CHAPTER 2
RESEARCH METHODOLOGY

2.1 INTRODUCTION

Research Methodology of a study includes, in general, the manner of conducting a statistical survey in such a way that it enable the researcher to reach in to valid inferences and conclusions. It includes the assumptions made and Scope of Enquiry, Objectives of the Study, Need for the Study, Research Methodology, Sources of Data and various statistical methods used in the course of study, which altogether helps interpreting data and reaching to conclusions.

Research methodology is a blue print showing where we are and where we want to go and various processes involved therein. It involves a series of actions designed for the accomplishment of the objectives of the survey in the stipulated time limit. It highlights the critical paths through which the researcher moves on without deviating from the basic assumptions for which the survey is instituted.

"According to Bernard S. Philips, "The research design constitutes the blue print of the collection, measure and analysis of data." The definition highlights that research design includes the methods of research, viz. survey, observation, experiment, the content analysis or their combinations. It also includes the types of data (quantitative or qualitative) data to be collected, questionnaire or schedule (structured or unstructured) and also about the size and techniques of sampling.

Different authors have defined the research design differently. The most popular book on research methodology among the students of social science is
that of Claire Selitiz "A research design is the arrangement of the condition for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in procedure".

According to Paul E. Green and Donald S. Tull, "A research design is the specification of methods and procedures for acquiring the information needed." Thus, according to the author, the research design is the overall framework of research project and which mentions about the types and sources of information and procedure to be followed in collecting it. All the above definitions point towards the mention of entire work to be done by the researcher from the beginning to the end.

2.2 THE PROBLEM

Mutual funds are considered as one of the best available investments as compare to others they are very cost efficient and also easy to invest in, thus by pooling money together in a mutual fund, investors can purchase stocks or bonds with much lower trading costs than if they tried to do it on their own. But the biggest advantage to mutual funds is diversification, by minimizing risk & maximizing returns.

The mobilization of small saving is one of the important aspects of introduction to capital formation in a country. Mutual fund, a financial innovation provides a novel way of mobilizing savings from small investors thus permitting them to enjoy the participation in the equity & other securities of leading company’s with less amount of risk involvement, which otherwise would have been impossible for them.
Various surveys revealed that the main reasons for the people remain invested 55.40% for higher returns, 13.30% for wealth creation, 9.60% for appreciation of investment, 5.80% for tax saving in case of a frequent investor while a variation in percentage can be seen in case of one time investor. For them 37.80% for higher returns, 17.90% for wealth creation, 14.30% for appreciation of investment, 5.30% for tax saving.

Mutual funds are proved to be an ideal investment vehicle by small and scattered investors in the stock market:

This analysis is an attempt which proved the level of significance in the difference in financial performance of star rated schemes launched by a variety of Mutual Fund Companies. This study has made an attempt to ponder out the level of significance in the difference in the financial performance among various schemes and in between the schemes.

2.3 NEED FOR THE STUDY

The main purpose of doing this study was to know about mutual fund and its performance. This helps to know in details about the growth of mutual fund industry in general and its future prospects in particular. It also helps in understanding different schemes of mutual funds, for this study depends upon star rated schemes like equity, balanced, cash etc of different mutual funds in India as well as the returns associated with those schemes. The study was also done to ascertain the variations in the risk associated with each type and to prove the comparative risk-return relationship. This study also helps understand the benefits of mutual funds to investors. This study helped very
much in understanding the future course of action for the future growth of the Mutual Fund Industry in India.

2.4 REVIEW OF LITERATURE:

In India, till recently, no study subjecting the mutuals to rigorous scientific analysis has been conducted, primarily due to comparatively short period of existence of Mutual Funds.

