CHAPTER - 6

Research Methodology

An Innovative Approach in New Product Development Process for SMEs in Surat, India
CHAPTER 6 RESEARCH METHODOLOGY

6.1 CHAPTER OVERVIEW

The chapter highlights the research problem statement, the research questions, and the objectives of the study and significance of the study. Chapter also discusses in detail data collection plan and the sampling plan. This chapter also describe the instrument design in detail. The data analysis methods.

6.2 STATEMENT OF RESEARCH PROBLEM:

An Innovative Approach in New Product Development Process for SMEs in Surat, India.

6.3 RESEARCH QUESTIONS:

1. What is the importance about key success factors (An Innovative Approach); technological, managerial, marketing and commercial factors in stages of New Product Development Process?
2. What is the Importance of New Product Development Process in SMEs?
3. How can Indian SMEs improve their NPD performance?

6.4 OBJECTIVES OF THE STUDY

6.4.1 Primary Objectives

1. To study stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization Stages of NPD in SMEs
6.2. To study An Innovative Approach as Key Success Factors in each stage of New Product Development adopted by SMEs.

6.4.2 Secondary Objectives:

1. To study the importance of **Technological Factors** in New Product Development Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization with respect to Textile and Diamond SMEs of Surat.

2. To study the importance of **Marketing Factors** in New Product Development Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization with respect to Textile and Diamond SMEs of Surat.

3. To study the importance of **Commercial Factors** in New Product Development Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization with respect to Textile and Diamond SMEs of Surat.

4. To study the importance of **Managerial Factors** in New Product Development Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization with respect to Textile and Diamond SMEs of Surat.

6.5 SIGNIFICANCE OF THE STUDY

The SMEs play a key role in sustaining economic development of any country. SMEs are backbone of developing as well as developed nations. Thus, there is extensive and widespread interest in the SMEs. The significance of this study is to contribute to the building of new knowledge in terms of theory and practice in new product development by studying key success factors in each stage of new product development process. Specifically, this study is significant for several reasons.

- **Firstly this study enhances New Product Development leads to better computability and strong market presence in SMEs.**
• Secondly, SMEs will be able to realize the importance of the key success factors in managing their NPD processes, such as Technological Factors, Marketing Factors, Commercial Factors, and Managerial Factors.
• Thirdly, this study aims to provide a guideline for SMEs to improve their performance in managing their NPD process.
• Fourthly, the study also provide the broad knowledge about the new product to new enterprise.
• Finally, the study will provide extensive micro level information about current scenario in respective SMEs.

6.6 LISTS OF INFORMATION

1. As the study tries to find the New Product Development in SMEs it was necessary to get detail profile of the firm
2. The Investment in plant and machinery as defined by MSME Act 2006 to classify Small and Medium Enterprises.
4. Designation of Respondents
5. The questions related to whether firms are engaged in Dyeing, Printing, Processing, Diamond cutting, and Polishing.
6. To know the importance of key success factor in each stage of New Product Development that is Idea Generation and Concept Development, Design and Development Stage and Commercialization Stage.
7. In order to examine an Innovative Approach (key success factors) importance of Technological Factors, Marketing Factors, Commercial Factors and Managerial Factors in each stage of new product development.

6.7 VARIABLES UNDER STUDY (INNOVATIVE APPROACH AS KEY SUCCESS FACTORS):

6.7.1 Technological Factors

1. The technological is new or significantly improved.
2. The technology core or platform
3. The technology is reliable
4. The technology is complex
5. The technology is hard to be substituted
6. The technology is not easy to be imitated
7. The technology or product has great market potential
8. The technology preference for open source over proprietary software

6.7.2 Marketing Factors

1. The product has the first mover advantage and strong functional characteristics
2. The time to reach market is short
3. The product and target market is clearly defined
4. The market is growing and big enough
5. There exists identifiable market and few or no competitor
6. There are few or no substitute products
7. The product has competitive advantage
8. There is potential marketing channel plan

6.7.3 Commercial Factors

1. There is reasonable pricing strategy,
2. The product can be manufactured at low cost,
3. The product can be easily financed,
4. The product has identifiable return on investment revenue,
5. The product has expected positive return on investment,
6. The product has positive net present cash value,
7. The product can make up the cost of the patenting,
8. The company has spent enough on research and development.

