimal portfolio that provides the highest possible returns for and specified level of risk or the lowest possible risk for any specified rate of return. Portfolio theory has been developed for financial asset. Thus making the highest rate of return with least possible amount of risk is the real investment portfolio.

Most securities available for investment have uncertain outcomes and thus risky. The basic problem facing each investor is to determine which particular risky security to own. Because a portfolio is a collection of securities. This problem is equivalent to the investor selecting the optimal portfolio from a set of portfolios.

Hence, this situation is often referred to as the portfolio selection problem. One solution to this problem was put forth in 1952 by Harry M. Markowitz in a landmark paper that is generally viewed as the origin of modern investment theory.(Alexander,Sharp & Bailey,2003:119)

1.2 FOCUS OF THE STUDY

It is obvious that the creation of provident fund provides financial aids to the employees after their retirement and to their family members or dependants after their demise. Besides it, the provident fund scheme will also helps in the mobilization of saving which can be used for capital formation and which is one of the revolution of economic growth.

The EPF aims to provide the financial security to the employees. Therefore, it has to invest or mobilize fund collected from the employees prudently. Thus, it is very important for EPF to diversify the collected fund to provide the good return to employees.

Today, the financial institutions have to face so many difficulties to mobilize their fund on profitability sectors. The risk is involved in every step of the return. So, to minimize the risk and maximize the return the too has to diversify its investment by the means of portfolio.

In this study the trend of investment process of EPF in various sectors by the mean of portfolio is analyzed. The existing investment situation, investment patterns and the return pattern are also analyzed. The main focus of the study is measurement of financial performance of EPF, its investment portfolio return situation and trend of investment and return .

1.3 STATEMENT OF THE PROBLEM

The importance of EPF in Nepal is need not to be more emphasized. It plays a crucial role in an individual's life and even to the national economy of the country. Obviously, there should various security measures for the welfare of employees so that the government as well as others employers may get a high level of workers' efficiency and devotion to duty and responsibility. Provident Fund system is also one of the measures which are created with the objective of providing for the welfare of the employees. Hence it has important role to play in Nepal. In Nepal, the government up to this time has not succeed to provide various other security measures such as staff welfare fund and make necessary provision for medical facilities. Hence, in such a situation the accumulated provident fund amount will help much to the retired employees.

Providing the employees with the financial aid has been the primary goal of EPF. The mission and goal envisioned provide huge responsibilities to the institution. Since, EPF is established to provide the financial security to the employees through effective mobilization of collected fund, it has to keep on examining its areas of investment and return pattern to attain its goal. Therefore the basic problem of the study is concerned with analyzing the investment portfolio and return of EPF. Specifically, the study is revolved around to access the answer of the following questions.

-) How is the investment portfolio structure of EPF?
-) How is the return situation of EPF from investment?
-) How is the relation of return with investment?
-) What can be the trend of investment and return of EPF?

1.4 OBJECTIVES OF THE STUDY

The creation of the Provident Fund scheme has dual purposes i.e. welfare to employees and the mobilization of saving. Now a days due to its growing popularity among all the employees and employers , in almost all the countries of the world have arranged the provident fund scheme and it is regarded as one of the source of saving which is utilized for the capital formation and then in the economic development of the country.

In this context, the general objective of the study is to identify the situation of portfolio management of EPF. However, the specific objectives of the study are as follows:

-) To analyze the investment portfolio structure of EPF.
-) To analyze the return situation of EPF obtaining from its investment portfolio.
-) To analyze the relation of return with investment.
-) To forecast the trend of investment and return of EPF.

1.5 SIGNIFICANCE OF THE STUDY

The investment analysis of any organization flashes its investment policy. Sound investment policy makes a good impact on the economy of country. The success and prosperity of any organization or institution relies heavily upon the successful investment of its available resources into the profitable sectors.

Today, the increasing size and responsibilities of themselves are challenging to EPF. The research work is the study of portfolio of EPF. Therefore,

this study can be fruitful to analyze EPF investment portfolio and return and reach out the strength and the weak aspects of investment and to sustain interest to saving employees.

This study provides the useful feedback about the existing situation of portfolio management and return to the organization and also helps employees and others to get acquainted with the investment diversification policy and financial performance of EPF.

In addition to these, it also provides literature to the researchers who want to carry further research work in this field.

1.6 LIMITATION OF THE STUDY

The study has completed with various limitations. Thus the study has the following boundaries and the researcher has confined himself within the set boundaries.

-) The study is basically focused only with the portfolio investment and the return analysis of EPF.
-) The study has not kept any concerned to analyze the availability of fund, official and administration expenses, investment policy and strategies and any other financial issues, technical and managerial issues except than the investment portfolio and return and trend of investment and return of EPF.
-) The study is principally based on the secondary sources (publication, journals, report, etc.) are preferred in this study. So the findings and conclusion drawn from the study can not be generalized.
-) The data of only five years are taken in order to carry research.
-) The time span and cost are the major limitation of the study, thus, other aspects are excluded from the study.
-) Study is carried within the framework of study of investment portfolio and return so, study may not be able to represent the whole financial industry.
-) This study is conducted in the partial fulfillment of the thesis writing for the degree of Master in Business Studies (MBS).

1.7 STRUCTURE OF THE STUDY

The study has been divided into five different segments to make the study more systematic mainly in the form of: Introduction, Literature Review, Research Methodology, Presentation and Analysis of data and Summary, conclusion and Recommendations.

Introduction: This is the first chapter. It contains background of the study, statement of the study, limitation of the study and structure of the study.

Review of Literatures: This is the second chapter. It deals with the study of related books, articles, journals and published and unpublished research works which are similar to the study.

Research Methodology: The third chapter describes the various aspects included in research such as: population and sample of the study, nature and source of data research design, method of data analysis and techniques used for data analysis.

Presentation and Analysis of Data: The fourth chapter encompasses presentation and analysis of data, which is the main body of the study. It fulfills the objectives of the study by presenting and analyzing the data to draw conclusion with the various financial and statistical tools.

Summary, Conclusion and Recommendations: It is the last chapter of the study which is concerned with the summary, conclusion of the study and various suggestions and recommendation.

CHAPTER - II

REVIEW OF LITERATURE

This chapter deals with the review to investment portfolio management and return in more detail in descriptive manner. Only the relevant literatures have been reviewed. Every possible effort has been made to grasp knowledge and information that are available. This chapter helps to take adequate feedback to broaden the information base and inputs to the study. Since there are not so much adequate study materials related with this topic, this study has referred almost book relate with this topic. This review has been focused different books, articles, research works etc. This chapter is divided into two parts.

- 1) Conceptual Frame Work
- 2) Review of Related studies.

2.1. CONCEPTUAL FRAME WORK.

The portfolio of an individual or a corporate unit is holding of securities and investment in financial assets. A portfolio is not merely a collection of unrelated assets but a carefully blended asset combination with a unified frame work. The portfolio is usually possible return for any specified degree of risk of the lowest possible risk for any specified rate of return. "A portfolio simply represents the practice among the investors of having their funds in more than one asset. The combination of asset is called portfolio." (Weston and Brigham, 1982: 245.)

Portfolio investment refers to an investment that combines several assets. The modern portfolio theory explains the relationship between assets risk and return. The theory is founded on the mechanics of measuring the effect of an asset on risk and return of portfolio.

Portfolio investment assumes that the mean and variance of returns are the only two factors that the investment cares. Based on this assumption, we can say that rational investor always prefers the highest possible mean return for a given level of risk or the lowest possible level of risk for a given amount of return Portfolio, technically known as efficient portfolio is a superior portfolio. The efficient portfolio is a function of not only risk and return of individual asset included but also the effect of relationship among the asset on the sum total of

portfolio risk and return. The portfolio return is straight weighted average of the individual asset. But the portfolio risk is not the weighted averaged of the variances of return of individual assets. The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and their respective weights. (Pradhan, 1992: 295)

An investor wants to minimize the risk of investment and maximize return but it is not possible through investment in a single asset. He\She needs to invest in two or more securities. This collection of securities is called portfolio. The basic assumption of portfolio theory is that an investor you want maximize the returns from your investment for a given level of risk. It also assumes that investors are basically risk averse, meaning that, given a choice between two assets equal rates of return they will select the asset with the lower level of risk. Risk is the deviation of actual returns from an expected return. The more the deviation, we need diversity our fund into different securities or assets. Portfolio analysis considers the determination of future risks and returns in holding various blends of securities. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. Diversification of portfolio helps to minimize risk and different diversification techniques have been developed for reducing portfolio risk. (Bhattari, 2007:132)

Portfolio theory was originally proposed by M. Markowitz in 1952 AD. The theory is concerned with selection of an optimal portfolio by a risk averse investor. A risk adverse investor is an investor who selects a portfolio that maximizes expected return for any given level of risk or minimize risk for any given level of expected return. A risk adverse investor will select only efficient portfolios. Portfolio theory can be used to determine the combination of these securities that will create the set of efficient portfolios. The selection of the optimal portfolio depends on the investor's performance for risk and return. (Cheney & Moses. 10th e.d, 648)

Portfolio management is basically concerned with efficient management of portfolio investment in financial assets. Portfolio management assumes periodic supervision of the security in the portfolio. The process of portfolio management is closely and directly linked with the process of decision-making the correctness of which cannot be ensured in all cases. The basic problem of portfolio management is to establish an investment objective of goal and then decide the best to reach the securities available. In order to do a proper job of portfolio management, the investor must be aware of the investment process. The process of portfolio

management involves a logical set of steps common to say any decision, plan, implement and monitor.

An investor will choose his/her optimal portfolio from the set of portfolio that

1. offers maximum expected return for varying level of risk and
2. offers minimum risk for varying level of expected return (Sharp, Alexander and Bailey, 2000:194)

2.1.1 PORTFOLIO RETURNS:

The expected return of the portfolio is the weighted average of the expected return of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each asset, and sum of the weights must be equal one. (Cheney & Moses, 10th ed, 652)

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

Where,

R_P = Portfolio expected Returns.

W_A = Weight of invested in stock 'A'

W_B = Weight of invested in stock 'B'

R_A = Expected return for stock 'A'

R_B = Expected return for stock 'B'

Expected Return of portfolio is the weighted average expected returns of assets included in the portfolio. Where the weights are the proportion of investment initially made in each asset included in the portfolio.

$$E(r_p) = \sum_{i=1}^n W_i E(r_i) = W_1 E(r_1) + W_2 E(r_2) + \dots + W_n E(r_n)$$

Where,

$E(r_p)$ = expected return of portfolio.

W_i = weight of ith asset or stock

$E(r_i)$ = expected return of ith asset

n = number of assets included in the portfolio. (Bhattari; 2007, 136)

2.1.2 PORTFOLIO RISK

A statistical measure of total risk is the variance or its square root, the standard deviation. The standard deviation or the variation of returns from an investment is the total risk, of our investment. This total risk is measured by using the following equation.

$$\text{Var}(r_p) = \sum_{i=1}^n \phi_i^2 W_i^2 \sigma_i^2 + 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^n \phi_i \phi_j W_i W_j \text{COV}_{ij}$$

Where,

W_i = Proportion (weight) of investment in security i.

W_j = Proportion (weight) of investment in security j.

COV_{ij} = Covariance of the returns between security i and security j. It can also be written as Ξ_{ij} .

n = number of assets included in portfolio.

$\text{var}(r_p)$ = Variance of returns of portfolio i.e, Ξ_p^2

Alternatively, The following equations explain the standard deviation of portfolio in a simple way.

a) If portfolio is made with two securities A and B.

$$\Xi_p = \sqrt{W_A^2 \Xi_A^2 + W_B^2 \Xi_B^2 + 2 \text{Cov}_{AB} W_A W_B}$$

$$\Xi_p^2 = W_A^2 \Xi_A^2 + W_B^2 \Xi_B^2 + 2 \text{Cov}_{AB} W_A W_B$$

b) If portfolio is made with three securities A, B and C. Then,

$$\Xi_p = \sqrt{W_A^2 \Xi_A^2 + W_B^2 \Xi_B^2 + W_C^2 \Xi_C^2 + 2 \text{Cov}_{AB} W_A W_B W_C + 2 \text{Cov}_{BC} W_B W_C + 2 \text{Cov}_{AC} W_A W_C}$$

$$\Xi_p^2 = W_A^2 \Xi_A^2 + W_B^2 \Xi_B^2 + W_C^2 \Xi_C^2 + 2 \text{Cov}_{AB} W_A W_B W_C + 2 \text{Cov}_{BC} W_B W_C + 2 \text{Cov}_{AC} W_A W_C \quad (\text{Bhattacharai, 2007:138})$$

Portfolio Theory and Risk Diversification:

The portfolio theory provides a normative approach to the investor's decision to investment in assets of or securities under risk. It is based on the assumption that investors are risk averse. This implies that investor hold well diversified portfolio instead of investing their entire wealth in a single asset or security. A portfolio is a bundle or combination of individual assets or securities. If investor holds a well diversified portfolio, then his concern should be the expected return and risk of portfolio rather than individual assets. The second assumption of the portfolio theory is that returns of securities are normally distributed. This means that the mean (the expected value) and variance (or standard deviation) analysis the foundation of the portfolio decisions. (Pandey, 1999)

2.1.3 EXPRESSIONS USED ON PORTFOLIO

Various terms and variables have been included to analyze the portfolio analysis. Among them, some are being explained as follows.