Smith and Tito (1969) conducted a study on 38 funds for 1958-67 period and obtained similar results. Treynor (1965) advocated the use of Beta coefficient instead of the total risk. He argues that using only naïve diversification, the unsystematic variability of returns of the individual assets in a portfolio typically averages out to zero. So, he considers measuring a portfolio’s return relative to its systematic risk more appropriate. However, McDonald (1974) examined 123 mutual funds for 1960-69 periods using both Sharpe and Treynor measure and found both measures to be closely correlated. More importantly, he found that on an average, mutuals perform about as well as a naïve ‘Buy and Hold’ strategy. Jensen (1968) measured the performance as the return in excess of the equilibrium return mandated by Capital Asset Pricing Mode. Fame (1972) has broken down the observed return into four components:

(a) the risk free rate of return;
(b) the impact of systematic risk;
(c) the impact of imperfect diversification; and
(d) returns due to selectivity.
If mutuals perform about as well as a naïve “Buy and Hold” strategy in a
developed market, can we expect the relatively inexperienced fund managers
in India to out-perform the market? Some studies have been carried out in this
direction and have evaluated the performance of mutual funds in India.
However, these studies have been few primarily due to short life of funds, their
(funds) hesitation to open themselves to public scrutiny and due to only few
funds being listed in the stock exchange. However, such studies have been
severely limited in scope and have not used the tools described earlier, with the

They have analyzed Mastershare for the period July 1987 to Sept. 1990. The
annualized return on Mastershare for their period is 70.60% against 41.40% for
the market. The annualized standard deviation of Mastershare is 41.31% as
compared to 19.44% for the market. Assuming 12% to be the risk free rate of
return, risk premium of the market and Master share is 29.4% and 58.6%. This
implies 1.512% and 1.418% reward per unit of volatility for the market and the
Mastershare. The return of 70.6% as compared to market (4014%) is prima
facie high but when risk assumed is taken into account the compensation for
risk assumed (1.418%) is poorer than that provided by the market (1.512%).
The beta coefficient of undiversifiable risk for Mastershare is 1.121. The reward
per unit of beta offered by the market is 29.5% and 52.3% for Mastershare.
This is a performance far superior to the market.

Sanchita Haldar in her article “Investment Avenues and Investors’
choice” published in Portfolio Organizer, October 2008, has analyzed the
popularity of investment in mutual funds among investors in India. The article provides that the mutual funds are second most preferred investment destination securing 61 responses or 20.3%, (calculated values compiled from the field study). Kanwar Vivek in his article, “Building and managing portfolio with mutual funds” published in Financial Planning, July - Sept 2007, provides a viewpoint on not only to invest in mutual funds but also to select the right funds while designing a portfolio.

B. Sravana Kumar in his article “Mutual Funds – An Investor’s option” published in Portfolio Organizer, August 2008, speaks about the performance of mutual fund industry in the current financial year. The article also focuses on investors’ choice of investing in mutual fund schemes. Arindam Ghosh in his article “Reviewing the Growing Market for Mutual Funds in India” published in Financial Planning, April - June 2008, analyzes some of the recent development in the Indian Mutual Fund industry. He also emphasized on tapping the HNWI (High Net Worth Individuals) with structured products, real estate funds, commodity based funds, art funds and the like.

Hemant Rustagi in his article “Indian Mutual Fund Industry – Opportunities and challenges” published in the Analyst January 2007, discovers the various opportunities coming in the way of mutual fund companies and at the same time tackle the challenges that will keep emerging as the industry will grow up.

Narayan Krishnamurthy in his article “Can you Bank on Funds?” published in Money Today November 27, 2008, explores that if the entire stock market declines in value, the value of mutual funds also decline. He also
stressed the problems of consolidation in fund houses. Over and above he focused on the investors’ involvement with the mutual fund investment. Abhilashita Rao in her article “Measuring Mutual Fund Performance – How to decide which fund to invest in?” published in Portfolio organizer April 2008 is an attempt to evaluate the financial performance of Mutual fund schemes on different parameters. Also she points out the importance of system of rating such as CRISIL to ensure that an investor gets an unbiased opinion on the funds.

Garima Gupta and Prabhjot Kaur in their article “Wealth Accumulation Through SIP” published in Portfolio Organizer October 2008, says, Systematic Investment Plan (SIP) is a regular investment plan enabling an investor to purchase units of a mutual fund scheme. This strategy is primarily modeled with the underlying concept of rupee-cost averaging. This unique strategy facilitates investors to restrict their unit purchase in a rising market and expands them in a falling market. According to the article the disciplined mechanism like SIP helps long term investors to reap good returns over a period of time. Radha Badrinath in their article “Contra Fund in India – A Quick Look” published in portfolio organizer January 2008, says, contrarian strategy involves going against the market movements. It involves investing in the stocks that have been fairly overlooked by most of the participants.

