CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research Methodology is a way to systematically solve a problem. It may be understood as a science of study where research is done scientifically. It includes (a) various steps that are generally adopted by a researcher in studying his research problem (b) 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 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 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) to be collected, questionnaire or schedule (structured or unstructured) and also about the size and techniques of sampling of data. According to 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, the author holds that the research design is the overall framework of the
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.

According to J.W. Best (1999) “Research is considered to be formal, systematic, intensive process of carrying on the scientific method of analysis. It involves a more systematic structure of investigation usually resulting in some of formal record of procedures and report of result or conclusions."

There are two commonly used approaches within business administration research: deductive and inductive. The deductive research approach builds upon existing theoretical aspects within a chosen area. Based on these theories the researcher will generate Hypothesis to accept or reject them. This is brought by a collection of data. The result from the data so collected will then be analyzed against the existing theories and leading to a conclusion. The relationship between theory and research can also be observed from an inductive perspective. An inductive research, will attempt to establish a theory as a result of a research project.

The conclusions that are arrived at are based on observations (Bryman & Bell, 2003). The present thesis adopts a deductive research study. Observations from Sweden funds will serve as the empirical result of the thesis. The aim is to merge relevant theories with the examination of the result in the analysis. A number of Hypothesis will be formulated to provide direction in order to draw conclusions on differences regarding the fund management.

3.2 RESEARCH STATEMENT

The problem studied in the present context is “Perception of Small Investors towards Mutual Funds: A Study With Reference To Chennai City ”. The
research work focuses on investor's perception towards Mutual Funds in Chennai city. The study has been undertaken to find the answers to the following questions:

1. What are the factors that influence investment in Mutual Funds?
2. What are the problems faced by investors of mutual fund?
3. Which tools of investment are popular among the investors and to predict the investment decision of investors using Fuzzy Logic.
4. To develop a new business model for mutual fund industry using Structural Equation Modeling (SEM) and give suitable recommendations to the Mutual Fund Industry based on the findings.

3.3 RESEARCH METHOD

Qualitative and Quantitative researches are two different methods implemented when doing a research within business administration.

Qualitative research is focused on analyzing the verbal methods of the context. The approach is a more in depth and involves a detailed analysis of the material within a smaller area of research. It is useful when describing certain events and individuals (Denscombe, 2000). The method emphasizes an inductive approach and rejects scientific models and standards. Focus is on how individuals perceive and interpret their social reality. A common qualitative method is depth interviews (Bryman & Bell, 2003).

The quantitative research has figures as a pivot of the analysis and it is foremost using statistical research methods. A t-test is a statistical hypothesis test which investigates if the null hypothesis will be supported. It is a random variable calculated from the sample evidence. It follows a well-known distribution and can be used to calculate the p-value (Aczel & Sounder Pandian, 2009). Gretl is free
statistical software and is used for different statistical purposes, essentially for econometric analysis. Further, the quantitative method is associated with large material that is processed. It is a characterized of being a precise and reliable method (Denscombe, 2000). Quantitative method has a deductive research approach due to the emphasis on testing theories. Moreover, the method has an objective picture of the social reality (Bryman & Bell, 2003).

The research methods that are applied in this thesis are both qualitative and quantitative methods. Regarding the qualitative method it will be carried out through in-depth interviews with fund managers from a small sample. These interviews will attempt to investigate the difference in fund management. Moreover, in order to extend the investigation, data will be obtain from several sources, e.g. Morningstar, annual reports and relevant electronic sources. A large sample will be presented in a quantitative manner and also testing Hypothesis. T-tests will be used for testing means and it is calculated through Gretl. This will serve as a complement to the qualitative method.

3.4 RESEARCH DESIGN

The research design is the conceptual structure within which research is conducted. It constitutes the blueprint for collection, arrangement and analysis of data. A research design includes an outline of what the researcher will do from writing the hypothesis and its operational implication to the final analysis of the data. Descriptive research design is used in this study. Descriptive research design is used to describe accurately the characteristics of consumer durable white goods customers. Descriptive research design describes what exists and to describe the proportion of people who hold various opinions are primarily descriptive in nature.