Total Risk:

The total variation of the rate of return for an individual security as measured by the standard deviation or variance of the rate of return is called total risk. According to CAPM total risk is divided into two parts. They are systematic and unsystematic risk.

Systematic Risk:

The variability of return on stock or portfolios associated with changes in return on the market as a whole. These are risk that effects securities over all and consequently, cannot be diversified away. In other words, even an investor who holds a well diversified portfolio will be exposed to this type of risk. (Vanhorn & Wachowicz, 1996:100)

Unsystematic risk:

The variability of return on stock or portfolio not explained by general market movements. By diversification the risk can be reduced and even eliminated if diversification is efficient. Therefore, not all of the risk involved in holding a stock is relevant since part of this can be diversified away (Vanhorn & Wachowicz , 1996:100)

Characteristic line:

A line which describes the relationship between an individual security return and return on the market portfolio is called character line. It depicts the expected relationship between excess return for the stock and excess return for the market portfolio. The expected relationship may be based on the past experience, in which case actual excess return for the stock and for the market portfolio would be plotted on the graph and a regression line best characterizing the historical would be drawn. The slope of this line is beta. (Vanhorn & Wachowicz, 1996:102)

Beta:

Beta is simply slope (i.e the change in the excess return on the stock over the change in excess return on market portfolio) of the character line. The beta of a portfolio is simply a weighted average of the individuals stocks betas in the portfolio. The beta of stock represents its contribution to the risk of a highly diversified portfolio of stock (Vanhorn & Wachowicz),1996:102-103)

Beta of a market return equals to 1 and beta coefficient as an index of systematic risk is used to rank the assets. If beta is larger than 1, then the asset is more volatile than the market and is called an aggressive beta. If the beta is less

than 1, the asset is called a defensive beta and its price fluctuation is less volatile than the market.

$$\text{Market Beta } (b_m) = \frac{\text{Cov}_{mm}}{\sigma_m^2} = \frac{r_{mm}\sigma_m\sigma_m}{\sigma_m^2} = \frac{1|\sigma_m^2}{\sigma_m^2} = 1$$

(Bhattacharai, 2007:172)

Portfolio Beta, (bp)

Portfolio beta is the weighted average beta of the total securities included in the portfolio. It can be calculated by using the following equation.

$$\text{Portfolio beta } (bp) = \sum_{i=1}^n W_i b_i + W_n b_n \text{ (Bhattacharai, 2007:172)}$$

Security Market line (SML)

Security market line is the line showing the relationship between the systematic risk index. (beta) and the required rate of return. It shows, the relationship between risk as measured by beta and the required rate of return for individual securities. (Thapa, 2062 : 3.16)

Covariance and correlation:

The covariance is a statistical measure of how the returns of two assets move together. In other words, covariance is the joint variance of any two securities. It is a statistical measure of the relationship between two random variables. That is, it is a measure of how two random variables, such as the return on securities A and B, move together. A positive value for the covariance indicates that the securities returns tend to move in the same direction. A negative value of the covariance indicates the return of securities move in the opposite direction and the zero value of the covariance indicates no relationship between the securities return. (Bhattacharai, 2007:139)

Correlation is a relative measure of relationship that is bounded by + 1.0 and – 1.0. It is a statistical measure of the extent to which the returns and on any two securities are related. However, it denotes only association not causation. Covariance and correlation are closely related. The correlation measure the degree of relationship of movement of securities’ return. (Bhattacharai, 2007: 139)

Minimum Variance Portfolio

It is a portfolio given minimum variance (standard deviation) in a given set of portfolio. This portfolio is also known as optimal portfolio. An investor can

develop many portfolios from the available (limited) fund and each portfolio gives its own standard deviation and expected return but what proportion of investment in two different assets give minimum (lowest) variance (risk). (Bhattacharai, 2007:140)

Market Average Portfolio:

Market average consists of all market represent able securities traded in the market, the risk is minimized to systematic level. In other words, the market portfolio is simply the rightly priced portfolio as that offers average return for the average level of risk. (Pradhan, 1992: 300)

Diversification:

The process of adding securities to a portfolio in order to reduce the portfolios unique risk and thereby, the portfolio total risk. The objective of portfolio analysis is to reduce risk. By combining securities of low risks with securities of high risk, success can be achieved by an investor in making a choice of investment out lets (Thapa 2001:23)

Simple Diversification:

Simple diversification is defined as not putting all the eggs in one basket. Under this diversification securities are selected randomly and are not provided equal weight. If we add 10 to 15 assets in portfolio then we can minimize the portfolio's total risk to the undiversification level.

Diversification across industries:

Another technique to diversify the portfolio is diversification across industries. Under this technique, assets in the portfolio are selected from different industries rather than from one industry. Under it the diversification is made to minimize the total risk, though many empirical researches have shown that diversifying across industries is not much better than selection securities randomly.

Superfluous Diversification:

Under a simple diversification a maximum risk reduction is attained through the inclusion of 10 to 15 assets in the portfolio. If we add further more assets in the portfolio such diversification called superfluous diversification. No further risk reduction is possible but instead it arouses more portfolio management problems, like high research cost high transaction costs, impossibility of good portfolio management, etc.

Simple Diversification across Quality Rating Categories Diversification of portfolio is also possible across the quality rating assets or securities. Different rating agencies rate different companies and their assets on the basis of the possibility of default risk or the risk of bankruptcy. Under a simple diversification across quality rating categories, we select assets randomly from the homogeneous quality ratings. The highest quality portfolio of randomly diver stocks will be able to achieve lower levels of risk than the simple diversified portfolio of lower quality stocks.

Markowitz Diversification:

A more analytical technique to diversify a portfolio is Markowitz diversification. Harry M. Markowitz developed this theory of diversification. Markowitz diversification is based on the correlation. Under this theory, if portfolio is made by combining assets which are less than perfectly positively correlated (+1), the reduction in risk is possible without sacrificing portfolio returns. The lower the correlation between assets, the more the Markowitz diversification will be able to reduce the portfolio risk. If the assets are perfectly negatively correlated (-1), the riskless portfolio is possible. (Bhattarai, 2007:133-136)

2.1.4 PORTFOLIO PERFORMANCE MEASURE:

Sharpe’s Portfolio Performance Measure

The Sharpe ratio (also called an index of portfolio performance) measures the amount of return from an investment portfolio for a given level of risk. It does this by dividing a measure of portfolio volatility (the standard deviation of its returns over a specific period) into the excess returns generated by the portfolio over a risk free rate of return for the same period. The higher the resulting number (index), the better is the portfolio performance. This ratio, also known as the reward to variability ratio, is used to rank the performance of investment funds.

Sharpe index of portfolio performance (S_p) = $\frac{\text{Risk Premium}}{\text{Total Risk}}$

$$= \frac{\bar{r}_p - r_f}{\Xi_p}$$

Where S_p = Sharp index of portfolio performance

\bar{r}_p = average return on portfolio

r_f = Risk free rate of return

Ξ_p = Standard deviation of portfolio

Treynor's Portfolio Performance Measure:

The concept of performance measurement of William Sharpe and Jack Treynor is not different but Treynor uses systematic risk instead of total risk to calculate the performance index. Therefore Treynor suggests the use of beta coefficient of portfolio, a measure of systematic risk index instead of standard deviation of portfolio. The following equation measures the portfolio performance under Treynor's concept.

$$T_P = \frac{\text{Risk Premium}}{\text{Systematic Risk Index}} = \frac{\bar{r}_P - r_f}{b_f}$$

Where,

T_P = Treynor index of portfolio performance.

\bar{r}_P = average return for portfolio

r_f = risk free rate of return

b_f = Systematic risk index of portfolio

Jensen's Portfolio Performance Measure:

Jensen's measure of portfolio performance is based on the capital asset pricing model (CAPM). This measure of portfolio performance is the average return on the portfolio over and above that predicated by the CAPM, given the portfolio beta and the average market return. Therefore, Jensen's portfolio approach for evaluating portfolio performance involves two steps. (Bhattarai, 2007; 375-376)

Step 1: Using CAPM equation i.e.

$E(r_p) = r_f + [E(r_m) - r_f] b_p$, a portfolio manager calculates the required rate of return for the portfolio.

Step 2 : Portfolio manager compares the actual realized return of portfolio with the required rate as suggested by CAPM equation.

2.1.5 REVIEW OF POPULAR MODELS OF PORTFOLIO:

Capital Assets Pricing Model

A model that describes the relationship between risk and expected (required) return. In this model a security expected (required) return is the risk free rate plus a premium based on the systematic risk of the securities.

This model was developed in 1960 A.D. and it has had important implications for finance ever since, while other models also attempts to capture market behaviour. The CAPM is simple in concept and has real world applicability.

It allows us to draw certain implication about risk and the size of the risk premium necessary to compensate for bearing a risk. (Vanhorn & Wachowicz, 1996:101)

Assumption of the capital Assets Pricing Model:

Capital market theory (CMT) uses portfolio theory as its starting point. Thus, the assumption underlying portfolio theory also pertains to the CAPM. The assumptions underlying CMT and the CAPM appear less realistic than the portfolio theory assumptions.

1. All investors are risk-averse. Thus all investors seek to be on the efficient frontier.
2. There are no constraints on the amount of money that can be borrowed. Borrowing and lending occur at the identical risk-free rate.
3. All investors have identical belief about the expected returns and risk of assets and portfolios that is, all investors have homogeneous expectations.
4. All investors have a common investment horizon, whether it is one month, three month, one year or whatever.
5. All investments are infinitely divisible and marketable: that is it possible to buy or sell any portion of an asset or portfolio.
6. Taxes and transaction costs do not exist. That is there are no tax effects, costs of acquiring information or transacting costs associated with buying or selling securities. These are often referred to as perfect market assumption. Markets are assumed to be competitive therefore, the same investment opportunity are available to all investors.
7. There are no un anticipated changes in inflation or interest rates.
8. The capital market are in a state of equilibrium or striving toward equilibrium, there are no under pricing or over pricing exists, the prices will move to correct this disequilibrium situation. (Cheney & Moses. n.d.: 687)

Arbitrage Pricing Theory Model:

CAPM is based on only a single factor of the average market performance, and it is based on some unrealistic assumptions. Such a reservation on the part of the user called for a new model. Stephen A Ross's multifactor model (1976), called Arbitrage Pricing Theory (APT) is the answer to this call.

The APT is said to superior on the ground that it is more general than CAPM. The CAPM assumes that the rate of return on a security is liner function of the movement of a set of economic factors (f_k) common to all securities. The random rate of return under APT model is linear function of K factors as follows.

$$R_j = R_j + b_{j1} + f_1 + b_{j2}f_2 + \dots + B_{jk}F_k + e_j$$

Where,

R_j = Random rate of return on stock j

R_j = Expected rate of return on stock j

B_{jk} = Sensitivity of stock j's return to kth factor

F_k = Mean zero kth factor common to the returns of assets under consideration.

e_j = random error term indicating the unique effect on return.

The F_k is the mean zero random variable of kth factor and it is the deviation of realized value from the expected value. The error term e_j , is the unique or unsystematic risk which can be eliminated through diversification and does not affect the stock rate of return.

The name Arbitrage refers to the market condition where two or more securities of identical factor sensitive are priced differently, providing opportunities to make profit by selling over priced securities short and buying under priced securities long. Such transactions are called arbitrage and they allow market participants to make profit without investment and without assuming any risk through short selling and buying long for the amount equivalent to the short selling. Such opportunities rarely exist in an efficient market and no one can benefit from arbitrage transactions. Otherwise, prices will continue to change until the expected return from such transactions zero. Therefore the expected arbitrage profit is zero in long run if the market functions efficiently.

