5 Research Methodology

5.1 INTRODUCTION

Business research method is a systematic and scientific procedure of data collection, compilation, analysis, interpretation, and implication pertaining to any business problem. It includes various steps that are generally adopted by a researcher in studying his research problem. This exercise is launched to provide objective and timely support to the decision maker of a business organisation.

(Zikmund, 2007) Business research is defined as the systematic and objective process of gathering, recording, and analyzing data for aid in making business decisions.

Cooper and Schindler (2009) define business research as a systematic enquiry that provides information to guide managerial decisions.

5.2 RESEARCH STATEMENT

The problem studied in the present context is entitled - “In-depth Study of Investors’ Preference towards various Investment Avenues in Capital Market with special reference to Derivatives” in Gujarat State. The research work has focused on investor’s preference towards specified investment instruments available in capital market and mainly focused on investors who are associated with investment in derivative market and researcher has tried to collect data from entire state with parent cities like Ahmedabad, Baroda, Surat, Mehsana, etc.

5.3 RESEARCH DESIGN

In this research descriptive research has been used. As evident from the name, descriptive research is conducted to describe the business or market characteristics. The descriptive research mainly answers who, what, when, where and how kind of questions. It attempts to address who should be surveyed, what, at what time (pre- and post-type of study), from where (investors), and how this information should be obtained (method of data collection). However, descriptive designs are not
capable of addressing any of the why questions associated with a given research problem (Hair et al., 2002).

Descriptive researches are generally used in segmenting and targeting the market. They are mainly conducted to describe the characteristics of some relevant groups for the research, to understand the demographic and other characteristics of the population, to understand the investors’ preferences about any investment avenues or services, to understand the degree of association between one variable to other variable for forecasting about investment.

5.3.1 Objectives of study

Primary objective of the study is:

• To study investors’ preferences towards various investment avenues in capital market with special reference to derivatives of Gujarat State.

Secondary objectives of the study are:

• To study the demographic factors of the investors dealing in capital market.
• To study the preference level of investors on various capital market instruments.
• To study the types of risk which are considered by the investors
• To study the ways through which the investors minimizes their risk
• To know the investors perception towards derivatives market
• To study the awareness level of investors towards derivatives segment

5.3.2 Hypothesis of the study

1. Investors do not give preference to the derivatives segment among the all segment of the capital market.
2. The fast return is the major factor responsible for choosing the derivatives segment.
3. Most of people are not aware about the derivatives segment.
4. Investment preference towards derivatives is independent from gender group
5. Major parts of investors in derivatives segment are from younger group
6. Educational qualification of investors affects investment in derivatives segment
7. Income level of investor’s affects investment in derivatives segment.
5.3.3 Nature of Data and Sources of Data

Primary as well as secondary data has been used for the study.

Secondary sources:

It is the data which has already been collected by someone or an organisation for some other purpose or research study. The data for study has been collected from basically relevant publications by RBI, SEBI, NSE, BSE and various other sources like books, journals, magazines, internet sources, etc.

Primary Data Source:

The investors of derivative market from major cities of Gujarat State like Ahmedabad, Baroda, Surat, Mehsana, etc. are source for primary data collection. The sample has consisted of investors who are employed or work as free lancers dealing in capital market to know their preferences and perception towards investment in capital market with special reference to derivatives.

5.3.4 Tools for data collection

Primary data has been collected with the help of structured pre-tested questionnaire which was distributed and collected from the respondents from number of cities of Gujarat State. The data has been collected from the investors who are dealing in derivative market.

5.3.5 Sample design

The respondents have been selected by using snowball sampling method but with the help of convenient sampling. The participation is voluntary. The data of 400 samples of major cities of Gujarat state has been collected.

- **Population:** - Population includes investors approaching participation in equity derivatives.
- **Sample element:** - Individual investors of equity derivatives who can spare time and provide the data, is the sample element.
- **Sampling technique:** - Snowball and convenience sampling techniques are used to collect the data.
- **Sample size:** - The sample size of 400 respondents was taken from major cities of Gujarat viz. Ahmedabad, Baroda, Surat, Mehsana, etc.
5.3.6 Area of the study

The broad area of study is capital market of India and specialized area of the study is equity derivative market. The study is limited to the major cities of Gujarat State viz. Ahmedabad, Baroda, Surat, Mehsana, etc.

5.3.7 Data Scaling and Measurement

In order to increase accuracy of research work, qualitative data scaling techniques such as nominal scale, ordinal scale and interval scales has been used.

5.4 TOOLS AND METHODS OF DATA ANALYSIS

5.4.1 Tabulation and Classification of data

The data has been collected through a pre-tested structured questionnaire and schedule. The data has been classified on the basis of gender, age, education, occupation, income held by the respondents. Cross tabulation has been done according to different variables and followed by analysis of the data.

5.4.2 Data Analysis

The various statistical techniques has been used to analyse the collected data like, frequency (percentage) distribution, cross tabulation, Karl Pearson’s correlation, Chi-square test and Z-test. For this the Statistical package for social science (SPSS.17) and MS Excel has been used.