A descriptive research approach is appropriate (a) when the problem is well structured, (b) when the researcher knows what knowledge it aims to collect,
and (c) where there is need to look for the cause and effect relationships. The objective with this kind of research is to describe something. It seeks to answer who, what, where and how questions. Consequently, it does not give the answer to why questions, in other words, it doesn’t give the explanation of the cause of findings.

3.5 NATURE OF DATA AND SOURCES OF DATA

Primary as well as secondary data are used for the study. Primary data is the data that is collected for the first time and that is original in nature. This data has been collected through questionnaire. Secondary data is the data which has been collected from newspapers, magazines, websites, general discussion with brokers of BSE, NSE and published data of BSE, NSE and Mutual Fund companies, Portfolio Management etc., The following websites has been used to collect the relevant information and data pertaining to the current study

- www.amfiindia.com
- www.franklintempleton.com
- www.ici.org
- www.indinifoline.com
- www.mutualfundindia.com
- www.rbi.com
- www.sebi.com
- www.uti.com
- www.valueresearchonline.com
3.6 QUESTIONNAIRE FOR DATA COLLECTION

The questionnaire once validated is used for fetching data from the sample population which was targeted. The questionnaire designed, based on the research objectives, hypothesis, factors listed, target population and research framework, has three parts, first part for demographic items and the subsequent sections on the respondent’s perception on Mutual Funds. Purpose of the Questionnaire and objectives are briefly conveyed through this section.

The second part has five sub-sections. The second part deals with the motivational factors attributing to investment in mutual funds. The first sub – section here is to understand Mutual Fund Product Awareness among investors. This section is to understand about the awareness with respect to mutual fund products. Mutual fund returns, knowledge about entry and exit loads, investment objectives, knowledge on NAV (Net Asset Value) and mutual fund product uniqueness and its feature awareness to investors are focused in this section.

The second sub - section is for Awareness on the reputation of the asset management companies. Company Brand Name, past performance track record, availability of customized fund planner options to the customers based on their needs and providing the details about future economic growth to the customers has been focussed in this section.

The third sub - section is on Understanding mutual fund risks. This section investigates on how much knowledge an investor has on mutual fund risks. This section tries to investigate on how a mutual fund helps to diversify the risks, how the fund managers can do their portfolio management in a better way, and how the market and currency decides the investment value.
The fourth sub-section in questionnaire describes the Qualities of investment advisors. This section investigates about the investment advisors needs and their qualities, how the investment advisors helps in the development of mutual fund industry.

Finally, the fifth sub-section in second part concentrates on about the investor’s understanding on Asset management services. It tries to get the details how the asset management companies are offering services to their investors.

The third part has five sub-sections. The third part deals with the factors which makes on Asset Management companies to next level on mutual funds industry growth. The first sub-section in part three, is to understand investor services. This section is to understand about how the investors can be educated / can able to get the insight on mutual fund products.

The second sub-section in third part, describes how an Asset Management Company, that how an asset management company can help in creating a new innovative products for an investor with tailor-made investment objectives.

The Third sub-section in third part, describes about the technology, and this section is to understand how technology will be useful for the mutual fund to get into the next level.

The Fourth sub-section in third part, describes on the distribution network. This section is to understand how the distribution network increases the mutual fund growth.

Finally, the fifth sub-section in the third part, helps to understand on investor’s intention to invest on mutual funds.
3.7 FACTORS OF THE STUDY

The detailed literature survey resulted in a substantial number of factors analyzed by various authors in their papers and supported by books published on Mutual Funds. These factors were listed after meticulous study and understanding of intend of each authors on the factors. The factors shown below were from the requirement and important aspect of perception of small investors towards mutual funds and also towards developing a business model for next generation mutual funds.

Factors Affecting Investor Perception of Mutual Fund

- Mutual Fund Product Awareness
- Awareness of Asset Management Company Reputation
- Understanding of Mutual Fund Risks
- Quality of Investment Advisors
- Understanding Asset Management Company Services.

Factors on developing a business model for next generation mutual funds

- Investor Services
- Intention to Invest
- Streamline Cost
- Investment Advisor Needs
- High Distribution Network
- Technology Usage

3.8 CONCEPTUAL BUSINESS MODEL

The understanding and listing of the existing factors and their practices in growth of mutual fund industry has been taken as the basis for conceptual framework model development.