The ATP states that if no arbitrage opportunity exists in the market, the assets pricing is a function of risk free rate and a set of relevant factor related to risk premium. It is therefore true that ATP is not different from 'CAPM which also states that return on security is equal to risk free rate and risk premium for the market related factor. The ATP model can be expressed through some mathematical manipulation in CAPM format as follows:

$$R_j = R_f + b_{j1} [E(f_1) - R_f] + b_{j2} [E(f_2) - R_f] + \dots + b_{jk} [E(F_k) - R_f]$$

Thus, we can see that the ATP logic is not much different from the logic used in the CAPM. Similar to CAPM, only the set of systematic is priced in the above model, and no price is assigned for the diversifiable risk. The risk premium for systematic risk of each factor is determined as the market price per unit of risk multiplied by the degree of factor's systematic risk. (Pradhan, 1992:286-287)

Markowitz's Portfolio Selection Model:

Markowitz developed the basic model, which defines the expected return of a portfolio as a weighted average of the expected return of the individual assets in the portfolio. The weights are defined as the portion of the investor's wealth invested in particular assets.

Markowitz used the variance of return as the measure of risk. However, estimating portfolio risk in this way would obscure the effects of combining assets with different return pattern in a portfolio.

The portfolio model developed by Markowitz is based on the following reasonable assumption.

1. The expected return form an asset is the mean value of a probability distribution of future returns over some holding period.
2. The risk of an individual asset or portfolio is based on the variability of returns.
3. Investors depend solely on there estimates of return and risk in making their investment decisions. This means that an investors utility (indifference) curves are only a function of expected return and risk.
4. Inventors adheres to the dominance principle. That is, for any given level of risk, investors prefer assets with a higher expected return to asset with a lower expected return for assets with same expected return investors prefer lower to higher risk.

According to Markowitz, the expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each asset, and sum of the weights must be equal one. (Cheney & Moses n.d: 651-652)

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

Where,

R_p = Portfolio expected returns

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Expected return for stock 'A'

R_B = Expected return for stock 'B'

According to Markowitz, the portfolio risk is measured by either variance or the standard deviation of returns "The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weight" (Pradhan, 1992:295)

2.1.6 TECHNIQUES FOR PORTFOLIO CONSTRUCTION:

Therefore as many techniques for portfolio construction as there are managers. Each manager adds a special twist. Despite this personalized nature of portfolio construction techniques, there are four generic classes of procedure which covers the vast majority of institution portfolio management applications.

-) Step 1: Screens
-) Stratification
-) Linear Programming
-) Quadratic Programming

Screens: Screens are simple. Here is a screen recipe for a portfolio from scratch.

Step 1 : Rank the stocks by alpha

Step 2 : Choose the first 5. (for example)

Step 3 : Equal weight (or capitalization weight) the stock.

Screens have several attractive features. There is beauty in simplicity. The screen is easy to understand, with a clear link between (membership on a buy, sell or hold list) and effect (membership in the portfolio). The screen on ranking. Wild estimates of positives or negative alphas will not alter the result.

Screens also have several short comings. They ignore all informations in the alphas apart from the ranking. They donot protect against biases in the alphas. If all of the utility stocks happen to be low in the alpha ranking the portfolio will not include any utility stocks.

Stratification:

Stratification is glorified screening. The term stratification comes from statistics. This term is very loosely in portfolio construction. When a portfolio manager says uses stratified sampling he wants the listeners to (1) be impressed and (2) ask no further question. The key to stratification is splitting the list of followed stocks into categories. These categories are generally exclusive. The idea is to obtain risk control by making sure the portfolio has representative holding in each category.

The stratification scheme has the same benefits as the screen, plus some. It is robust, Improving upon the screen, it ignores any biases in the alphas across categories. It is some what transparent and easy to code. It has the same mechanism as the screen for controlling turnover.

Stratification retain some of the short coming of screens. It ignores some information and does not consider slightly over weighting one category and under

weighting another. Chosen well, the categories can lead to reasonable risk control. If some important risk dimensions are excluded risk, control will fail.

Linear Programming:

A linear programming (LP) is space – age stratification. The Linear Programming approach characterizes stocks along dimensions of risk, eg industry, size, volatility, beta. The Linear Programming does not require that these dimensions distinctly and exclusively partition the stocks. The linear programme will then attempt to build portfolio that are responsibly close to the bench mark portfolio in all the dimension used for risk control.

It is also possible to cut up a linear program with explicit transaction costs, a limit on turnover and upper and lower position limits on each stock. The objectives of the linear program is to maximize the portfolio's alpha.

The linear program takes all of the informations about alpha into account and control risk by keeping the characteristics of the portfolio close to the characteristics of the bench mark. The linear program has difficulty producing portfolio with a prespecified number of stocks. Also, the risk control characteristic should not work at cross purpose with the alphas. For example, if the alphas tell you to shade the portfolio toward smaller stocks at some times and toward larger stocks at other time you should not control risk on the size dimension.

Quadratic Programming:

Quadratic Programming (QP) is the ultimate in portfolio construction. The quadratic program explicitly consider each of the three elements in our figure of merit; alpha, risk and transactions costs. In addition, since a quadratic program is a glorified linear program, it can include all the constraints and limitation on find in a linear program. This should be the best of all world. Alas, nothing is perfect.

The quadratic program requires a great many more inputs than the other portfolio contraction techniques. More inputs means more noise. There are ample opportunities to make mistakes. It is a fear of garbage in, garbage out that deters one from using a quadratic that deters one from using a quadratic program.

This fear is warranted. A lack of precision, in the estimates of correlations is an inconvenience in the ordinary estimation of portfolio risk. For the most part, the estimation errors will cancel out. It is an obstacle in optimization. Because the optimizer tries to lower active risk, the optimize will take advantage of opportunities that appear in the noisy estimates of covariance but are not present in reality. (Grinold & Kahn, 1995:276-279)

2.2 REVIEW OF ARTICLES AND JOURNAL:

There are less articles published relating to the portfolio management and return of EPF. However, the researcher has included here as much he could find and considered related to the study.

Prof. Puskar Bajracharya has written on topic 'An overview performance of EPF' as : Cursory overview of the performance of EPF reveals an encouraging picture albeit in the midst of significant challenges emerging not only from the vagaries of business cycle and changing economic environment but also from the multitude of exogenous and indigenous reasons. The major performance indicators may be summarized as followings.

-) EPF extend service to 415000 employees comprising of civil service, military police, corporations and teachers, which has been increasing at an average growth rate of 4.80 percent per annum.
-) Employees contribution has reached Rs. 48 billion recording an average a growth of 20.7% and the total resources have reached over Rs. 51 billion in 2005-06 recording a growth of employee's fund.
-) The pattern of resources utilization shows that loans to saving employees and fixed deposits at commercial banks predominate accounting for almost 80.8 percent of the total utilization portfolio of the fund. Other sectors of utilization include project loan about 10.0 percent, government securities around 8.5 percent. A limit has been prescribed to each segment off the portfolio to enhance return while maintaining a desirable or minimum level of risk, a primary concern for an institution like EPF, which must tread path very carefully and cautiously as it is the repository of faith of employees particularly to ensure their future security affair contributing their meaningful life to various services.
-) Loans to saving employees is the principal source of revenue to the fund contributing about 43 percent of the total revenue followed by 31 percent by fixed deposit, 14 percent by project loans and about 11 percent by investment in government securities. In terms of relative returns, project loans on an average provide around 8.6 percent returns on loans followed by government securities and loans to saving employees while the return from fixed deposits is minimum with the interest rate on deposits declining unabated.
-) One of the most prominent features of the fund has been its ability to sustain administrative expenses, which have grown on an average of 4.5

percent per annum in nominal terms but has actually declined to 4.2 percent of the total revenue in 2005-06 in comparison to 4.6 percent in 2001-02. It may be noted that the ratio is less than the margin fixed by the central bank for commercial banks in loan and deposit rates meaning that EPE has been successful in maintaining discipline.

- J Employee Productivity in terms of revenue has increased from Rs. 40.45 lakhs in 2001-02 to Rs. 63.87 lakhs in nominal terms. This has been feasible due to expanding activities on the one hand and ability to reduce the size of employees on the other by various means including golden handshake process in an effort to rationalize the staff strength. Similar productivity growths are noted in terms of total resources, total loans and net earnings.
- J Another indicator of performance, which appears to be highly laudable, is the operational surplus that has more than double in 2005-06 compared to 2001-02. EPF was successful in generating an operating surplus of Rs. 339 million in 2005-06 or 0.66 percent⁶ in total resources or 10.5 percent in total revenue. This must be considered encouraging particularly in the perspective of declining interest rates and the operating environment in the nation. (Kosh, 2064:1-2)

Prof. Dr. Manohar K. Shrestha has written on a growing focus on operations and portfolio management of Karmachari Sanchaya Kosh as: The six year analysis period taking from 2055/56 to 2060\61 exhibits that the total investment portfolio has increased from Rs. 18037.4 million to Rs. 39204.1 million and the increment is 2.14 times. Then taking the contribution of each portfolio in the year 2060\61, it is found that there is major dominance of fixed deposits in various commercial banks as its share comes to 41 percent and then followed by loans to contributors having a share of 35 percent.

Investment in development represents 13 percent and there is institutional loan of 8 percent. The remaining 3 percent consists of share loan, Pokhara Housing Loan and loan to employees.

In the portfolio composition, KSK has still facing problems of devising a variety of new viable investment alternatives in the absence of internal investment management expertise and adequate investment professional background. Also true that the old established investment promotion cell is not manned by groups of people having investment sufficient background and professional expertise since people often come from fields not relevant to provide valuable advice and dynamic

investment counseling. The board composition KSK has no adequate exposure to the ways and means of managing retirement income to ensure pension benefits by devising various pension schemes. Very little idea has been floated to link provident fund to retirement income insurance (Bodie, 1990) although certain exposure exists in the matters relating to security benefits and payment. The tax shelter benefits exist as the amounts contributed to provident fund is not subject to tax payment. The Old Age and Survivors Insurance Fund covered under Social Security System and investment plans are to be devised to ensure adequate income to hedge against growing cost of living index.

Feedback and analysis reveals that KSK despite having greater institutional scope for growth has not been able to explore new possibilities of managing assets and liabilities in terms of their maturity structure. This is because of the continuation of same old practices and revival of the same traditional thinking without no pushing drive to develop defined benefit plans and defined contribution plans. As yet, effort is not coming to encourage. The growth of Keogh Plan is a pension plan for self employed persons or contributions that have business or service running venture skill. (Kosh, 2062:93-94)

Narayan Joshi in his article "Share Investment in Banking and Financial Institution: An EPF Perspective" has written as: The portfolio of share investment of EPF consists of both ordinary share and preference share of BAFI but this paper deals only with the ordinary shares. BAFT consists of three commercial banks (Himalayan Bank Limited, Nepal SBI Bank Limited, Lumbini Bank Limited) Four development banks (Nepal Development Bank, Nepal Business and Employment Promotion Financial Institution, Clean Energy Development Bank) two finance companies (Nepal Merchant Banking and Financial Company, NIDC Capital Markets) and one insurance company (Alliance Insurance Company Limited). In most of these institution EPF holds more than 10 percent share of there paid up capital. (Kosh, 2064: 81)

He, Narayan K. Joshi, uses the traditional financial ratio analysis tools to assess the financial performance of BAFT in BAFT in which EPF holds share. In his article he mainly focuses on performance measure- valuation ration and profitability ratio that is relevant in respect of investor. He mentioned in his conclusion that, like many of the individual and institutions investor, EPF is oriented only to stock of financial institutions, which ensures security with maximum return. This is often true for nascent market but in the long run this may not be. Holding all eggs (money) in one basket (financial sectors) alone will make

the stock portfolio of EPF vulnerable to risk associated with this sector. Hence the objectives as envisaged in its Five-Year Strategic Plan should be to divert to other sectors at present to hydropower rather than manufacturing sectors so as to diversify the risk. Moreover, the buy and hold (Passive) strategy of EPF albeit secured doesn't ensure maximum return (the achievement of which is a challenging task at present) to contributors, so the future steps should be to monitor the secondary market movement and divest the stocks that are underperforming in the market and hold/invest in stocks which are outperforming the market (Kosh, 2064:84)

Shiva Raj Shrestha in his article "Challenges of the Karmachari Sanchay Kosh in the New Millennium" points out the major challenges as:

-) To re-examine the entire concept of stakeholder involvement in the strategic guidance and management of provident funds.
-) To emphasize and risk-based supervision and risk management for the Kosh management.
-) To have prudence and aim at highest returns.
-) To re-examine the management of all investment portfolio including real estate development projects so that the contributors reap maximum benefit from investments by improving their provident fund benefits.
-) To identify emerging trends in the investment management of accumulated fund by top-level management.
-) To review the various schemes offered to its members/ contributors on an on-going basis in the light of the changing economic circumstances and demographic profile.
-) To improve the quality and efficiency of its program and service.
-) To identify all the potential cases of default and delinquency and initiate action for recovery of contributions along with interest and penalty.