6.7.4 Managerial Factors

1. The company has sufficient resources for NPD,
2. The inventor has relevant manufacturing experience in the industry and support NPD team,
3. The inventor owns the patent and has good reputation,
4. There is managerial expertise in the company,
5. The company has effective incentive mechanism,
6. The company has highly qualified marketing staff,
7. The company has highly qualified production staff,
8. The company has highly qualified technical staff.

6.8 RESEARCH FRAMEWORK

There are three stages of new product development used (Jifeng Mu et.al. 2007) i.e. Idea Generation and Concept Development, Design and Development and Commercialization. Based on the framework find the importance of Innovative Approach as Key success factors in each stage of new product development process and relevant criteria in each key success factors therein a research framework was developed by the researcher which was used for appropriate research design.

Figure 6-1 Proposed Research Framework
6.9 RESEARCH METHOD

Silverman (1993) states that “methodology is a general approach to studying a research topic”, while Collis and Hussey (2003) defined the term methodology as relating to “the overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data”.

In the context of the current study, questionnaire survey method were adopted to achieve the objectives. This method have been adopted in many previous related studies like Jifeng Mu (2007). The current study employ only a questionnaire survey and not include personal interviews.

6.10 RESEARCH DESIGN

The present study is a descriptive research and consist two stage research design consisting of primary as well as secondary data. The primary data is collected from the questionnaires. The questionnaire covers complete variables regarding Key Success Factors in New Product Development Process from managerial perspective based on secondary data was found to be useful in order to assess the new product development stages followed by SMEs from thorough literature review. The other elements of research design are data collection plan, sampling plan, instrument design.

6.11 CLASSIFICATION OF THE VARIABLES

6.11.1 Test Variable List (Innovative Approach to New Product Development)

1. Technological Factors in each stage of NPD Process
2. Marketing Factors in each stage of NPD Process
3. Commercial Factors in each stage of NPD Process
4. Managerial Factors in each stage of NPD Process

6.11.2 Grouping Variable

1. Investment in Plant and Machinery (Size of the Firm)
6.12 DATA COLLECTION PLAN

6.12.1 Secondary Data

Secondary data refer to information gathered from sources already existing (Sekaran U., 2006). There are many avenues to find out information about previous research for New Product Development Process in SMEs and key Success Factors in each stage of New Product Development Process. (e.g., articles published in journal, Books Related to NPD, and Web Sites, MSMEs Reports).

6.12.2 Primary Data

Primary data refers to information obtained firsthand by the researcher on the variables of interest for the specific purpose of the study. Sekaran (1992) defined the questionnaire as a “formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives”. The primary data is collected through structured questionnaire to be obtain relevant information. A questionnaire is used to examine the opinion of owners, managers of Small and Medium Size Enterprises in order to know the importance of Key Success Factor in each stage of New Product Development as innovative approach. Therefore, a self-administered questionnaire was selected for the research. The researcher than designed a series of closed ended questions again reflecting thesis aims and the extent literature. The larger part of the questions considered in the form of statements, with respondents were asked to indicate their views using a five point Likert scale. A number of the survey question employed in this study were based on those used in earlier related studies, but with some modifications to ensure validity in an Indian Environment. The topic and questions are mainly generated from the literature on New Product Development in SMEs. Every effort was made to ensure that the questionnaire covered all the areas relevant to research examining New Product Development in Indian SMEs.

The primary data was collected for the study from the managerial level people (Owners, CEO, Dyeing Masters, and Managers) were approached and further briefed them about the topic and the major objectives of the study. Data collected used in this study through two instrument (Questionnaire) Qualitative Research and Quantitative research.
6.12.2.1 Qualitative Research

The in-depth interview: which was the face-to-face meeting between the researcher and respondent for the purpose of collecting more detailed information on new product development within the firm. Based on the survey results of key success factors (Innovative Approach) in new product development, the in-depth interview was used to gather further and detailed information on new product development in Indian SMEs. It was also used to validate the findings of the survey and identify additional factors which may have been ignored. Rather than looking at the general attitudes of new product outcomes in the SMEs, the interview was more focused on the new product development process and Key Success Factors as Innovative Approach in each stage of new product development. Managers, Owners, Dyeing Masters, CEO and Business Partners of the Textile and Diamond were the respondents for the face-to-face interview.

There were several issues of interest in the in-depth interview:

- New product development activities in the companies. It was to investigate the actual New Product Development process applied in Textile and Diamond SMEs, from initial idea generation to commercialization; also any problems during the process were identified. Examples of key success factor as innovative approach were used to find out the importance in each stage of NPD. It was valuable to see from the respondents' point of view about their products' advantages and weaknesses. This information was compared with the results of the survey.