5.4.2.1 Method of Analysis

5.4.2.1.1 Likert’s Scale technique

Most frequently used summated scales in the study of social attitudes follow the pattern devised by Likert. For this reason they are often referred to as Likert-type scale. In a Likert scale, the respondent is asked to respond to each of the statements in terms of several degrees, usually five degrees (but at times 3 or 7 may also be used) of agreement or disagreement.

Likert scales are developed by utilizing the item analysis approach wherein a particular item is evaluated on the basis of how well it discriminates between those person whose total score is high and those whose score is low. Those items or statements that best meet this sort of discrimination test are included in the final instrument. Thus, summated scales consist of a number of statements which express
either a favorable or unfavorable attitude towards the given object to which the respondent is asked to react. The respondent indicates his agreement or disagreement with each statement in the instrument. Each response is given a numerical score, indicating its favourableness or unfavourableness, and the scores are totalled to measure the respondent’s attitude. In other words, the overall score represents the respondent’s position on the continuum of favourable-unfavourableness towards an issue.

**Advantages:**

The Likert scale has several advantages.

(a) It is relatively easy to construct the Likert-type scale in comparison to Thurstone-type scale because Likert-type scale can be performed without a panel of judges.

(b) Likert scale is considered more reliable because under it respondents answer each statement included in the instrument. As such it also provides more information and data than does the Thurston-type scale.

(c) Each statement, included in the Likert scale, is given an empirical test for discriminating ability and as such, unlike Thurstone-type scale, the 43 Likert scale permits the use of statements that are not manifestly related (to have a direct relationship) to the attitude being studied.

(d) Likert scale can easily be used in respondent-centered and stimulus centered studies i.e., through it we can study how responses differ between people and how responses differ between stimuli.

(e) Likert scale takes much less time to construct; it is frequently used by the student of opinion research.

**Limitations of Likert scale:**

These are several limitations of Likert scale as well. One important limitation is that, with this scale, we can simply examine whether respondents are more or less favorable to a topic, but we cannot tell how much more or less they are. There is no basis of belief that the five positions indicated on the scale are equally spaced. The interval between ‘strongly agree’ and ‘agree’ may not be equal to the interval between
“agree” “and undecided”. This means that Likert scale does not rise to a stature more than that of an ordinal scale.

One further disadvantage is that often the total score of an individual respondent has little clear meaning since a given total score can be secured by a variety of answer patterns. It is unlikely that the respondent can validly reach to a short statement on a printed form in the absence of real-life qualifying situations. Moreover, there “remains a possibility that people may answer according to what they think they should feel rather than how they do feel.

In spite of all the limitations, the Likert-type summated scales are regarded as the most useful in a situation wherein it is possible to compare the respondent’s score with a distribution of scores from some well defined group. They are equally useful when we are concerned with a programme of change or improvement in which case we can use the scales to measure attitudes before and after the programme or change or improvement in order to assess whether our efforts have had the desired effects. We can as well correlate scores on the scale to other measures without any concern for the absolute value of what is favourable and what is unfavorable. All this accounts for the popularity of Likert scales in social studies relating to measuring of attitudes.

5.4.2.1.2 Frequency Distribution

Researchers often need to answer questions about a single variable. For example:

- How many users of the brand may be characterized as brand loyal?
- What percentage of the market consists of heavy users, medium users, light users, and non-users?
- How many customers are very familiar with a new product offering? How many are familiar, somewhat familiar, and unfamiliar with the brand? What is the mean familiarity rating? Is there much variance in the extent to which customers are familiar with the new product?
- What is the income distribution of brand users? Is this distribution skewed towards low-income brackets?

The answer to these kinds of questions can be determined by examining frequency distributions. In a frequency distribution, one variable is considered at a time. The objective is to obtain a count of the number of responses associated with different
values of the variable. The relative occurrence, or frequency, of different values of the variable is then expressed in percentages. A frequency distribution for a variable produces a table of frequency counts, percentages, and cumulative percentages for all the values associated with that variable.

5.4.2.1.3 Cross Tabulation

Although answers to questions related to a variable are interesting, they often raise additional questions about how to link that variable to other variables. To introduce the frequency distribution, we posed several representative research questions. For each of these, a researcher might pose additional questions to relate these variables to other variables. For example:

- How many brand-loyal users are males?
- Is familiarity with a new product related to age and education levels?
- Is product ownership related to income (high, medium, and low)?

The answers to such questions can be determined by examining cross-tabulations. Whereas a frequency distribution describes one variable at a time, a cross-tabulation describes two or more variables simultaneously. A cross-tabulation is the merging of the frequency distribution of two or more variables in a single table. It helps us to understand how one variable such as brand loyalty relates to other variable such as sex. Cross-tabulation results in tables that reflect the joint distribution of two or more variables with a limited number of categories or distinct values. The categories of one variable are cross-classified with the categories of one or more other variables. Thus, the frequency distribution of one variable is subdivided according to the values or categories of the other variables.