He further writes that provident fund is an instrument for social transformation and progress and must be preserved, supported and developed. As a statutory body and a trustee fund, the main role of the Kosh is to provide financial security to its member contributors, especially after retirement, through a compulsory saving scheme. Thus, the Kosh has to invest the accumulated contribution money with at most care and vigilance to ensure that it is well able to maintain the capital preservation of its members' saving as well as give them the best possible investment returns common to the market with an acceptable level of risk. Hence, the Kosh's decision to invest in any project should always be based on the

criteria of security, liquidity and yield. The Kosh, being the largest contractual saving organization in Nepal, has the responsibility to ensure that the aspirations and expectations of the Kosh members are fulfilled in the best possible manner. This responsibility in turn requires optimization of investment return, reduction in administrative costs, delivery of quick, efficient and effective service to the members and ensuring that the Kosh adapts rapidly to change in the external environment. Hence, the development of strong contractual savings sector become feasible in a small economy like Nepal. Thus the government as well as the central bank should focus on building efficient institutions that are able to respond to emerging challenges in a dynamic financial environment. The government has to introduce long term government bonds in the capital markets so as to strengthen financial soundness of the contractual saving organization. Likewise, the government should endeavor to avoid roll over risk and offer long duration assets via, provident fund bond, pension fund bond, insurance bond and another special bonds, to contractual saving organization in the government securities market. Last but not least, the government has to build up professional expertise in accounting and auditing, actuarial science, assets managements and other areas of the development of the contractual savings sectors in the country. (Kosh, 2061:84-86)

2.3 REVIEW OF PREVIOUS THESIS

Khaniya(2003), prepared the thesis on entitled "Investment Portfolio Analysis of joint venture Banks" Five listed joint venture banks. NABIL, SCBNL, HBL, NBBL, & EBL as sample. The main objective of the study was to study portfolio structure of NABIL banks Ltd. as compared to other joint venture banks. From her finding the investment portfolio structure of NABIL banks is almost similar to other joint venture banks investment portfolio. Hence NABIL is following market trend in composing investment portfolio in various sectors as most of the investment is concentrated into loans & advances to private sectors enterprises and securities investment is to purchase of government securities. The financial performance of NABIL bank is at moderate position to other joint venture banks. Some of banks earn high and some banks earn low then NABIL banks.

Shrestha (2006) performed research on Investment portfolio of Pokhara Finance Ltd. In her study she has analyzed deposit mobilization and investment trends in different sectors made by the company. Six years of data from 2055 BS to 2061 BS has been taken into consideration for conduction the research. The

researcher found that the said company had high liquidity during the period and focused more on loan and advance than on other government securities. From the study she has concluded that Pokhara Finance has to relate to maintenance of appropriate risk return trade off between credit outflow by the way of loans and investment and strict monitoring of its repayment to ensure timely cash in flows. She further recommended launching demand driven or customer oriented scheme so as to initiate depositors and to focus on diversification of investments.

Bhatta (2003) prepared a thesis "Portfolio Management of listed finance companies of Nepal". The main objectives of the study was to identify the present situation of portfolio management of finance com. in Nepal with the help of risk return and other relevant variables. Which conclude that the most of finance companies have enough unsystematic risk (diversifiable risk) that means there is no effective portfolio management of listed finance companies. In context of portfolio risk and return of Nepalese finance companies investor has to bear higher portfolio risk to increase little bit of portfolio return.

The major problem to manage the portfolio is volatility of different securities in Nepalese capital market. For the selection of portfolio in Nepal technical analysis does not work effectively but fundamental analysis work effectively. In Nepalese stock market passive strategy is more suitable than active strategy to achieve better result. Corporate investor think portfolio evaluation is necessary but lack of specific knowledge they depend on conventional method.

Joshi (2002) Conducted a research entitle "Investor Problem in Choice of Optimum Portfolio of Stock Exchange". The main objective of the study was to identify the investors problems choice of optimum portfolio of stock in NEPSE which conclude that portfolio management is a new concept for Nepalese investor. Due to lack of sufficient information proper investment is not possible. Proper investment needs huge information internal as well external. The stock market of Nepal is also in growing stage only. The only one stock exchange located in Kathmandu. Traditionally cry system for trading stock Limited number of security broker lack of opportunity of investment and many other reasons are there, which is acting as barrier of development of NEPSE. Investor does not know in which stock to invest, how to formulate the portfolio. Even many stock brokers do not give information to the investors. Investors are purchasing and selling their stocks mostly on the pressure of broker. Due to lack of sufficient information the decision for purchase and sell of stock has been difficult. It needs special knowledge as well as adequate skills to analyze portfolio.

Satyal (2002) has done a study on 'Risk and Return analysis of Listed Companies'. The eight companies are taken into account. The main objectives of the study were to analyze risk, return and other relevant variables that help in making decision about investment on securities of the listed companies and to examine the movement of market price of share. He has used holding period return and expected rate of return to calculate the return of the companies. Calculation of standard deviation, coefficient of variance and beta were used to measure risk and capital assets pricing model (CAPM) for portfolio analysis. The expected return of HBL is 52.66%, risk 29.5% and coefficient of variance is 0.56%, The beta is 1.576. So, HBL is less risky than NIB.

Poudel (2005) has done a study on "Portfolio Analysis of commercial Banks in Nepal" And out of seventeen commercial banks he took NBBL, EBL, BOKL and NIBL as sample. His objective of the study was to identify the situation of portfolio management of commercial banks of Nepal. From the study he drew the conclusion that.

Investment portfolio shows that how the investor is maintaining its investment by the means of portfolio. In study banks had made an investment in only two assets i.e. risky asset (share & debenture) and risk free asset (government securities). Among four banks EBL has invested its highest fund on risk free asset and lower amount on risky assets. NBBL has invested lower amount on risk free asset and highest amount on risky assets. None of the banks has invested any amount on NRB bond.

The study also showed that higher the investment in risk free asset (i.e. government securities) lower will be the return & and lower will be the risk also but if higher the investment in risky assets (i. e. share and debenture) higher will be the return and higher will be the risk also. The purpose of trend analysis in the study was to analyze loan and investment and total deposit trend of NIBL, NBBL, EBL, and BOKL and during 1998-2003 and forecast the trend of loan and investment and total deposit of next 6 years. Past trend showed that NBBL has utilized its more collected fund on loans and advances and investment. Future forecasting shows that BOKL, will utilize its more collected fund on loan and investment among banks.

Devkota (2004) conducted the research on to identify the situation of portfolio management of finance companies in Nepal. He took the sample of 8 finance companies in study. From the study of investment portfolio it is found that the industry average investment in government securities is 31.34%. The average

investments of two companies are higher than the industry average investment i.e. 81.82% and 78.89% > 31.34%. The companies YFCL and SFL have not invested any amount of their fund in government securities. The industry average investment in shares and debentures is 13%. The investment of five companies in shares and debenture are higher than the industry average and the investment of remaining companies are lower. PEFIL has the highest amount of investment in shares and debentures among the sample companies and YFCL has the lowest one. The industry average of investment in other is 55.66%. The average investment and remaining two companies have lower. In overall, the finance companies have given first priority to invest in others, second priority to government securities and least priority to shares and debentures.

Similarly, from the analysis of loans and advance portfolio it is found that finance companies have given first priority to invest high amount of their loans and advances to term loan and the second priority to housing loan and the least priority to others. Only one finance company has not invested its fund as loans and advances.

(Gautam, 2001) In her thesis she has found the following trend of investment of finance companies from the aggregated data it is shown that the investment on government securities was increasing rapidly from the period 1995 to 1998. However, it was decreased in the year 1999 and it may be because of low return on government securities as of Mid October 1999 and out of 40 companies there are 9 financial companies with zero investment on government securities. Out of remaining 31 companies 16 companies have up to 10 million and others 15 companies have more than 10 million investment on the securities. Her study shows that 38 companies invested on hire purchase and the investment was decreased rapidly. All the companies have invested on housing loan. The investment toward housing loans has almost linear.

Pandey (2000) in her thesis entitled "Risk and return analysis of common stock investment" concluded that poor education and lack of adequate source of information are the major constraints for development of stock market in Nepal. Among all the other securities common stock is more risky securities. When risk and return compared to different industries, finance companies and insurance companies are the best as per highest return with higher degree of risk where as trading industry has minimum return and minimum level of risk. There is no significance different between the portfolio return of insurance co. stock and over all market portfolio. Market sensitivity is measured by beta coefficient which cannot be reducing by diversification. Public invest their funds in different

securities on the basis of expectation and assumption rather than analysis. The proper selection of portfolio approach is better way to get success in stock market.

Shrestha (1989) has conducted a research which has the objectives :

- i) To examine the functioning of EPF.
- ii) To evaluate the problems of the EPF.
- iii) To suggest measures for its improvement in functioning.

From the study, he addresses the problem that, majority of members who have obtained housing loans are finding the amortization of loan very much in compatible with their means. Under the circumstances, housing loans are blatantly utilized for purposes other than that intended for. Deliquesces, which is but natural, on the part of the house loans recipients will eventually result in forfeitures of Whatever benefits they otherwise could avail from EPF on their separation from services. Although very little can be done to remedy the present situation, corrective measures can be taken to prevent further detriments to the institution and the beneficiaries alike. The possible solution to the problem lies in abolishing the present system of granting loans by EPF and establishing as early as possible a separate housing development authority in the public sector for implementing low cost housing programmes especially intended to benefit the fixed income populace.

He further adds EPF ought to invest the trust funds in assets that will appreciate in value over times so that member can benefit from capital growth in the years to come. For this purpose, the invested assets should comprise a mix of portfolio conferring high yield and also providing a hedge against inflation. Investment in real estate properties would be a step in the right direction to counter inflating pressures.

2.4 RESEARCH GAP:

From the above studies the researcher found the gap that all the previous research are done mostly based on showing the risk and return and portfolio analysis of commercial banks and finance companies. There is very less research work done regarding the any financial aspect of EPF. Even the research done by Shrestha on 1989 was just limited to identifying the problem related with EPF on those days, which does not keep much significance in these days. Therefore the researcher has conducted this research to analyze the existing investment portfolio and its functioning.

CHAPTER – III

RESEARCH METHODOLOGY

Research methodology describes the methods and process applied in the entire aspect of the study focus of data, data gathering instrument and procedure, data tabulating and processing and methods of analysis.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them (Kothari, 1990:10). This chapter includes research design, nature of data, data collection procedure, population and sample and data processing procedures.

3.1 RESEARCH DESIGN:

Research design is the plan, structure and strategy of investigation conceived so as to obtain answer to research questions and to control variance. The plan is the over all scheme or program of the research. It includes an outline of what the investigator will do from writing the hypothesis and their operational implications to the final analysis of data. The structure of the research is more specific. It is the outline, the scheme, the paradigm of the operation of the variables. When we draw diagrams that outline the variables and their relation and juxtaposition, we build structural schemes for accomplishing operational research purpose. (Kerlinger, 1986:275)

Therefore the study is based on a case study analytical approach of research design. Case study design is essential because the finding and conclusion drawn from the study cannot be generalized and applied to all entire financial industry. It is an investigation of a given unit. Analytical approach makes analysis of gathered facts and information and makes a critical evaluation of it. It is the process of micro analysis and appraisal of the data.

3.2 NATURE AND SOURCE OF DATA:

This study is mainly based on secondary data. The necessary data and information have been collected from various sources covering the period of 5 years. i.e. 2060/61- 2064-065. Similarly related books, magazine, journals articles,

reports, bulletins, related website, annual report etc are used. Previous report studies to the subject are also counted as the source of information.

3.3 POPULATION AND SAMPLE:

Population or universe refers to the entire group of people, events, or things of interest that the researcher wishes to investigate. A sample is a collection of items or elements from a population or universe. (Wolff and Pant, 2005:162) In this study, EPF is the main and only centre point. Therefore, EPF is itself the population and sample of the study.

3.4 DATA GATHERING PROCEDURE:

As this study is mainly based on secondary data, the secondary data is gathered from various libraries, various related literatures, from related website, journals, annual reports, article etc.

3.5 DATA ANALYSIS METHOD:

Analysis is the careful study of available facts so that one can understand and draw conclusion from them on the basis of established principles and sound logic. After the completion of data collection they are classified into different categories as per their nature. Hence the data are analyzed by using financial and statistical tools.

The result of analysis are presented in tables and graphs according to the nature of the data where necessary.