- The importance of Keys Success Factors as Innovative Approach in new product development. The information included the SMEs competitive situation in local and international market, the human and commercial resources, and the information channels. The respondents' opinions of the Indian Textile and Diamond SMEs, their company's future, and influence of government policy were also of interest. They were helpful in discovering the growth potential of the industry, suggesting the ways to improve product development management, and finally to create an 'ideal' model process of successful new product development for Indian Textile and Diamond SMEs to compete in the highly competitive domestic and international markets.
Respondents for the In-Depth Interviews: The respondents in the face-to-face interviews, were experts in product development, and very familiar with the product development process Managers, Owners, Dyeing Masters, CEO and Business Partners of the Textile and Diamond, who were in charge of the new product outcome and familiar to the whole process of the company's production and marketing routine, were the ideal respondents. It was an added benefit if the person had knowledge of the company's history, management structure, and human resources. So the respondent of a company was the Managers, Owners, Dyeing Masters, CEO and Business Partners were chosen as respondents.

A personal contact by telephone was made to the person to arrange a meeting. The possible time was limited. It was important to get all respondents in an area available in one or two days, then the meeting time for each interview was arranged. When the meeting time was arranged, a fax was sent to the respondent to confirm the arrangement. A pre-prepared topic sheet which contained the possible questions in the interview was also sent to respondent to prepare for the interview.

Table 6.12-1 In Depth Interview Topics

<table>
<thead>
<tr>
<th>1. General Information About Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief about your Firm</td>
</tr>
<tr>
<td>Structure of your Company</td>
</tr>
<tr>
<td>Number of Products</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Focus of the Your Firm On New Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your firm follow New Product Development Process?</td>
</tr>
<tr>
<td>Share your experience about success or failure of New Products.</td>
</tr>
<tr>
<td>Share your view about Competitive Products in Market</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Firm’s Situation Related to New Product Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Give you opinion about Distribution Channel</td>
</tr>
<tr>
<td>Your Opinion about new Technology and Innovation in Market</td>
</tr>
<tr>
<td>What are the opportunities are you looking from the market?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Your Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Opinion about the Textile/ Diamond SMEs</td>
</tr>
<tr>
<td>Whether government policy is supporting or not?</td>
</tr>
<tr>
<td>Your Opinion about the Role of Textile Processors Association and Surat Diamond Association or Any other Association</td>
</tr>
</tbody>
</table>
Preparing the Interviewing Topics This was a type of semi structured interview [Hague, 1985], made up of a mix of some formal questions of a structured nature and others which were less self-possessed, so letting open-end analytical. It was flexible to accommodate the varied circumstances existing between companies with different size of the firms. The topics covered in the interview mainly related to the activities of new product development within the company, and some of respondent's opinions on relevant issues. The topic checklist is shown in Table below.

Qualitative Analysis of the Interview: Unlike a mail survey, which obtained quantitative data for statistical analysis, the interview provided qualitative information. The qualitative information does not claim any statistical validity, but is concerned with exploring people's opinions and emotion in some depth [Gordon and Langmaid, 1988]. The analysis of qualitative information is not a scientific and objective process, It answers such questions as 'what', why' or 'how' it but cannot answer the question 'how much'.

The meaning concentration method was applied to reduce the text of interview materials into brief summaries (Kvale, 19961). The analysis began by reviewing the the interviews, and then recording the complete interviews on paper. Looking at the issues talked about, the contexts were classified under each group of the prepared topics. For each interview, a report was summarized the information under these topics. The Ad Hoc Meaning Generation approach was used to review the notes from the interviews. The excerpts that appearedmainlyapplicable to the proceedings of the study were written down. The areas where respondent strongly agreed or disagreed about an issue were noted. Similar comments were grouped to identify participants' preferences. Attention was paid to respect respondent's confidentiality by not to identify any respondent by name.

6.12.2.2 Quantitative Research

For Quantitative Research Please Rever Chapter 7 Data Analysis I and Chapter 8 Data Analysis of the Thesis.
6.13 SAMPLING PLAN

6.13.1 Introduction Sampling

Sampling is used when it is not feasible to measure every item in the population (Livin and Rubin 2004). A good sampling plan helps in objectivity measuring the evaluations of the population features. With this understanding the researcher sets out the sampling plan for the study in consideration of the research objectives and research questions.