S Subadra in her article “Mutual Funds Boon or Bane?” published in Portfolio Organizer June 2008, identifies the growth potential for the mutual fund industry in India. The article also throws light on various benefits which an Indian investor can enjoy in the present scenario. Ashish Gupta and Neeru
Gupta in their article “Real Estate Mutual Funds- An Indian Perspective” published in Portfolio Organizer June 2008, says, introduction of REMFs has caused a certain amount of simulation to real estate sector. Real estate fund is a fund that buys, develops, manages and sells real estate assets and allows various participants to invest in a professionally managed portfolio of real estate properties. Sanjoy De in their article “US-64 Saga-The Rise and Fall of a popular scheme” published in Portfolio Organizer July 2008, focuses on the tax-free bonds issued to investors in lieu of US-64 scheme were redeemed on may 31,2008 and the fund houses and insurance companies raced in attracting the investors. The article advises the steps taken by the holder while investing their reduced money.

*Indian Mutual Fund Industry – The Future in a Dynamic Environment*(June 2009, KPMG & CII). This report highlighted the following findings: Low customer awareness levels and financial literacy pose the biggest challenge to channelizing household savings into mutual funds. Further, fund houses have shown limited focus on increasing retail penetration and building retail AUM. Customer awareness is the prerequisite for the achievement of the industry growth potential, there is a need for planning, financing and executing initiatives aimed at increasing financial literacy and enhancing investor education across the country through a sustained collaborative effort across all stakeholders, which is expected to result in a massive increase in mutual fund penetration. Distributors and the mutual fund houses have exhibited limited interest in continuously engaging with customers post
closure of sale as the commissions and incentives have been largely in the form of upfront fees from product sales. The next phase in the industry is likely to be characterized by a stronger focus on customer centricity, cost management and robust governance and regulatory framework – all aimed at enabling the industry to achieve sustained, profitable growth, going forward.

Making Mutual Fund Work for You (June 2008, AMFI in association with Price Waterhouse LLP/FIRE Project funded by USAID and Ogilvy & Mather, Financial & Business Communications). This guide on the concept, operations and advantages of mutual funds and the rights of mutual fund unit holders was produced by AMFI to promote financial literacy among public regarding Indian Mutual fund Industry. This guide explains the concept of mutual fund, its advantages and risks associated with the mutual funds. The main aim of this guide was to spread awareness among investors regarding their rights as mutual fund unit holders.

India’s Mutual Fund Industry (Tetsuya Kamiyama, Nomura Capital Market Review, Vol. 10, No. 4, Winter 2007). The assets managed by India’s mutual funds have shown impressive growth, and had totaled 3.3 trillion rupees (Rs 3.3 trillion) as of the end of March 2007. India’s middle class, who are prospective investors in mutual funds, has been growing, and we expect to see further growth in the mutual fund market moving forward. In this paper, the researcher first provides an overview of the assets managed within India’s mutual fund market, both now and in the past, and of the legal
framework for mutual funds, and then discuss the current situation and recent trends in financial products, distribution channels and asset management companies.

*The Fall and Rise of Mutual Funds in India (Kaushal Shah & Associates, 2007).* This article take the reader through the entire journey of mutual fund industry in India, its origin, its fall & rise throughout all these years and tried to predict what the future may hold for the mutual fund investors in the long run.

*Downside Risk Analysis of Indian Equity Mutual Funds: A Value at Risk Approach (Soumya Guha Deb & Ashok Banerjee, International Research Journal of Finance & Economics, Issue 23, 2009).* The current study attempts to highlight the importance of VaR as a measure of ‘downside risk’ for Indian equity mutual funds, an aspect which is completely ignored for performance reporting in Indian mutual fund industry. The study used three parametric models and one non parametric model and weekly returns of a sample of equity mutual fund schemes in India, to predict their weekly VaR on a ‘rolling’ basis and also tested the robustness and predictive ability of the models by employing two popular ‘back testing’ approaches. Overall the analysis shows that the Indian equity mutual funds have exhibited considerable downside risk in terms of VaR measures. Back testing of the models suggest that the ‘random walk’ and the ‘moving average’ models suffer from a downward bias and err by underestimating the VaR frequently. The EWMA and historical simulation models are free from that bias, but these two
models, particularly the later, show tendency of providing too conservative estimates of VaR.