3.5.1 FINANCIAL TOOLS:

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

Cash and Bank Balance to Current Assets

The cash and bank balance to current assets ratio reflects the position of cash and bank balance in the total of current assets. Cash and bank balance are the highly liquid assets compared to other current assets. It is computed by using following formula.

$$\text{Cash and Bank Balance to Current Assets} = \frac{\text{Cash and Bank Balance}}{\text{Total Current Assets}}$$

Investment to Total Fund

This ratio shows the investment made out of total fund available. This ratio is calculated by dividing the total investment by the total fund available. The ratio is computed as:

$$\text{Total Investment to Total Fund} = \frac{\text{Total Investment}}{\text{Total Fund}}$$

Profitability Ratio

The profitability ratio as the name suggests, measures the profitability of business operation in terms of profit margin, return on equity, return on total investment and reflects the over all efficiency and effectiveness of management. (Pardhan 1992:39)

Profitability can be measured in term of relationship between net profit and assets. This ratio is also known as profit to asset ratio. It measures the profitability of investment. The over all profitability can be calculated as:

$$\text{Return on total assets} = \frac{\text{Net Profit}}{\text{Total Assets}}$$

Return on Investment Ratio:

Return on investment ratio shows how efficiently the organization is investing it fund in different sector for generating profit. The higher the ratio the better the organization profit. The ROI ratio measures how efficiently the organization can earn on its investment. It is a kind of technique that measure the profitability position of the organization.

This ratio can be calculated as:

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Total Investment}}$$

3. STATISTICAL TOOLS:

The following statistical tools will be used while making analysis of data. Standard deviation of stock return standard deviation (S.D) is defined as the positive square root of the mean of the square of the deviations taken from the arithmetic mean (Bajracharaya, 2004:177). It is the square root of the variance and measures the unsystematic risk on the stock investment. It is denoted by σ . Symbolically,

$$\exists_j = \sqrt{\frac{\phi (R_j - \bar{R}_j)}{N}}$$

Where,

\exists_j = Standard deviation of return of stock j during period n.

Variance of Stock Returns:

Variance is the mean of squared deviation about the mean of a series. The variance also shows the square of the standard deviation and denoted by \exists^2 . Symbolically

$$\exists^2_j = \frac{\phi (R_j - \bar{R}_j)}{N}$$

Where,

\exists^2_j = Variance of the return of stock j.

Coefficient of Variation:

Standard deviation is the measure of dispersion. The relative measure of dispersion based on the standard deviation is known as coefficient of standard deviation. The coefficient of dispersion based on standard deviation multiplied by 100 is known as coefficient of variation (C.V.) C.V. measure risk "Per unit of expected return" less the CV will be the uniformity, consistency etc and more the C.V. less will be the uniformity, consistency etc,. Symbolically

$$\text{Coefficient Variation (C.V)} = \frac{\exists}{R_j}$$

Covariance:

Covariance is the joint variance of any two securities. It measures how two random variable, such as the return on securities A & B move together. A positive value of covariance indicates that the securities return tend to move in the same direction. A negative value of covariance indicates the returns of securities move in the opposite direction and the zero value of covariance indicates no relationship between the securities return. The covariance between the securities return can be calculated by using following. (Bhattari, 2004:96)

$$\text{Cov} (r_j, r_m) = \frac{\phi (CR_j - \bar{R}_j) (R_m - \bar{R}_m)}{N}$$

Where,

$\text{Cov} (r_j, r_m)$ = Covariance between stock J & market return M.

Correlation:

Covariance and correlation are closely related. The correlation measure the degree of relationship of movement of securities return. Correlation coefficient always lies between +1 and -1. A value of +1 represent perfectly positive correlation and value of -1 represent perfectly negative correlation. (Bhattacharai, 2004:97). Symbolically,

$$\rho_{jm} = \frac{\text{Cov}(r_j - r_m)}{\sigma_j \sigma_m}$$

Where

ρ_{jm} = correlation between stock j and market return.

Trend Analysis:

Trend Analysis is an analysis of financial ratio over time used to determine the improvement of determination of its financial situation (Gupta, 1996:541). The trend line is represented by following equation.

$$Y = a + bx \dots\dots\dots (i)$$

Where,

Y = trend values

a = Y intercept or value y, when x = 0

b = Slope of the trend line or amount of change that comes in y for a unit change in x.

x = variables that represent time or time variables.

To find the value of a and b, we have to solve the following equations.

$$\sum Y = Na + b\sum X \dots\dots\dots 1$$

$$\sum XY = a \sum X + b \sum X^2$$

Where,

N = No. of years

To make calculation easier, the deviation of the independent variable (i.e.time) are taken from the middle of the time period so that $\sum X = 0$, then the above two equation change to

$$\dots a = \frac{\sum Y}{n} \dots \frac{\sum XY}{\sum X^2}$$

CHAPTER –IV

DATA PRESENTATION AND ANALYSIS

This chapter is the heart of the whole study. This chapter makes an analysis and interpretation of all collected relevant data related to the study. The study is fully devoted to analyzing the profitability ratios, investment portfolio structure and return of the EPF. It also presents and analyses the relationship between the investment portfolio and return of EPF.

4.1 Analysis of Ratios:

An arithmetical relationship between two figures is ratio. In other words, the relationship between accounting figures expressed in mathematical terms is known as financial ratios. As tools of financial analysis, ratio can be expressed in term of percentage and times. Ratio is always calculated by dividing one item to another.

From the help of ratio analysis, the qualitative judgment can be done very easily and timely. Ratio analysis server as stepping stone for an inter-firm comparison to take Corrective measure. In this chapter only important financial ratio seeing the nature of organization and relevancy of data are analyzed.

4.1.1 Cash and bank balance to current Assets

The cash and bank balance to current assets ratio reflects the position of cash and bank balance in the total of current assets. Cash and bank balance are highly liquid asset compared to other current assets. It is computed by using following formula.

$$\text{Cash and bank balance to C.A. Ratio} = \frac{\text{Cash and Bank Balance}}{\text{Total current Assets}}$$

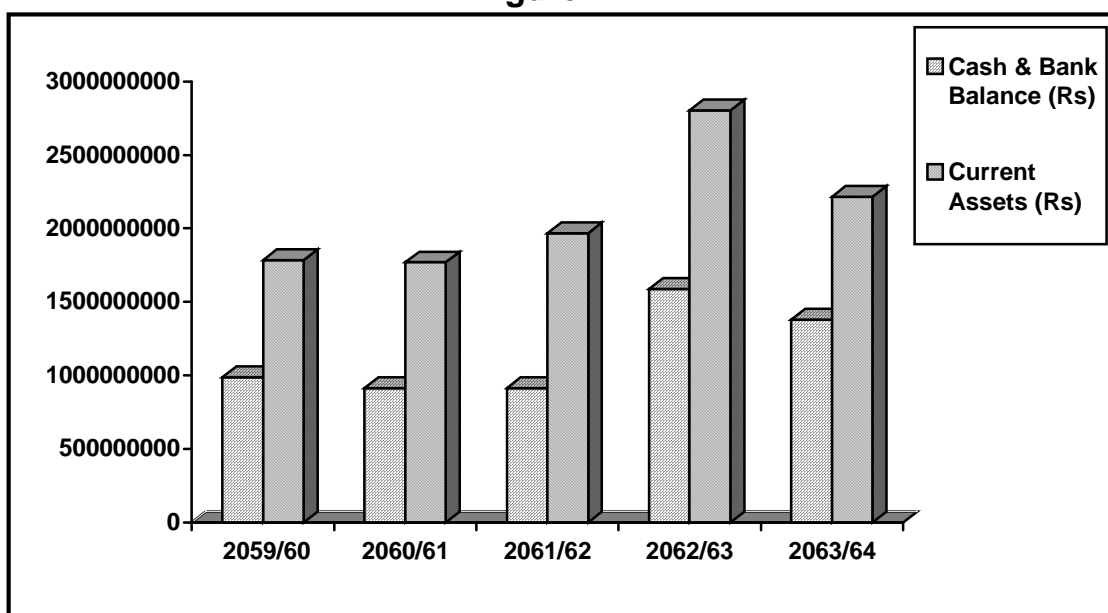
The following table shows the cash and bank balance to current assets ratio of EPF.

Table No. 1

Cash & Bank Balance to current Assets Ratio

Year	Cash & Bank Balance (Rs.)	Current Assets (Rs.)	Ratio (%)
2059/60	988,988,231	1,785,734,291	55.38
2060/61	914,469,049	1,770,989,145	51.64
2061/62	913,890,611	1,967,733,856	46.44
2062/63	1,589,276,933	2,803,856,472	56.68
2063/64	1,379,557,767	3,595,120,797	38.37

Figure: 1



The Cash and bank balance ratio states what portion of current asset is in the form of cash. The ratio indicates the higher cash and bank means the higher level of idle fund remain in the organization that situation creates the opportunity cost and decrease the profitability of the organization. The above table shows that EPF has high portion of cash and bank balance in current asset. EPF had 55.38% cash and bank balance in the year 2059/60, 51.64% of total current asset in 2060/61, 46.44% in the year 2061/62, 56.68% in the year 2062/63 and 38.37% in the year 2063/64. By the above analysis it is found that the EPF has fluctuating cash and bank balance to current ratio.

4.1.2 Investment to Total Fund

Investment to total fund ratio shows how effectively the EPF is utilizing its deposit made by the contributors on investment. This ratio is calculated by dividing the investment by the total fund available (total source). The total investment includes the investment made in the government securities, credit to contributors, fixed deposit (commercial Banks), project financing, share and debenture, etc. Where the total fund encompasses deposited amount by contributors and reserve fund. The ratio is computed as:

$$\text{Total Investment to total fund} = \frac{\text{Total Investment}}{\text{Total fund}}$$

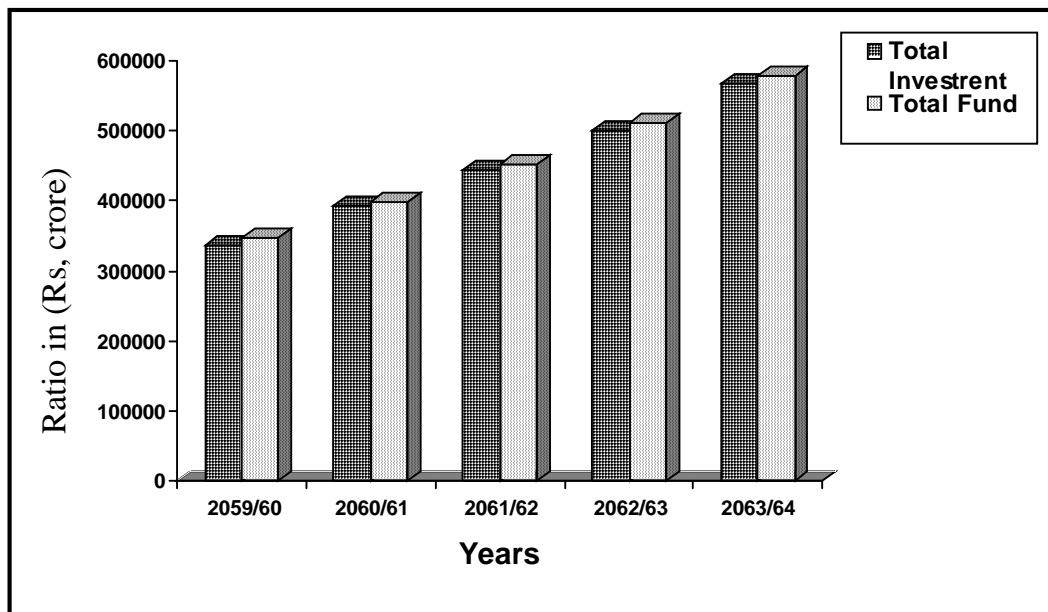
Table : 2

Total investment to total fund Ratio. (Rs in crore)

Year	Total investment	Total fund	Ratio(%)
2059/60	3349.89	3456.10	96.93
2060/61	3920.41	3988.31	98.30
2061/62	4440.19	4513.64	98.38
2062/63	4994.48	5108.61	97.77
2063/64	5660.87	5781.89	97.91

Source : (Kosh 2064)

Figure : 2



The table No. 2 shows the total investment to total fund ratio of EPF indifferent years from 2059/60 to 2063/64. The table depicts that the EPF has extensively investing its total fund available. EPF invested 96.93% in the year 2059/60, 98.30% in the year 2060/61, 98.38% in the year 2061/62, 97.77% in the year 2062/63 and 97.91% in the year 2063/64. From the above table it is found that EPF has been investing a very high portion of total fund availed as investment for employee's welfare which can be looked as good work done.

4.1.3 Return on Total Investment

Return on investment ratio shows how efficiently the organization is getting or obtaining the return or income from various sector of investment. The higher the ratio the better the profit or income. ROI is a kind of tool that measures the profitability Position of EPF.

Table: 3
Return Obtained from Various sector of Investment.