6.13.2 Population

The primary concern relating to sampling is determining the target population related to the study. William G. Zikmund, (2007), “The first question related to sampling concerns identifying the target population that is the complete group of specific population elements relevant to the researcher’s project”. For this study sample population is Indian SMEs Sectors; Textile and Diamond SMEs of Surat.

6.13.3 Sampling Frame

Physical resources from which a sample is picked up, is called a frame. A directory, card file, census records or records of any government or non-government organisation are examples of a frame. The sampling frame for this study is List Provided by South Gujarat Processor Association Surat for Textile SMEs and Diamond Association Web Site. The Current study involves an empirical investigation of the degree of importance of Key Success Factors as an Innoative Approach in each stage of New Product Development (NPD).

To achieve this objectives of research study and to provide a comprehensive picture of study of Key Success Factors as innovative approach in each stage of New Product Development and to generate a sample large enough to perform meaningful statistical analysis it was decided to select the sample from the List Provided by South Gujarat Processor Association for Textile SMEs and Diamond Association Web site for Diamond SMEs. The sample includes all Small and Medium Size enterprise as per definition of The MSME Act 2006.
6.13.4 Types of Sample

It is non-probability sampling. The convenient judgmental sampling was employed by the researcher because the managers, owners, CEO having knowledge about the NPD were to be contacted and willingness and ability of respondent to answer the questions in the questionnaire was needed to be considered. Though it is worth mentioning at this juncture that the sampling type also had an element of references and connections thereby snow ball sampling.

<table>
<thead>
<tr>
<th>Unit Surveyed</th>
<th>Frequency Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyeing Unit</td>
<td>173</td>
<td>14.8</td>
</tr>
<tr>
<td>Printing Unit</td>
<td>174</td>
<td>14.9</td>
</tr>
<tr>
<td>Processing Unit</td>
<td>185</td>
<td>15.8</td>
</tr>
<tr>
<td>Diamond Cutting Units</td>
<td>500</td>
<td>42.8</td>
</tr>
<tr>
<td>Diamond Polishing Unit</td>
<td>137</td>
<td>11.7</td>
</tr>
<tr>
<td>Total</td>
<td>1169</td>
<td>100.0</td>
</tr>
</tbody>
</table>

6.13.5 Size of Sample

In sample survey the sample size required for estimating the population parameters with a specified precision is usually specified in terms of the margin of error permissible in the estimate and the confidence with which the researcher wants to make sure the evaluation is within permissible margin of error. For the present study for the totally 650 responses were taken from Textile SMEs and 650 responses were Taken from Diamond SMEs from the managers, CEOs, and Owners of the SMEs.

6.13.6 Cost

The cost involved in this study is time, questionnaire printing and the other charges.
### 6.13.7 Instrument Design

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Structured Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Questionnaire Type</strong></td>
<td>An open-ended question is designed to encourage a full, meaningful answer using the subject's own knowledge and/or feelings. Closed-ended questions which are aimed at collecting accurate statistical data.</td>
</tr>
<tr>
<td><strong>Questionnaire Pattern</strong></td>
<td>The researcher drafted the instrument keeping in view the content and purpose of the survey. Simplified language was inserted in the questionnaire.</td>
</tr>
<tr>
<td><strong>Questionnaire Sequence</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Part One of Questionnaire:</strong></td>
<td>The respondents were first asked about demographic profile with few open ended questions like respondents' name, designation, highest qualifications, name of firm, investment in plant and machinery, number of employees.</td>
</tr>
<tr>
<td><strong>Part Two of Questionnaire:</strong></td>
<td>The respondents were asked to give close ended question related to the types of business are they in? Type of Unit are they in? Product category and finally yes no types of question to their vision, product, training, innovative approaches and patents of their design.</td>
</tr>
<tr>
<td><strong>Part Three of Questionnaire:</strong></td>
<td>In this section of questionnaire the respondents were asked about New Product Development Using four Innovative Approaches Key Success Factors in each Stage of New Product Development Process. The NPDP is The Idea Generation and Concept Development, Design and Development and Commercialization of Product. In each of these researcher ask four Key Success Factors namely Technological Factors, Marketing Factors, Commercial Factors and Managerial Factors, with eight criteria in each. Each Criteria thirty two criteria in each stage were measure using five point Likert Scale where 1 indicates “not at all important” and 5 indicates “very important”.</td>
</tr>
<tr>
<td><strong>Questionnaire Length</strong></td>
<td>The final questionnaire was compiled on A4 size paper and was completed in 5 pages. The final layout of the questionnaire is appended in Appendix.</td>
</tr>
<tr>
<td><strong>The Pilot Study &amp; Refining the Instrument</strong></td>
<td>The draft was piloted to a number of selected managerial level people from SMEs to obtain their opinion regarding the wording, sequence and structure of the questions. Based on their feedback, modification were made to questionnaires.</td>
</tr>
</tbody>
</table>
### 6.14 HYPOTHESES