India’s Capital Markets: Unlocking the door to future growth (Deutsche Bank Research, Feb 2007). The paper follows an analysis of supply (bonds, equities and derivatives) and demand conditions (household and institutional investors) in India’s capital markets. Some stylized facts regarding India’s capital market infrastructure and corporate governance are first presented, followed by an analysis of its fixed income, equity and derivatives markets. Later, the paper discusses the classes of investors in India’s markets and the constraints they face in optimizing the risk/return objectives of their portfolios. Finally, some brief comments regarding the link between economic growth and capital markets reform conclude the paper.

2.5 SCOPE OF ENQUIRY

For facilitating the above analysis, 45 different star rated schemes which were active during the year 2009 from five different types of mutual funds were selected. 9 star rated schemes from Equity Fund, 05 from Equity Tax Planning, 14 from Balanced/Hybrid Funds, 8 schemes from Debt Funds and 9 from Cash Funds. The performance of all the above schemes was tested using data of Standard Deviation, Beta and NAV.

The researcher limited the scope of this study to only to these five categories of schemes and that too only limited number of samples.

2.6 OBJECTIVES OF THE STUDY

1. To review the growth and development of MF industry.

2. To examine the performance of MF industry.
3. To analyze and compare the selected scheme in various types of MF.

4. To document the NAV, beta, sharpe’ index etc. of various selected scheme.

2.7 HYPOTHESIS:

The broader hypothesis of the research can be formulated as under:

1. There would be no significance difference in financial performance of five star rated schemes launched by a variety of Mutual Fund Companies.

2. Above hypothesis is main hypothesis it would be reviewed by NAV, beta, sharpe, index etc. performance indicators at that stage sub hypothesis will be developed objectively.

2.8 RESEARCH DESIGN

2.8.1 Sample Design

Sampling – Researcher used multi stage sampling techniques. (Based on value research) and the different stages through which sampling process has been carried out are as under.

1. List of Mutual Fund companies.

2. List of various types of Mutual Fund.

3. To select the star rated mutual fund schemes in various types of MF.

2.8.2 Sources of Data

The basic source of data is periodicals, magazines and journals of mutual fund schemes. The publications of association of mutual fund industry, RBI Bulletin, AMFI Mutual Fund Fact Book, Mutual Fund Fact Book", ICI

### 2.8.3 Statistical Methods

**Key Statistical Methods for Comparing and Evaluating Mutual Funds :-**

The following are key statistics that one should use to compare and evaluate mutual funds within the various categories that represent the investment universe. Some of them are given below.

**Mutual Fund Returns**

- Return - Arithmetic Mean
- Return - Geometric Mean
- Yield
- Risk-Adjusted Return

**Mutual Fund Risk**

- Standard Deviation
- Beta
- R-squared
- Bond Duration
Mutual Fund Performance: Risk-to-Return

- Coefficient of Variation
- Sharpe Ratio
- Treynor Ratio

The Expense Ratio, Turnover Rate & Manager Tenure

- Expense Ratio
- Turnover
- Manager Tenure & Succession

Return:-

Return on a typical investment consists of two components. The basic component is the periodic cash receipts (or income) on the investment, either in the form of interest or dividends. The second component is the change in the price of the asset - commonly called the capital gain or loss. This element of return is the difference between the purchase price and the price at which the asset can be or is sold; therefore, it can be a gain or a loss.

The return has been calculated as under: Portfolio Return: $R_{it} = \frac{\text{NAV}_t - \text{NAV}_{t-1}}{\text{NAV}_{t-1}}$

Where $R_i$ is difference between net asset values for two consecutive days divided by the NAV of preceding day.

Market Return: $R_{mt} = \frac{\text{M.Indt} - \text{M.Indt-i}}{\text{M.Indt-i}}$

Where $R_{mt}$ is the difference between markets indexes of two consecutive days divided by market index for the preceding day.
Risk:–

Risk is neither good nor bad; rather it is viewed in some context. Risk in holding securities is generally associated with the possibility that realized returns will be less than expected return. The difference between the required rate of return on mutual fund investment and the risk free return is the risk premium.

Mean and Standard Deviation:–

Standard deviation is the standard measure of investment risk. Standard deviation measures investment risk in terms of the volatility of returns. It is a measure of the total risk of individual assets and the residual risk of well-diversified portfolios. Standard deviation is the standard measure of the total risk of individual assets and the residual risk of well-diversified portfolios of assets.