S.N	Particular	2059/60	2060/61	2061/62	2062/63	2063/64
		Return %	Return %	Return %	Return %	Return %
1.	Govt. securities	8.98	7.30	7.43	7.46	5.52
2.	Share	11.84	5.43	3.0	5.46	10.6
3.	Fixed Deposit (Commercial bank)	7.63	7.2	6.07	4.78	5.06
4.	Project financing	11.1	9.88	8.10	8.58	8.08
5.	Credit to contributors.	10.04	8.21	6.96	6.73	6.22
	Average:	8.80	7.80	6.77	6.59	6.03

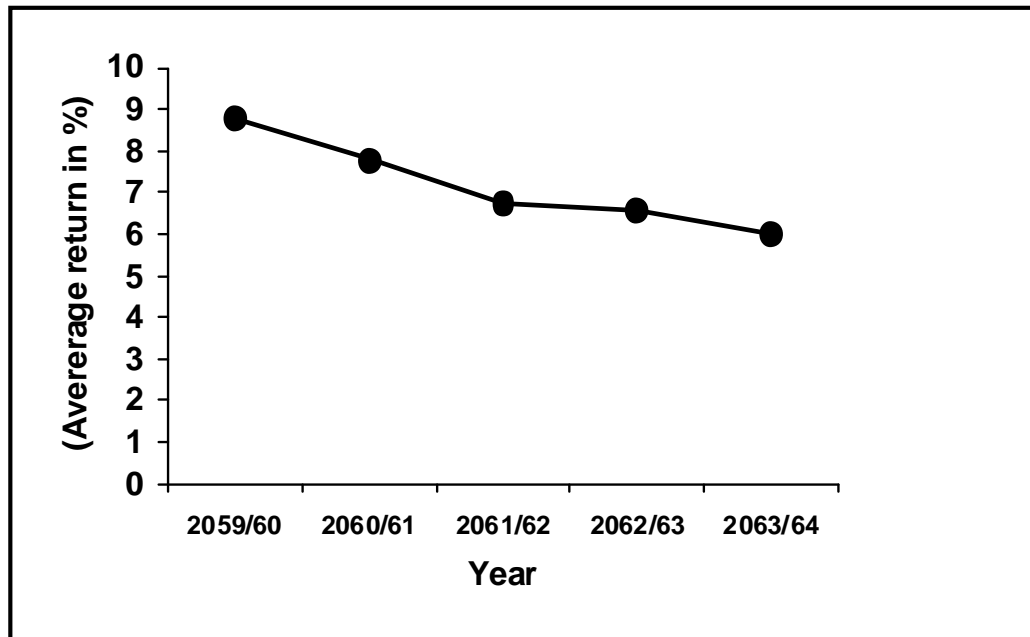
Source: (Kosh 2064 and kosh 2065)

In the above table the return obtain form various sectors of investment from 2059/60 to 2064/65 is shown. The result is expressed in percentage. The return obtained from all sectors of investment are in fluctuating form. It may be because of deviation in invested amount. How ever, if we observe table: 2, i.e total investment in each year it is in gradually increasing pattern. The average return in percentage in 2059/60 is 8.8% 7.8% is in the year 2060/61, 6.77 in the year 2061/62, 6.59% in the year 2062/63 and 6.03% in the year 2063/64. Which is in decreasing patter in average.

The trend of a return from investment also can be shown in chart as.

Figure: 3

Trend Chart: Average Return from Investment



The above figure:3 is the trend chart of average return from investment of EPF. It shows that the average return is slowly going down each year. In the year 2059/60 it was 8.8% of total investment which has fallen to 6.03% of total investment by the end of 2063/064.

4.1.4 Return on Total Assets

Return on total assets (ROA) is the relationship between the net profit and total assets. This is the basis of measuring how efficiently the organization is utilizing its total assets in term of return generating form. It is the ratio that judges the effectiveness in using the pool of fund useful to measuring the profitability of all financial resources invested in the organization's assets. Higher the ratio the better the financial position of the organization is. The ratio is calculated dividing net profit by total assets of the organization. The profit of EPF is not tax deductible. Thus here net profit represents Net profit after tax and the total assets includes fixed assets, current assets, investment and loan lending. i.e, the total assets of balance sheet . It is calculated as.

$$\text{Return of Total Asset} = \frac{\text{Net profit}}{\text{Total Assets}}$$

Table: 4

Return on Total Assets Ratio

Year	Net Profit (Rs.)	Total Asset (Rs.)	Ratio (%)
2059/60	7,499,172	34,561,005,810	0.022
2060/61	153,719,009	39,883,141,608	0.385
2061/62	169,194,034	45,130,463,308	0.375
2062/63	339,107,058	53,632,102,239	0.632
2063/64	434,401,615	60,651,711,561	0.716
	Average		4.426

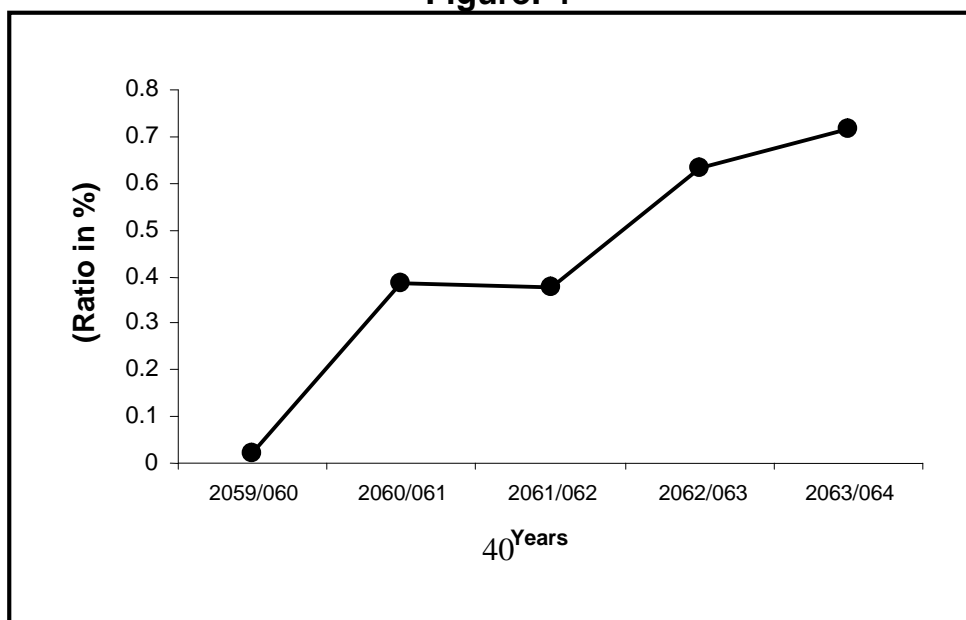
Source(kosh 2062-2065)

The return on total assets ratio measures the profitability with respect to the total assets. It seems to be vital tool for measuring the financial performance of the organization. The above table No. 4 shows the ROA ratio of EPF in different period from 2059/60 to 2063/64. The average ratio (0.426%). In the year 2059/60 the ROA was 0.022% and 0.385% in the year 2060/01, 0.385% in the year 2061/62 which all are below the average considered of five years period. But the ratio is 0.632% and 0.716% in the year 2062/63 and 2063/64 respectively which are above the average.

From the above analysis it is found that the ratio of the EPF has been making more profit in the last two years.

The ratio trend also can be shown in figures as:

Figure: 4



The above figure: 4 shows the ROA (Return of total assets) in trend chart. It is shown that the ROA is gradually in or easing. In the year 2059/60 it was only 0.022% of total assets which is reached to 0.716% by the end of 2063/064.

4.2 Investment Portfolio Analysis

Portfolio investment refers to an investment that combines several assets. It is a collection of securities or sectors of investment. Portfolio that provides the highest possible return for any specified level of risk or the lower possible risk for any specified rate of return is desirable. Portfolio management can be also taken as risk and return management. It aims to determine an appropriate asset mix which attains optimal level of risk and return.

With the intention of mobilizing its fund effectively, EPF has formulated its own investment policy, Investment sectors, portfolio and priorities are fixed in the policy document. Following is the analysis of EPF investment portfolio in the period 2059/060 to 2063/064.

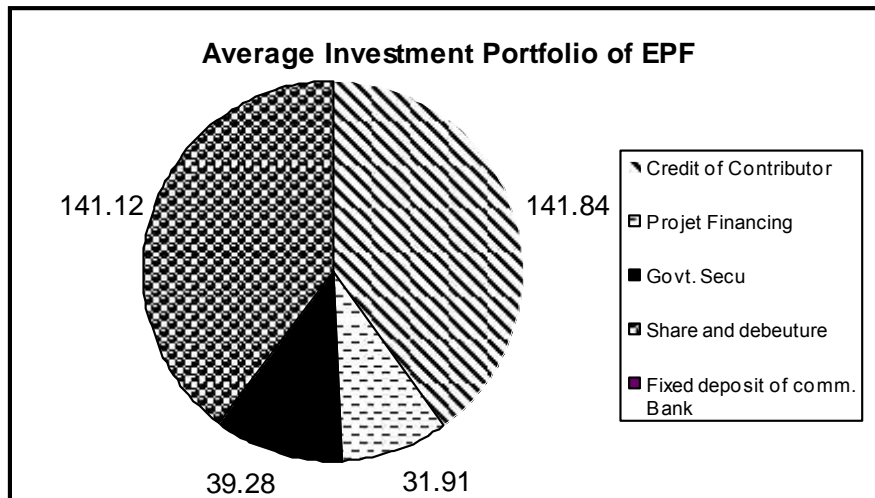
Table: 5
Investment Portfolio of EPF (In Percentage)

S.N.	Particular	2059/060	2060/061	2061/062	2062/063	2063/064	Average
1.	Govt. Securities	11.65	13.26	11.46	8.47	9.73	10.91
2.	Share & debenture	0.69	0.65	0.70	0.78	0.76	0.72
3.	Fixed Deposit (commercial bank)	45.54	41.05	35.20	37.08	36.91	39.20
4.	Project financing	10.81	8.57	11.88	9.97	7.25	9.7
5.	Credit to contributors	31.28	36.46	40.76	43.70	44.65	39.40

Source: (Kosh: 2064 and 2065)

The above table is presented in Pie-Chart as:

Figure: 5



In the above pie chart the average investment portfolio of EPF is shown. The percentage shown in table:5 is shown in pie chart. According to it, 1410.12⁰ and 141.84⁰ have the highest portion of average investment of investment in gort. securities and project financing are. 39.28⁰ and 34.92⁰ respectively, where as the investment on share and debenture is the least degree that is 2.84⁰.

Above table no. 5 shows the average investment portfolio of EPF from the fiscal year 2059/060 to 2063/064. It is observed that EPF has only five sectors or areas of investment. They are respectively government securities, fixed deposit of commercial banks, project financing, share and debenture and loan or credit to contributors or employees. The table shows that EPF had invested 11.65% of total investment in government securities in the year 2059/060, 13.26% in the year 2060/061, 11.46% in the year 2061/062, 8.47% in the year 2062/063 and 9.73 in the year 2063/064 The average investment in this area in past five years is 10.91%. Like wise EPF invested 0.69% of total investment in shares and debentures of banks and financial institutions, in 2059/060, 0.65% in the year 2060/061, 0.7% in 2061/062, 0.78% in the year 2062/063 and 0.76% in the year 2063/064. The average investment made by EPF in share and debenture of banks and financial institutions is 0.72%. Similarly, the investment of EPF in Fixed deposit of commercial banks in the year 2059/060 is 45.54%, 41.05% of total investment in year 2060/061, 35.20% in the year 2061/062 and 37.08% and 36.91% in the years 2062/063 and 2063/064 respectively. Where the average investment of EPF in this area is 39.20%. The EPF investment portfolio also consists project financing. The EPF had invested 10.81% of total investment in

project financing in the year 2059/060, 8.57% in the year 2060/061, 11.88% in the year 2061/062 and 9.97% and 7.25% of total investment in the year 2062/063 and 2063/064 respectively. Similarly, the investment of EPF in credit to contributors or loan to employees of total investment is 31.28% in the year 2059/060, 36.46% in the year 2060/061, 40.76% in the year 2061/062, 43.70% in the year and 44.65% in the year 2063/064. The average investment of EPF in this sector is 39.40%.

From the above analysis it is observed that each year the major among above five areas are credit to contributors and investment on fixed deposit of commercial banks. The investment in share of commercial banks has the least priority. However, the EPF is making investment on loan to contributors in increasing pattern. Where, in rest there is fluctuation.