A conceptual framework has been shown in Figure 3.1. The factors listed are Investor Awareness / Services, New Product Design, Streamline Cost, Investment Advisor Discount, Grab Rural Sales, High Distribution Network and Technology Usage.

Apart from the concept explanation from the experience in the field of mutual funds, it was also found essential to have the confirmation from the literature survey. There are various references which have been noted and used for developing the links in Framework.

Figure 3.1 Conceptual Frame Work
3.9 GROUPING OF VARIABLES

3.9.1 Variable Summary

In the above framework the following are:

Observed, Endogenous Variables

- TECH: Technology Usage
- INTV: Intention to Invest
- IAN: Investment Advisor Needs

Observed, Exogenous Variables

- CST: Streamline Cost
- NET: High Distribution Network
- IAS: Investor Awareness / Services

3.10 HYPOTHESIS

Some sample Hypothesis are as follows:

\( H_{01} \): Mutual Fund Product Awareness is the same among respondents of different age groups.

\( H_{02} \): Awareness of Asset Management Company Reputation is the same among respondents of different age groups.

\( H_{03} \): Understanding of Mutual Fund Risks is the same among respondents of different age groups.
H_{04}: Quality of Investment Advisors is the same among respondents of different age groups.

H_{05}: Understanding Asset Management Company Services is the same among respondents of different age groups.

H_{06}: There is no difference between males and females as far as mutual fund product awareness are concerned.

H_{07}: There is no difference between males and females as far as awareness of asset management company reputation are concerned.

H_{08}: There is no difference between males and females as far as understanding of mutual fund risks are concerned.

H_{09}: There is no difference between males and females as far as quality of investment advisors are concerned.

H_{10}: There is no difference between males and females as far as understanding asset management company services are concerned.

H_{41}: Mutual fund product awareness is the same among respondents with different income levels.

H_{42}: Awareness of asset management company reputation is the same among respondents with different income levels.

H_{43}: Understanding of mutual fund risks is the same among respondents with different income levels.

H_{44}: Quality of investment advisors is the same among respondents with different income levels.
H₄₅ : Understanding asset management company services is the same among respondents with different income levels.

H₅₁ : Mutual Fund Product Awareness is going to be the same among the respondents with different frequency levels of saving.

H₅₂ : Awareness of Asset Management Company Reputation is going to be the same among the respondents with different frequency levels of saving.

H₅₃ : Understanding of Mutual Fund Risks is going to be the same among the respondents with different frequency levels of saving.

H₅₄ : Quality of Investment Advisors is going to be the same among the respondents with different frequency levels of saving.

H₅₅ : Understanding Asset Management Company Services is going to be the same among the respondents with different frequency levels of saving.

H₅₆ : There exists no relationship between the factors Investor Awareness / Services (IAS), Intention to invest (INTV), Streamline Cost (CST), Investment Advisor Needs (IAN), High Distribution Network Model (NET), and Technology Usage (TECH) proposed in the framework.

H₅₇ : There exists no close model fit among the listed factors in the framework (Investor Awareness / Services (IAS), Intention to invest (INTV), Streamline Cost (CST), Investment Advisor Needs (IAN), High Distribution Network Model (NET), Technology Usage (TECH)) and successful new business model development in the mutual fund industry.
3.11 SAMPLING DESIGN

The Respondents (Retail Investors – Individual Investors with the least amount of assets - Source: CFA Institute / AMFI Guidelines) were selected with the help of advisory agency in Chennai city (Source: Fundzindia.com). Direct and Indirect Referrals were accepted from respondents. Brief explanation has been given in the covering letter, and it was made clear directly or indirectly to all respondents to ensure the effectiveness in outcome. Responses received from 334 respondents from the total population of 4952. Samples have been chosen based on the sample size chart (Source: http://www.raosoft.com/samplesize.html). The following are the Top Best Financial Services Companies in Chennai:

- SBI Capital Markets Limited
- Bajaj Capital Limited
- DSP Merrill Lynch Limited
- Birla Global Finance Limited
- Housing Development Finance Corporation
- ICICI Group
- Karvy Group
- FundsIndia

(Source: http://business.mapsofindia.com/finance)

FundsIndia Advisory Company is one of the best National Financial Advisory Company in India and it ranks the top performer for the year 2013–2014, (source: http://faa.moneycontrol.com/winners, also received “Grand Jury Award for the work done online by a National Financial Advisor”). Investor’s detail has been collected from FundsIndia, who has invested during the month of January 2014.
Random number has been generated as part of simple random sampling using Random Number Generator Tool (Source: http://stattrek.com/statistics/random-number-generator.aspx#table).