Individual large-cap stocks have a standard deviation of about 35%, on average, but many are well in excess of 35%. Large-cap stocks in aggregate have had a standard deviation of about 20% in recent years, which would be the non diversifiable market risk for the universe comprised of large-cap stocks. As individual stocks from various industries are added to a portfolio, the standard deviation of the portfolio will diminish until all of the specific risk has been wrung out of the portfolio. Large-cap mutual funds, being diversified portfolios, tend to have standard deviations close to the market's standard deviation, with any difference, plus or minus, being attributable to the funds' investing styles, i.e., whether their styles are aggressive or conservative.
It is used to measure the variation in individual returns from the average expected return over a certain period. Standard deviation is used in the concept of risk of a portfolio of investments. Higher standard deviation leads to greater fluctuation in expected return.

When comparing two assets, it’s sometimes helpful to use the coefficient of variation (CV), which is the standard deviation divided by the mean, thus normalizing the standard deviation and facilitating the comparison of assets on a risk-to-return basis. This works well period-by-period but, because actual returns include the risk-free rate, which varies over time, it is not appropriate for period-to-period comparisons.

**The Coefficient of Variation (CV):**

\[ CV = \frac{s_i}{r_i} \]

Where:

- \( s_i \) = the standard deviation of asset \( i \)
- \( r_i \) = the mean return of asset \( i \)

Using the data from our 10-year example, the CV of the S&P 500 is \( 18.7/8.3 = 2.3 \) and the large-cap growth fund is \( 23.9/13.4 = 1.8 \). This tells us that the S&P 500 has more risk per unit of return than the growth fund based on that 10-year period.

Another useful means of comparing assets on an equal basis is the risk-adjusted return. A security's risk-adjusted return is determined by adjusting its return in proportion to its investment risk relative to the risk of an appropriate benchmark. For example, if you wanted to compare the return on the large-cap
growth fund to that of the S&P 500, you would divide the fund's return by its standard deviation then multiply it by the standard deviation of the S&P 500:

\[ \frac{r_{\text{fund}}}{s_{\text{fund}}} \times s_{\text{market}} = \frac{13.4\%}{23.9\%} \times 18.5\% = 10.4\% \]

10.4% vs 8.3% for the market index

Where \( r = \) rate of return and \( s = \) standard deviation

So, on a risk-adjusted basis, the fund beat the S&P 500 by 2.2 percentage points or 26.5%.

**Correlation, Regression and \( R^2 \):**

The correlation coefficient is a simple statistic that describes the variability of asset returns relative to other assets for the purpose of asset allocation. Determining how the asset classes in your universe correlate is an important step in the process of optimizing the allocation of your assets. Without this normalized form of the covariance, it would be very difficult to evaluate the relative variability of asset returns.

Correlation describes on a scale of -1 to +1 the relative movement of two securities' prices or one security relative to an index, with +1 being perfectly positively correlated, -1 being perfectly negatively correlated and 0 indicating no correlation. The correlation coefficient, \( R \), which is the normalized form of the covariance, is a measure of relative variation. The covariance, which we won't get into here, is the statistical measure that mathematically describes the variance of two variables with respect to one another.

Perfect positive correlation is like moving in lock step. You would expect an S&P 500 index fund to be nearly perfectly positively correlated with the S&P
500 index. Perfectly positively correlated securities do not complement each other and therefore provide no diversification.

Perfectly negatively correlated securities’ prices move in the opposite direction from each other by the exact same amount. For example, if stock A and stock B are perfectly negatively correlated, stock B will decline by 10% when stock A rises 10% and stock A will decline by 15% when stock B rises 15%. Perfectly negatively correlated investments would provide 100% diversification, as they would form a portfolio with zero variance, which translates to zero risk. Unfortunately, in the real world such investments don’t exist, but there are a few assets that are highly negatively correlated. These assets provide excellent diversification.

**Beta:**

Market risk is measured by beta, which is another measure of investment risk that is based on the volatility of returns. In contrast to standard deviation, beta measures volatility relative to a relevant baseline rather than to the mean of the asset that is being evaluated. Beta is the appropriate measure of an asset’s contribution to your portfolio’s risk, as it measures only systematic risk, i.e., market risk.