4.3 Analysis of the Relationship of Return with Investment Portfolio

For making the study meaningful and to see how far the relationship is between variables, certain statistical tool has been used. Statistical tools are the mathematical techniques which are used to facilitate the analysis and interpretation of numerical data. The statistical tools also help to show the relationship between and to predict unknown variable with the help of known variable. In this study correlation coefficient is used to show the relationship between the investment portfolio and return of the EPF.

4.3.1 Relation between Investment in Government Securities and Return of the EPF

Correlation analysis is that statistical tool which can be used to describe the degree to which one variable is linearly related to another. It measures the relationship between two variables. The correlation coefficient between investment in government securities and return of EPF measures the relationship between these two variables. In this study the investment is independent variable (x) and return is dependent (Y).

The correlation between dependent variable and independent variable is 0.637. Thus there is positive correlation between independent and dependent variables. It indicates that if the investment in Government Securities is increased it will result in increase of return of EPF and vice-versa.

(Detail Calculation in Annex:1)

4.3.2 Relation Between Investment in Share of Commercial Bank and Return of EPF

To show the relationship between investment in share of Commercial Bank and return of EPF, Pearson's correlation coefficient method is used. The correlation value is -0.70 which means that there is negative relation between these two variables. It indicates that increase in investment in shares of commercial banks brings decrease in return of EPF and vice versa. In other words, if the independent variable investment in shares (X) increased, it will result in decrease of dependent variable return of EPF(Y).

(Detail in Annex:2)

4.3.3 Relation Between Investment in Fixed deposit of commercial Bank and Return of EPF.

The correlation coefficient between investment in fixed deposit of commercial banks of the EPF shows the relationship between these two variables. In this study it is assumed that investment in fixed deposit of commercial banks is independent variable (x) and return of the EPF is dependent variable(y). The calculated correlation coefficient is 0.924 which shows the positive correlation between investment in fixed deposit of commercial banks will increase the return of EPF.

(Detail in Annex:3)

4.3.4 Relation Between Investment in Project Financing and Return of EPF.

Here, to show the relation between investment in project financing and return of EPF the person's correlation coefficient has been used. The calculated value or correlation value is 0.356 which indicated that the return of EPF and investment in project financing has positive relation. It indicates that increase in investment in project financing brings increment in return of the EPF and vice versa.

(Sec: Detail calculation in Annex:4)

4.3.5 Relation Between Investment in Credit to Employees and Return of the EPF

The correlation coefficient between investment in credit to employees and return of EPF measures the relationship between these two variables. In this study the investment is independent variable (X) and return is dependent variable (Y). The correlation between dependent variable and independent variable is - 0.989. Thus there is negative correlation between independent and dependent variable. It indicates that if the investment in credit to employees is increased it will result in decrease of return of EPF and vice versa.

(Detail Calculation in Annex:5)

4.4 Trend Analysis

Trend analysis is a statistical tool which highlights the previous trend and forecast for a future with the help of past and present information.

The purpose of trend analysis in this work is to analysis investment, total deposit and return of EPF during 2059/060 - 2063/064 and forecast the trend of investment, total deposit and return of next 5 year.

Table: 6

Position of total investment of EPF (Rs. In Crore)

S.N.	Year	Total Investment
1.	205/060	3349.89
2.	2060/061	3920.41
3.	2061/062	4440.19
4.	2060/063	4994.48
5.	2063/064	5660.86

Source: (Kosh 2064 and 2065)

The above table shows the EPF's total investment reached to Rs.56660.86 Crore in the year 2063/064 from Rs. 3349.89 Crore of 2059/060.

The total investment trend forecasting of EPF for next coming five years from 2064/065 to 2068/069 are shown below.

Table: 7
Trend value (y=a+bx) of total investment of EPF (Rs in crore)

S.N.	Year	Total Investment $y = 2764.361 + 569.6x$
1.	2064/065	Rs. 6181.96
2.	2065/066	Rs. 6751.56
3.	2066/067	Rs. 7321.16
4.	2067/068	Rs. 7890.76
5.	2068/069	Rs. 8460.36

(Detail Calculation in Annex:6)

The above table shows the forecasted total investment amount of EPF from 2064/065 to 2068/69. According to it the investment has been increasing by Rs. 569.6 Crore per year. It is expected to reach Rs. 6181.96 Crore in year 2064/065 and Rs. 8460.36 by the end of 2068/69.

Table: 8
Position of total deposit of EPF (Rs in Crore)

S.N.	Year	Total Deposit Amount
1.	2056/060	3228.31
2.	2060/061	3740.19
3.	2061/062	4251.06
4.	2062/063	4814.49
5.	2063/064	5450.07

Source: (Kosh: 2064 and 2065)

The above table depicts that the EPF had Rs. 3228.31 Crore fund which was deposited by the employees (contributors) in the year 2059/060 which reached to Rs. 5450.07 Crore at the end of 2063/064.

The total deposit trend forecasting of EPF in next five year i.e. from 2064/065 to 2068/069 shown in the given table.

Table: 9
Trend value (y=a+bx) of total deposit of EPF (Rs. In Crore)

S.N.	Year	Total deposit $y=2641.478 + 551.782 x$
1.	2064/065	5952.12
2.	2065/066	6503.952
3.	2066/067	7055.734
4.	2067/068	7607.516
5.	2068/069	8159.298

(See detail calculation in Annex:7)

The above table shows the forecasted total deposit amount of EPF from 2064/065 to 2068/069. According to it the investment has been increased by Rs. 551.782 Crore per year. It is expected be reached Rs. 5952.12 in the year. 2064/065 and Rs. 8159.298 Crore by the end of 2068/069.

Table: 10
Position of total return of EPF (Rs. In Crore)

S.N.	Year	Total Return Amount
1.	2059/060	255.93
2.	2060/061	283.52
3.	2061/062	283.05
4.	2062/063	310.93
5.	2063/064	331.19

Source: (Kosh: 2064 and 2065)

The above table is showing the total return made by EPF by investing in diverse areas. According to it, the EPF had earned as Rs. 255.93 Crore in the year, 2059/060 which reached to Rs. 283.52 Crore, Rs. 283.05 Crore. Rs. 310.93 Crore and Rs. 331.19 Crore in the year 2060/061, 2061/062, 2062/063 and 2063/064 respectively.

The total return amount trend forecasting of EPF in next five years i.e. from 2064/065 to 2068/069 is shown in the given table.

Table: 11

Forecasted trend value of EPF return ($y=a+bx$) (Rs. In Crore)

S.N.	Year	Total Return Amount $y=239.5 + 17.79x$
1.	2064/065	346.29
2.	2065/066	364.08
3.	2066/067	381.87
4.	2067/068	399.66
5.	2068/069	417.45

(See detail calculation in Annex:8)

The above table no 11 Shows the forecasted total return of EPF in the year 2064/065 to 2068/069. According to it, the return has been increased Rs. 17.79 Crore per year. It is expected to be Rs. 346.29 Crore in the year 2064/065, Rs. 364.08 Crore in the year 2065/066, Rs. 381.87 Crore, Rs. 399.66 Crore and Rs. 417.45 Crore in the in the year 2066/067, 2067/068 and 2068/069 respectively.

CHAPTER -V

SUMMARY, CONCLUSION AND RECOMMENDATION

This Chapters summarizes the whole study, Summary of the study has been mentioned in the first section. The second section reflects the conclusion drawn from the study. The third part is recommendations to erase the draw backs of EPF and portfolio investment on the basis of findings and conclusion of the study.

5.1 SUMMARY:

Portfolio management is one of the challenging task for every financial institution. Now a days, there is very high competitions in financial industry but very less opportunity to make an effective investment. Without proper management of portfolio, any organization cannot achieve its goal. Portfolio management basically means allocation of fund to different components of investment areas having different degrees of risks and varying rates of return in such way that it can balance the conflicting goal of maximum yield in minimum risk. Investment is to be made in different productive sector of investment alternatives to get maximum return. Uncertainty of return creates risk so every financial organization has to diversify its investment in different sector to minimize risk.

The purpose of the study is to present clear picture of investment portfolio and return of the EPF. The study is based on secondary data of EPF covering five years study period from 2059/060 to 2063/064. The analysis has been done with the help of tables and charts.

To analysis the solvency and profitability position of the EPF different rations, Cash and bank balance to current ratio, total investment to total fund available ratio, return on investment ration and return on total assets are calculated and interpreted.

The primary objective of EPF is to manage the provident fund of government, public and private sector employees and to help them financially on retirement or separation from their job. Therefore EPF has designed its own investment portfolio. After analyzing the investment portfolio it is found that EPF has made its

investment mainly in five sectors i.e. investment in government securities, share and debenture of commercial banks and institutions, investment in fixed deposit of commercial banks, investment in project (project financing) and credit to its own contributors. In order to analyze the return of the EPF and its relation with investment portfolio a statistical tool correlation has been used. The correlation between the return of the EPF and investment portfolio has been calculated for finding the relationship between these two variables. The relationship of return of EPF with government securities, with investment in shares of commercial banks, with investment in fixed deposit of commercial banks, with project financing and with credit to employees are calculated and analyzed. In this study investment portfolio has been taken as independent variable and the return from investment sectors have been taken as dependable variable.

Similarly, this study also includes the trend analysis and forecasting of investment, deposit by contributors and return of EPF incoming five years have forecasted.

5.2 CONCLUSIONS:

The primary objective of the EPF is to manage the provident fund of government, public and private sector employees and to help them financially on their retirement or separation from their jobs. With the promotion of activity, EPF is emerging as the important national organization in the field of social security protection. EPF has been providing dependable funds to the members on their retirement and at the same time, EPF is gaining the major resources in the saving scheme. The remaining section of employed people who are still to be covered are gradually joining the EPF voluntarily by making obligation even to their employers for their economic protection by way of provident system. Based on the presentation and analysis of the study the following findings and conclusions are drawn up.

-) The cash and bank balance to current asset ratio reflects the position of cash and bank balance in the total current assets. The portion of cash and bank balance in total current asset of EPF is high each year except in the year 2061/062 the portion is more than 50% of current assets. In the year 2062/063 and 2063/064 the cash and bank balance is Rs. 158.92 Crore and Rs. 137.95 Crore respectively which is 56.68% and 62.27% of total current assets of those year. The higher ratio indicates that there exists the higher amount of idle cash which creates the opportunity cost and decrease the profitability of the organization.

- J From the analysis of investment to total fund available it is found that the EPF has extensively investing its fund for employees welfare. Seeing the data of past five years i.e. 2059/060 to 2063/064 it is known that in each year the EPF has been investing more than 96% of total fund. So, it can be said that the EPF is doing good with the deposited fund.
- J The return on investment ratio of EPF is in decreasing order. The average return in the year 2059/060 was 8.8% where it is gradually decreasing in each year and has come to 6.03% in the year 2063/064. The return from each investment sector is also fluctuating.
- J The average return on total assets of EPF is in increasing pattern. In the end of 2063/064 it is 0.716%. Though, it is in increasing order year however it is not even 1% of total assets. So, we can conclude the EPF is not efficient in utilizing its total assets in terms of return generated.
- J From the study of investment portfolio of EPF it is found that the EPF has made investment on five areas. They are investment in government securities, investment in shares of commercial banks, investment in fixed deposit of commercial banks, project financing and credit to contributors. Among these five areas the investment in the fixed deposit of commercial banks and Credit to the contributors is higher. In average 39.20% and 39.40% of total investment is made in these sector. Where investment in shares of commercial bank falls in the least priority of investment.
- J The Correlation coefficient between investment in government securities and return of the EPF is 0.637. It indicates that the increase in the weight of investment in government securities will increase the return of the company Similarly the correlation coefficient between investment in fixed deposit of commercial bank and return of the EPF is 0.924 which means the increase in investment fixed deposit will increase the return of EPF. The correlation coefficient between project financing and return of EPF is 0.356 which also means that the increase in weight of project financing results in increase in return. The correlation coefficient between bank. And return of EPF is 0.70. It indicates that the increase in the Weight of investment in shares of commercial banks will decrease the return of the organization. The coefficient correlation between credit to employees (contributor) and return of EPF is – 0.989. It indicates that the increase in investment on credit to employees will decrease the return of the EPF.