3.12 TABULATION AND CLASSIFICATION OF DATA

The data was collected through a questionnaire and tabulated. The data has been classified on the basis of age, education, qualifications, occupation, monthly income, gender, marital status, monthly savings; monthly expenditure held by the respondents. Cross tabulation has been done according to different variables.

3.12.1 Frame Work of Data Analysis

Statistical package for social science (SPSS.17) was used to analyze the data. SPSS is the one of the most widely used of statistical software packages. It covers a broad range of statistical procedures that allows summarizing data, determining whether the differences between groups are statistical significant or not. SPSS also contains several tools for analyzing data, including functions for recording data and computing new variable as well as merging and aggregating data files.

Chi-Square Test was applied for testing the hypothesis at 5% level of significance. Data was analyzed with the help of tables, charts and diagram. Statistical technique like percentile was used to analyze the data. Descriptive analysis has been used.
3.13 TOOLS USED FOR DATA ANALYSIS

3.13.1 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 is 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

\[
s_i = \text{the standard deviation of asset } i
\]
\[
r_i = \text{the mean return of asset } i
\]

3.13.2 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 is not discussed at this juncture, 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. One 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.

### 3.13.3 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 Hypothesis 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 $N = n_i$. 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: $F = MST / MSE$. The critical value is the tabular
value of the F distribution, based on the chosen level and the degrees of freedom DFT and DFE.

Source SS DF MS F Treatments SST k-1 SST / (k-1) MST/MSE, Error SSE N-k SSE / (N-k) Total (corrected) SS N-1. The word "source" stands for source of variation. Some authors prefer to use "between" and "within" instead of "treatments" and "error", respectively.

3.13.4 Trend Analysis

Trend Analysis is an aspect of technical analysis that tries to predict the future movement of a stock based on past data. It is based on the idea that what has happened in the past gives traders an idea of what will happen in the future. The trends could be 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.

3.13.5 Chi – Square

Karl Pearson in 1900 developed a non-parametric test for testing the significance of the discrepancy between experimental (observed) frequencies and the theoretical frequencies (expected) obtained under some theory or hypothesis. This test is known as Chi-Square Test ($\chi^2$-test) of goodness of fit, and is used to test whether the discrepancy between expected and observed values may be attributed the chance (fluctuations of sampling) or whether the deviation is really because of the inadequacy of the theory to fit into the observed data.
In order to apply the Chi-square test either as a test of goodness of fit or as a test to judge the significance of association between attributes, it is necessary that the observed as well as theoretical or expected frequencies must be grouped in the same way and the theoretical distribution must be adjusted to give the same total frequency as we find in case of observed distribution.

\[ \chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \]

where \( O_{ij} = \) observed frequency of the cell in ith row and jth column

\( E_{ij} = \) expected frequency of the cell in ith and jth column

**Conditions characterizing the \( \chi^2 \) test**

The chi-square test can be validly applied if the following conditions are satisfied:

- The observations recorded are collected on a random basis.
- The sample observations are independent, i.e., no individual item should be included twice or more in the samples.
- The total number of observations is reasonably large, say \( N > 50 \).
- Data expressed in original units for convenience of comparison and the given distribution should never replace by relative frequencies or proportions.
- Small theoretical frequencies are to be avoided while calculating \( \chi^2 \).
Small is a relative term. Preferably, each theoretical frequency should be larger than 10, but in any case not less than 5. Since, chi-square distribution is a continuous distribution; it cannot maintain its characteristic of continuity, if cell frequency is below less than 5. In that case, adopt pooling techniques, which consists of adding the frequencies which are less than 5 with the preceding or succeeding frequency (frequencies) to enable the resulting sum to exceed 5 and adjust accordingly for the degree of freedom is adopted.