Beta measures the systematic risk. Beta shows how prices of securities respond to the market forces. Beta is calculated by relating the return on a security with return for the market. By convention, market will have beta 1.0. Mutual fund can be said as volatile, more volatile or less volatile. If beta is greater than 1 the stock is said to be riskier than market. If beta is less than 1, the indication is
that stock is less risky in comparison to market. If beta is zero then the risk is a same as of the market. Negative beta is rare.

Beta is a commonly published statistic that can be used to evaluate the market risk of assets that you are considering adding to your portfolio. However, betas are usually derived using the S&P 500 as a baseline, which is fine if it is evaluated large-cap domestic stocks or to see how any particular asset moves relative to the S&P 500. Betas thus derived are relative to the S&P 500 and that they only represent the residual volatility.

Portfolio betas are calculated as the weighted average of the betas of the assets that comprise the portfolios. If your universe extends well beyond the S&P 500, to get a truly relevant portfolio beta, the individual asset's betas would have to be derived using a baseline that is representative of the assets in the portfolio, i.e., the market risk of the universe is still 1.0 by definition but it may be more or less volatile than the S&P 500. For a broadly diversified portfolio, this would entail developing a weighted average index of the appropriate indexes.

As beta is a measure of risk, it can be related to standard deviation. Indeed, an asset's beta is equal to the product of its correlation coefficient, R, and its standard deviation divided by the market's standard deviation. Mathematically, the correlation coefficient divided by the market's standard deviation factors the specific risk out of the asset's standard deviation leaving only the systematic risk, which, as you now know, is the market risk of the asset.
Alpha:-

The size of the alpha exhibits the stock’s unsystematic return and its average return independent of market return. If the fund produces the expected return at the level of risk assumed, the fund would have an alpha equal to zero. A positive alpha indicates that the manager produced return greater than expected for the risk taken. Alpha is calculated by comparing the fund’s actual performance with the risk-adjusted expected return.

Sharpe Index:-

Sharpe index measures risk premium of portfolio relative to the total amount of risk in the portfolio. Sharpe index summarizes the risk and return of a portfolio in a single measure that categories the performance of funds on the risk-adjusted basis. The larger the Sharpe’s Index, the portfolio is over performing the market and vice versa.

\[
\text{Sharpe Index (Sr)} = \frac{\text{Portfolio average return (R}_p\text{)} - \text{Risk free rate of interest (R}_t\text{)}}{\text{Standard deviations of the portfolio return (s}_p\text{)}}
\]

Treynor’s Index:-

Treynor’s model is on the concept of characteristics straight line. The characteristics line has drawn a relationship between the market return and a specific portfolio without taking into consideration any direct adjustment for risk. It is also known as reward to volatility ratio and is defined as:

\[
\text{Treynor Index (T}_n\text{)} = \frac{\text{Portfolio average return (R}_p\text{)} - \text{risk free rate of interest (R}_i\text{)}}{\text{Beta co-efficient of portfolio (B}_p\text{)}}
\]

It measures portfolio risk in terms of beta, which is the weighted average of individual security beats. The ratio is relevant to investors, for whom the fund
represents only a fraction of their total assets. The higher the ratio better is the performance.

**ANOVA Test:-**

The sums of squares SST and SSE previously computed for the one-way ANOVA are used to form two mean squares, one for treatments and the second for error. These mean squares are denoted by MST and MSE, respectively. These are typically displayed in a tabular form, known as an ANOVA Table. The ANOVA table also shows the statistics used to test hypotheses about the population means.

When the null hypothesis of equal means is true, the two mean squares estimate the same quantity (error variance), and should be of approximately equal magnitude. In other words, their ratio should be close to 1. If the null hypothesis is false, MST should be larger than MSE. The mean squares are formed by dividing the sum of squares by the associated degrees of freedom.

Let $N = \sum n_i$. Then, the degrees of freedom for treatment, $DFT = k - 1$, and the degrees of freedom for error, $DFE = N - k$.

The test statistic, used in testing the equality of treatment means is:

$$F = \frac{MST}{MSE}.$$

The critical value is the tabular value of the $F$ distribution, based on the chosen $\alpha$ level and the degrees of freedom DFT and DFE.