5. 3 RECOMMENDATIONS:

- J Recommendations and suggestion cover a major portion of the research. This part contains the valuable notes upon the study made by the researcher on a particular field of the study. On the basis of analysis finding and conclusions of the following recommendations can be forwarded to overcome challenges and inefficiency and to improve the present fund mobilization and investment of EPF.
- J The fund located in EPF is property of employees. The biggest challenges to EPF is to increase its return from the investment to satisfy the employees. After analyzing the data of past five years it is found the average return on investment is in decreasing pattern. There fore the EPF has to make the necessary arrangement to check the declining the average return from investment.
- J EPF has to effectively mobilize it the deposited fund in productive areas. In area of project financing and investment on share and debentures (securities) of commercial banks it has to identify the appropriate areas and should mobilize the fund.
- J The legal restriction, policies and regulation imposed by the government to EPF have made the EPF area of investment narrow. There fore according to the phase of time and changes in national economy the regulation and policies seem to be amended which may eventfully help EPF to sustain interest on saving and meet the objectives of EPF.
- J According to the calculation of cash and bank Balance Ratio to current Asset it is found that there is high ratio. The higher ratio indicates the higher level of idle fund remaining in the organization. This situation creates the opportunity cost and decrease the profitability. Therefore, EPF has to make prompt action regarding this matter.
- J The portfolio investment of the EPF should be revised from time to time. Basically portfolio management refers to the allocation of funds into different small component of its assets having different degree of risk, different rate of return in such a way that the conflicting goals of maximum yield (return) minimum risk can be properly achieved. So the EPF should always make continuous efforts to explore competitive and highly yielding investment opportunities to optimize the investment portfolio.

-) It is very prudent to have more transparency in investment decisions. There is need to have more prudence and aim at highest returns. There is need to reexamine the management of investment portfolio frequently for improving provident fund benefits. For this the top level management of the EPF should be able to identify emerging trend in the investment management of accumulate funds.
-) The Kosh's or EPF's decision to invest in any project should always to be based open the criteria of security, liquidity and yield. So that the investment may not be default and meanwhile it may able to reap maximum benefits from investment.

BIBLIOGRAPHY

- J Alexandar, Gordeon J;Sharp, William F. and Bailey, Jef Ferry V. (2000). *Investment*.
New Delhi: Prentice Hall of India.
- J Bhattarai, Rabindra, 2004, *Investment Theory & Practice*, 1st edition, Kathmandu.
Buddha Academic Publisher & Distributors.
- J Bhattarai, Rabindra, 2007, *Investment Theory & Practice*, 3rd edition, Kathmandu
Buddha Academic Publisher & Distributors.
- J Chehey, John M & Moses Edward A, n.d, *Fundamentals of Investments*, 10th edition.
St Paul: Westpublishing, company.
- J Chundal and Bimali, 2056, *Sanstan Parichaya*, 1st edition, Kathmandu. Atharai
Pustak Bhandar.
- J Pandey, I.M. (1999). *Financial Management*. New Delhi: Vikas Publishing House
Pvt. Ltd.
- J Pardhan Surendra, 1992, *Basic of Financial Management*, 1st edition, Kathmandu:
Educational Enterprise (P). Ltd.
- J Richard C. Grinold & Ronald N. Kahn, 1995, *Active Portfolio Management*, S. Chad
& Company Ltd.
- J Van Horn James & Wachowicz John M, 1996, *Fundamentals of Financial
Management*, 9th education, New Delhi: Prentice Hall of India Pvt. Ltd.
- J Weston, J.F. and Brigham, E.F. (1982). *Managerial Finance*, New York: The Dryden
Press.

Journals, Reports & Article.

Karmachari Sanchaya Kosh, "Kosh", Varshik Vishesanka, 2061.

Vol, 62

Karmachari Sanchaya Kash, "Kash", Varshik Vishesanka, 2062.

Vol, 64

Karmanchari Sanchaya Kosh, "Kash", Varshik Vishesanka, 2064

Vol, 68

Karmachari Sanchaya Kosh, "Kosh", Nawa Varsha 2065.

Vol, 69

Thesis:

- Bhatta, Dipesh, "Portfolio Management of Listed Finance Companies in Nepal"
Master diss., Shanker Dev Campus, Tribhuvan University, 2003
- Devkota, Sam Raj, "Investment Portfolio of Listed Finance Companies in Nepal".
Master diss, Tribhuvan University, 2004.
- Gautam, Turu. "Investment Analysis of the Finance Companies in context of Nepal".
Mater diss., Tribhuvan University, 2001
- Joshi Rupak. "Investor Problems in Choice of Optimum Portfolio of Stock in Nepal
Stock Exchange". Master diss, Shankar Dev Campus. Tribhuvan University, 2002.
- Khaniya, Kalpana, "Investment Portfolio Analysis of Joint Venture Banks. "Master
diss. Shanker Dev Campus, Tribhuvan University, 2003.
- Panday, Pramina, "Risk & Return Analysis of Common Stock Investment". Master
diss. Shanker Dev Campus. Tribhuvan University 2000.
- Poudel, Prakash. "Portfolio Analysis of Commercial Banks in Nepal" Master Diss.
Tribhuvan University, 2005.
- Satyal, Mohan. "Risk and Return analysis of Listed Companies" Tribhuvan
University, 2002.
- Shrestha, Ishwor Bahadur, "Employees Provident Fund" Economic Institution
Committee, Master Diss. Tribhuvan University, 1989.
- Shrestha, Salina. "Investment Portfolio of Pokhara Finance Ltd." Master diss. Prithivi
Narayan Campus, Tribhuvan University, 2006.

Annex: 1

Relationship between Investment in Share & Debenture and Return of EPF

X_1	X_2	$x_1=X_1-\bar{X}_1$	x_1^2	$x_2=X_2-\bar{X}_2$	X_2^2	X_1X_2
11.65	8.80	0.74	0.55	1.6	2.56	1.184
13.26	7.8	2.35	5.52	0.6	0.36	1.41
11.46	6.77	0.55	0.30	-0.43	0.185	-0.237
8.47	6.59	-2.44	5.95	-0.61	0.372	1.488
9.73	6.03	-1.18	1.39	-1.17	1.369	1.3806
54.5	35.99		13.91		4.846	5.226

$$\bar{X}_1 = \frac{\sum X_1}{n} = \frac{54.57}{5} = 10.91$$

$$\bar{X}_2 = \frac{\sum X_2}{n} = \frac{35.99}{5} = 7.2$$

$$\begin{aligned} r_{12} &= \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2} \sqrt{\sum x_2^2}} = \frac{5.226}{\sqrt{13.91} \times \sqrt{4.846}} \\ &= \frac{5.226}{2.20 \times 3.729} \\ &= 0.639 \end{aligned}$$

Annex: 2

Relationship between Investment in Share& Debenture and Return of EPF

X_1	X_2	$x_1=X_1-\bar{X}_1$	x_1^2	$x_2=X_2-\bar{X}_2$	x_2^2	x_1x_2
0.69	8.8	-0.026	0.000676	1.6	2.56	-0.0416
0.65	7.8	-0.066	0.0044	0.6	0.36	-0.0396
0.70	6.77	-0.016	0.00026	-0.43	0.185	0.00688
0.78	6.59	0.064	0.0041	-0.61	0.372	-0.03904
0.76	6.03	0.044	0.0019	-1.17	1.369	-0.05148
3.58	35.99		0.01134		4.846	-0.1644

$$\bar{X}_1 = \frac{X_1}{n} = 0.716$$

$$\bar{X}_2 = \frac{X_2}{n} = 7.198$$

$$r_{12} = \frac{-0.1648}{\sqrt{0.01134} \sqrt{4.846}}$$
$$= -0.70$$

Annex: 3

Relationship between Investment in Fixed Deposit and Return of EPF

X_1	X_2	$x_1=X_1-\bar{X}_1$	x_1^2	$x_2=X_2-\bar{X}_2$	x_2^2	x_1x_2
45.54	8.8	6.389	40.82	1.6	2.56	10.222
41.05	7.8	1.899	3.606	0.6	0.36	1.139
35.20	6.77	-3.951	15.61	-0.46	0.185	1.699
37.08	6.59	-2.071	4.289	-0.61	0.372	1.263
36.91	6.03	-2.241	5.022	-1.17	1.369	2.622
195.78	35.99		69.347		4.846	16.945

$$\bar{X}_1 = \frac{\sum X_1}{n} = \frac{195.78}{5} = 39.156$$

$$\bar{X}_2 = \frac{\sum X_2}{n} = \frac{35.99}{5} = 7.198$$

$$r_{12} = \frac{\sum x_1x_2}{\sqrt{\sum x_1^2} \sqrt{\sum x_2^2}} = \frac{16.945}{\sqrt{69.347} \times \sqrt{4.846}}$$
$$= 0.924$$

Annex: 4

Relationship between Investment in Project Financing and Return of EPF

X_1	X_2	$x_1=X_1-\bar{X}_1$	x_1^2	$x_2=X_2-\bar{X}_2$	x_2^2	x_1x_2
10.81	8.8	1.114	1.241	1.6	2.56	2.782
8.57	7.8	-1.126	1.268	0.6	0.36	-0.6756
11.88	6.77	2.184	4.769	-0.43	0.185	-0.939
9.97	6.59	0.274	0.075	-0.61	0.372	-0.167
7.25	6.03	-2.446	5.983	-1.17	1.369	2.862
48.48	35.99		13.336		4.846	3.8624

$$\bar{X}_1 = \frac{48.48}{5} = 9.696$$

$$\bar{X}_2 = 7.198$$

$$r_{12} = \frac{3.8624}{\sqrt{13.336} \sqrt{4.486}}$$
$$= 0.356$$

Annex: 5

Relationship between Investment in Credit to Contributions and Return of EPF

X_1	X_2	$x_1=X_1-\bar{X}_1$	x_1^2	$x_2=X_2-\bar{X}_2$	x_2^2	x_1x_2
31.28	8.8	-8.09	65.45	1.6	2.56	-12.94
36.46	7.8	-2.91	8.468	0.6	0.36	-1.746
40.76	6.77	1.39	1.932	-0.43	0.185	-0.598
43.70	6.59	4.33	18.75	-0.61	0.372	-2.6413
44.65	6.03	5.28	27.88	-1.17	1.369	-6.1776
196.85	35.99		122.48		4.846	-24.1029

$$\bar{X}_1 = \frac{196.85}{5} = 39.37$$

$$\bar{X}_2 = \frac{X_2}{n} = \frac{35.99}{5} = 7.198$$

$$r_{12} = \frac{-24.103}{\sqrt{122.48} \sqrt{4.846}}$$
$$= -0.989$$

Annex: 6

Y (Total Investment)	X	X ₁	X ²
3349.89	1	3349.89	1
3920.41	2	7840.82	4
4440.19	3	13320.57	9
4994.48	4	19977.92	16
5660.86	5	28304.3	25
Y=22365.83	X=15	XY=72793.5	x ² =55

We have least square equation

$$Y = a+bx \text{ _____(i)}$$

$$Y = na+b x \text{ _____(ii)}$$

$$XY = a x+b x^2 \text{ _____(iii)}$$

Substituting the value in Eq. (ii) and (iii)

We get

$$Y = na+b X$$

$$22365.83 = 5a + b15 \text{ _____(iv)}$$

Again,

$$xy= a x+b x^2$$

$$72793.5=a15+b55 \text{ _____(v)}$$

From eq (iv) and (v) we get

$$a = 2764.36$$

$$b= 569.60$$

Now, we have $Y = a+bx$

The required least square equation

$$Y = 2764.36 + 569.6x$$

Now, the forecasted investment value

$$2064/65 = \text{Rs. } 6181.96$$

$$2065/66 = \text{Rs. } 6751.56$$

$$2066/67 = \text{Rs. } 7321.16$$

$$2067/68 = \text{Rs. } 7890.76$$

$$2068/69 = \text{Rs. } 8460.36$$

Annex:7

Y	X	XY	X ²
3228.31	1	3228.31	1
3740.19	2	7480.38	4
4251.06	3	12753.18	9
4814.49	4	19257.96	16
5450.07	5	27250.35	25
Y = 21484.12	X=15	XY = 69970.18	X ² = 55

Lakewise calculated the value of

$$a = 2641.478$$

$$b = 551.782$$

Then, in eq $Y=a+bx$

$$2064/65 = \text{Rs. } 5952.12$$

$$2065/66 = \text{Rs. } 6503.952$$

$$2066/67 = \text{Rs. } 7055.734$$

$$2067/68 = \text{Rs. } 7607.516$$

$$2068/69 = \text{Rs. } 8159.298$$

Annex: 8

Y	X	XY	X ²
255.93	1	255.93	1
283.52	2	567.04	4
283.05	3	849.15	9
310.93	4	1243.72	16
331.19	5	1655.95	25
Y = 1464.62	X=15	XY = 4571.79	X ² = 55

The least square equation

$$Y=a+bx$$

$$a = 239.55$$

$$b = 17.793$$

The fore casted value

$$2064/65 = \text{Rs. } 346.29$$

$$2065/66 = \text{Rs. } 364.08$$

$$2066/67 = \text{Rs. } 381.84$$

$$2067/68 = \text{Rs. } 399.66$$

$$2068/69 = \text{Rs. } 417.45$$