**Table 6.14-1 Hypothesis Testing Association for Textile and Diamond SMEs**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Hypotheses</th>
<th>Hypotheses Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>( H_0 )</td>
<td>There is no significant association between Investment in Plant and Machinery (Size of The Firm) and Technological Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>( H_a )</td>
<td>There is significant association between Investment in Plant and Machinery (Size of The Firm) and Technological Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>2</td>
<td>( H_0 )</td>
<td>There is no significant association between Investment in Plant and Machinery (Size of The Firm) and Marketing Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>( H_a )</td>
<td>There is significant association between Investment in Plant and Machinery (Size of The Firm) and Marketing Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>3</td>
<td>( H_0 )</td>
<td>There is no significant association between Investment in Plant and Machinery (Size of The Firm) and Commercial Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>( H_a )</td>
<td>There is significant association between Investment in Plant and Machinery (Size of The Firm) and Commercial Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>4</td>
<td>( H_0 )</td>
<td>There is no significant association between Investment in Plant and Machinery (Size of The Firm) and Managerial Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>( H_a )</td>
<td>There is significant association between Investment in Plant and Machinery (Size of The Firm) and Managerial Factors in Stage 1 Idea Generation and Concept Development, Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
</tbody>
</table>
6. RESEARCH METHODOLOGY

Table 6.14-2 Hypothesis Testing Importance for Textile and Diamond SMEs

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Hypotheses</th>
<th>Hypotheses Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>$H_0$</td>
<td>There is no significant important of Technological Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>$H_a$</td>
<td>There is significant important of Technological Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>6</td>
<td>$H_0$</td>
<td>There is no significant important of Marketing Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>$H_a$</td>
<td>There is significant important of Marketing Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>7</td>
<td>$H_0$</td>
<td>There is no significant important of Commercial Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>$H_a$</td>
<td>There is significant important of Commercial Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td>8</td>
<td>$H_0$</td>
<td>There is no significant important of Managerial Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
<tr>
<td></td>
<td>$H_a$</td>
<td>There is significant important of Managerial Factors in Stage 1 Idea Generation and Concept Development Stage 2 Design and Development and Stage 3 Commercialization in Textile and Diamond SMEs.</td>
</tr>
</tbody>
</table>

Ken Black (2014) defined hypothesis as a tentative explanation of principle operating in nature. One the main objectives of this research is to study the importance of key success factors (KSFs) as innovative approach in Indian SMEs. In order to achieve this objective and based on the variable considered for the study the hypotheses which are assessed in the tables;
6.15 DATA ANALYSIS PLAN

6.15.1 Getting Data Ready for Analysis

After the data were obtained through questionnaire, they have to be edited and the raw data have to be manually entered into the computer. The coding requirement was taken care of at the questionnaire design stage itself. The five point Likert Scale was used in the questionnaire. Where ‘1’ stands for not at all important and ‘5’ stands for very important. Then it was possible to key in the data straight from individual questionnaire. The data was further analyzed by the use of descriptive statistics and other advanced statistical tests using SPSS- 21.0 and AMOS 18.0.

6.15.2 Getting a Feel of the Data

For the interval and ratio scaled variables there was good feel of the data by checking the cross tabs and Chi-Square Test. If the response to each individual item a scale does not have a good spread and shows variations in association between Key Success Factor and Investment in Plant and Machinery which shows the size of the firm indicate whether the response were satisfactory or not. Hence, it is planned to obtain the following statistics to get a feel of the data and comment upon the same.

- The Cross Tabulations of Key Success Factors (KSF) in each stage of NPDP.
- The Mann Whitney U Statistics Applied to check the difference in importance given by respondent of Small and Medium Size Enterprise.
- Principle Compenent Analysis and Structural Equation Model.