The calculations are displayed in an ANOVA table, as follows:

<table>
<thead>
<tr>
<th>The corresponding mean squares are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$MST = \frac{SST}{DFT}$</td>
</tr>
<tr>
<td>$MSE = \frac{SSE}{DFE}$</td>
</tr>
</tbody>
</table>
Table 2.1
Specimen Table showing result of ANOVA Test:

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatments</td>
<td>SST</td>
<td>k-1</td>
<td>SST / (k-1)</td>
<td>MST/MSE</td>
</tr>
<tr>
<td>Error</td>
<td>SSE</td>
<td>N-k</td>
<td>SSE / (N-k)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>SS</td>
<td>N-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The word "source" stands for source of variation. Some authors prefer to use "between" and "within" instead of "treatments" and "error", respectively.

**Trend Analysis:-**

An aspect of technical analysis that tries to predict the future movement of a stock based on past data. Trend analysis is based on the idea that what has happened in the past gives traders an idea of what will happen in the future. There are three main types of trends: short-, intermediate- and long-term.

Trend analysis tries to predict a trend like a bull market run and ride that trend until data suggests a trend reversal (e.g. bull to bear market). Trend analysis is helpful because moving with trends, and not against them, will lead to profit for an investor.

**2.9 TIME PERIOD OF STUDY**

The present study tried to analyse performance of Mutual Fund Industry by covering the time period from the year 2004 to 2009.
2.10 LIMITATIONS OF THIS STUDY

Based on the above discussion, the following limitations are found during the course of study.

- The main objective of this survey was to analyze whether there is any significance difference in financial performance of five star rated schemes launched by a variety of Mutual Fund Companies. But as the performance of the schemes changed year to year, the rating too changed during the period under study, i.e. from year 2004 to 2009. Therefore many schemes remained inconsistent with respect to rating.

- Non-availability of necessary and sufficient data is considered as one of the major limitation of this survey. Data on Standard Deviation, Beta etc. was not available for a number of schemes which made the study tiresome.

- The entire survey is based up on secondary data source. Therefore, the errors inherent in while using secondary data remain present in this study also.

- Different methods are used to measure the financial performance and its interpretation of mutual funds. But the opinion of experts in and out the mutual fund industry differs from one another.

- Only the high-risk high-return type mutual funds - Equity Fund and Equity Tax Planning have been analytical studied using the Standard Deviation and Beta. Thereafter, individual as well as group analysis study have been made for all the five groups under study.
2.11 EXPECTED CONTRIBUTION FROM THE STUDY

The study could find and prove the relationships and differences in between various schemes prevailing in the market through a rigorous analysis of data. The risk-to-return relationship exists among different type of Mutual Funds could be established clearly. The trends to risk and returns could be clearly known which in turn help making future policies by the Mutual Fund Managers with respect to each different type of schemes.

On the basis of the findings, this study directly points out the necessity of rejuvenating the Mutual Fund Industry in India in tune with the US Mutual Fund Industry in order to make it competitive in the stock market. It proved the necessity of having transparency in the functioning of the Industry. It also pointed out the requirement of a well planned marketing strategy aiming complete awareness among the rural India in order to reach the Industry down to all the villages.

The study also directs the Mutual Fund companies that they should explore more and more adequate risk to generate good return.

2.12 SCOPE FOR FURTHER STUDY

From the review of the growth and development of MF industry and the findings of the present study and the prevailing level of Market Competition, there are several other important issues relating to mutual funds increasing the scope of this study. The studies could be carried out in the following areas to substantiate the existing literature and contribute for the growth of Indian Mutual Fund Industry.
A study on various techniques for channelizing our savings (23%) which is the highest in the world in an optimal way for the growth of Mutual Fund Industry in India is suggested.

A study on the relevance of expenses for the ordinary retail investor in choosing a fund.

A study on the role of marketing expenses in attracting fresh investor.

A study on scope for expansion of Mutual Fund Industry in India compared to the developed nations like US.

In line with the role of foreign institutional investors in the stock market, the role of mutual funds can also be studied in terms of its influence on stock market sentiments, purchase and sale of securities.

As very few studies are available on money market mutual funds, studies could be carried out to identify the role of money market mutual funds as a short-term financial instrument and how far they are able to meet the demand and supply of short-term funds in the Indian financial system.