5.4.2.1.4 Karl Pearson’s Correlation

Correlation measures the degree of association between the strength of a relationship between two variables. Karl Person’s method is widely used method of measuring the relationship between two variables. This coefficient is based on the following assumptions:

- There is a linear relationship between the two variables which means that a straight line would be obtained if the observed data are plotted on a graph.
• The two variables are causally related which means that one of the variables is independent and the other one is dependent.

• A large number of independent causes are operating in both the variables so as to produce a normal distribution.

According to Karl Pearson’s coefficient of correlation ‘r’ can be worked out as under:

\[ r = \frac{\sum xy}{n\sigma_x \sigma_y} \]

Where:

\[ x = (X - \overline{X}) \]

\[ y = (Y - \overline{Y}) \]

\[ \sigma_x = \text{Standard deviation of X series} = \sqrt{\frac{\sum x^2}{n}} \]

\[ \sigma_y = \text{Standard deviation of Y series} = \sqrt{\frac{\sum y^2}{n}} \]

\[ n = \text{Number of pairs of X and Y series} \]

5.4.2.1.5 Chi-Square Test

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 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 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. The chi-square test of independence is often used as a tool for preliminary analysis of data gathered in exploratory research where the researcher has little idea of what variables seem to be related to what variables, and the data are nominal. This test is particularly useful with demographic type data.
Chi-Square Test is then calculated as follows:

\[ \chi^2 = \sum \frac{(f_o - f_e)^2}{f_e} \]

\[ \text{df} = k - 1 - c \]

Where:
- \( f_o \) = frequency of the observed values
- \( f_e \) = frequency of the expected values
- \( k \) = number of categories
- \( c \) = number of parameters estimated from the sample

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

**5.4.2.1.6 Z-test**

Hypothesis testing for large samples \((n \geq 30)\) is based on the assumption that the population, from which the sample is drawn, has a normal distribution. As a result, the sampling distribution of mean \( \bar{X} \) is also normally distributed. Even when the population is not normal, the sampling distribution of mean \( \bar{X} \) for a large sample size
is normally distributed, irrespective of the shape of the population (central limit theorem). For testing hypothesis about a single population mean, Z- formula can be used, if the sample size is large \( (n \geq 30) \) for any population; for small sample \( (n< 30) \), if \( x \) is normally distributed. As discussed earlier, Z formula can be stated as below:

\[
Z = \frac{\bar{p} - p}{\sqrt{\frac{PQ}{N}}}
\]

Where:

\[
\bar{p} = \frac{n}{N}
\]

\( P = \) Probability of acceptance for \( H_0 \)

\( Q = \) Probability of acceptance for \( H_1 \)

\( n = \) Proportion of sample from population

\( N = \) Size of population

### 5.5 SCOPE OF THE STUDY

The periphery of the research work is limited to investors’ preferences towards some selected capital market investment avenues i.e. bond, mutual funds, equity, equity futures and options and commodities exclude any other capital market investment as well as money market investment. The research work is to be done in the major cities of Gujarat state - Ahmedabad, Baroda, Surat, Mehsana, etc. The respondents are the investors who are directly involved with derivatives market. The research is aimed to study the investors where they are investing along with derivatives and what are their perceptions and preferences towards derivatives with compare to others investment instruments, so, here; the scope is limited to just perceptions and preferences study, and not for other behaviour aspect.

### 5.6 ANTICIPATED BENEFITS OF THE STUDY

The study may provide the insight to financial advisors, investment companies and regulatory body like SEBI that how demographic factors are influencing investment decision. The study will strive to pinpoint of investors’ awareness and knowledge towards derivatives market and how they are participating. This study may provide information about the problems and possible solutions to them as well information regarding if necessary changes required in the investment products and services that investor want. Further the study also identifies various factors and investor services required to sustain with the investment vehicles as well as with this market. It can be beneficial to educate investors who are risk averse for trade in derivatives and it can help how to reduce the risk and minimize the losses.
Further the study may help to the other researchers, targeting specific behaviour of derivatives user towards other investment and other than derivatives user that why they are not participating in derivatives, what others investors are perceived who are not participating in derivatives market towards derivatives market.

5.7 LIMITATIONS OF THE STUDY

For the research work, data has been collected and interpreted but there are certain limitations of the study which as follows:

1. The secondary data analysis is limited to the time period of 2001 to 2010 but if where the updated data is available it has been used for the research work.
2. The study depicts the present scenario in the selected cities of Gujarat and hence the result may be varying from another study due to some changes in situation and human behaviour.
3. The study is limited to 400 respondents of the selected cities of Gujarat – Ahmedabad, Baroda, Surat, Mehsana, Visnagar, Unjha, Gandhinagar, Patan, Himmatnagar, etc.
4. Answer to the questionnaire depends upon the beliefs and prejudices of investors.
5. It is assumed that respondents are true and honest in expressing their views and have filled the questionnaire honestly and without any bias.
6. The present study is restricted to information collected about the Equity Derivative investors with the help of questionnaire.