6.15.3 Testing Goodness of Data

Establishing goodness of data lends credibility to all subsequent analysis, findings, inferences, discussions and recommendations. That is, the researcher has ensured that the instrument used in the research does indeed measure the variables they are supposed to and then measure them accurately.
6.16 STATISTICAL PROCEDURE FOR DATA ANALYSIS

6.16.1 Questionnaire Analysis

The objective of this section is to outline the set of statistical analysis and tests which were adopted in the empirical analysis of the questionnaires. The analysis of the primary data included both cross tabulation and non parametric test like Chi-Square Test to check the association between size of the firm and key success factors in each stage of NPD in both Textile and Dimaond SMEs and inferential statistics like the Principal Component Ananalysis (PCA) (Factor Analysis) and Structural Equation Modeling which was applied. PCA was performed to identify the factors which are important for the Key Success Factors (KSFs) in New Product Development Process (NPDP). The Innovative Approach as KSFs in NPDP were measured by 32 statements in each stage. The model (Jifeng Mu et.al. 2007) to be tested in Hypothesis postulates a priori that New Product Development Process’s Key Success Factors structure composed of the Technological Factors, Marketing Factors, Commercial Factors, and Managerial Factors in Stages of NPDP on a 5-Point Likert Scale that ranges from 1 Not at all Important to 5 Extremely Important was used. The hypothesized and analyzed by using IBM SPSS 21 and IBM AMOS 18.

6.16.2 Ethics of Research

For any study to be reliable, a note of assurance and confidence needs to be given to the respondents. This is a part of Ethics of research and not a compulsion. However, the researcher has tried to maintain integrity by giving importance to ethical standards in survey.

- A proper introduction that clearly discloses the identity of the researcher and the purpose of the survey was noted.
- It was also essential to establish some rapport with the respondents and motivate them to respond enthusiastically.
- Assurance of confidentiality of the information provided by them was the researcher’s uppermost priority.
- The researcher has tried to collect the valuable data from those respondents who were not ready to give their identity in the questionnaire but ready to give response.
So in order to gather valuable data and not to forego the valuable data, researcher has included them in the data.

- The researcher concluded with a courteous note of thanks for the respondents’ precious time invested in the survey.
- The researcher has taken utmost care maintaining the ethical standards and secrecy of the information provided by the respondents.
- Personal responses have been treated as utmost confidential and are preserved with care.

6.17 SCOPE AND BENEFITS OF THE STUDY

The study has been undertaken with a view point of benefiting a significant section of the society. The researcher has thus focused on a very concerning issue of Managing New Product Development’s Key Success Factors (An Innovative Approach) with special reference to Textile and Diamond SMEs of Surat Region. The findings for the study are considered to be useful in finding out the gaps in New Product Development through Innovative Approach (KSFs).

- The study helps to understand the present and possible role of New Product Development in Indian SMEs.
- The result will be of interest to The MSME, State Government, Local Associations for improvement in present situation.
- The study will find its utility for Textile and Diamond Managers CEO and owners to create more innovative products and make long term strategies.
- This research will enrich the number of literature on the New Product Development and Key Success Factors in SMEs worldwide particularly developing countries.
- The study stimulate further researches and grab attention of researchers towards Managing New Product Development.

6.18 LIMITATIONS OF THE STUDY

The researcher outlined certain escapes in the study:
1. The current study did not examined other industries than Textile and Diamond SMEs.
2. The sample included were only 650 respectively may not represent or generalize for other industry.
3. The current study is based on specific sector, SMEs.
4. This study focus only on Innovative Approach as Key Success Factors other innovative approaches are not investigated that may give more comprehensive picture of Key Success Factors in New Product Development Process in SMEs.
5. The entire scope of the topic could not be covered as the topic is very vast and complex which could not be covered in one research study.

6.19 SCOPE FOR FURTHER STUDY

In the due course of the study, the researcher has realized that there are yet many pages left unturned and many horizons not explored. Some of which are;

1. The study can be extended to other sectors and other developing and under developed nations of the world.
2. The study can be conducted with reference other Sectors of SMEs like Chemical and Pharmaceutical Sectors SMEs

6.20 CHAPTER SUMMARY

The chapter focused primarily on research problem statement, research questions as well as objectives of the research. To complete the study in a logical convincing format, the data plan, sample plan and instrument design have also been discussed in detail. On the basis of the research questions and objectives, variables for the study have been developed and hypothesis formulated, which have been analyzed in the following chapters of data analysis. However, clear plan for data analysis has been presented along with the scope and benefits, limitation and Scope for further study to give completeness to the subject under study.