CHAPTER 3: RESEARCH METHODOLOGY

3.1 Types of Research

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CHAPTER 3

RESEARCH METHODOLOGY

Research in common parlance refers to a search for knowledge. Research is also defined as scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation.

Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose and for that research objectives are: to gain familiarity with a phenomenon or to achieve new insights into it; to portray accurately the characteristics of a particular individual, situation or a group; to determine the frequency with which something occurs or with which it is associated with something else; and to test a hypothesis of a casual relationship between variables.

3.1 Types of Research

The basic types of research are as follows:

3.1.1 Descriptive vs. Analytical

Descriptive research includes surveys and fact finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. The main characteristic of this method is that the researcher has no control over the variables; he can only report that what has happened or what is happening. The methods utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods. In analytical research, on the other hand, the researcher has to use facts or information already available, and analyze these to make a critical evaluation of the material.
3.1.2 Applied vs. Fundamental

Research can be either be applied (or action) research or fundamental (to basic or pure) research. Applied research aims at finding a solution for an immediate problem facing a society or an industrial/business organization, where as fundamental research is mainly concerned with generalizations and with the formulation of theory. Research concerning some natural phenomena or relating to pure mathematics are examples of fundamental research. Similarly, research studies, concern in human behavior carried on with a view to make generalizations about human behavior are also examples of fundamental research, but research aimed at certain conclusions facing a concrete social or business problem is an example of applied research.

3.1.3 Quantitative vs. Qualitative

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomena, i.e. phenomena relating to or involving quality or kind. This type of research aims at discovering the underlying the motives and desires, using in depth interviews for the purpose.

3.1.4 Conceptual vs. Empirical

Conceptual research is that related to some abstract ideas or theories. It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research relies on experience or observation alone, often without due regard for the system and the theory. It is data based research coming up with conclusions, which are capable of being verified, by observation or experiment.

3.1.5 Some Other Types of Research

All other types of research are variations of one or more of the above stated approaches, based on either the purpose of research of the time required to accomplish research, on the environment in which research is done or on the basis of some other similar factors.
3.2 Research Methodology

In order to fulfill the research objectives, an appropriate research methodology has been followed and it is discussed in detailed as per following:

3.2.1 Research Questions

Based on the literature review, several questions were raised related to the implementation of SCM. Some of the questions are:

- Is there any relationship between the size / scale of the operation (small, medium and large) of the organization and implementation of SCM?
- Whether the issues and challenges faced by the organization while implementing SCM different for the organization having different scale of operations (small, medium, and large)?
- What are the motivations / reasons for the management to implement SCM in their organization?
- What are the perceptions about the implementation of SCM?
- Which activities are much needed for the current growth rate of the organization?
- What are the perceptions about the usefulness of the SCM in the organization?
- What level of extent the documentation increased for the implementation of SCM?
- What level of cost incurred for the implementation of SCM?
- What are the perceptions about the resources in implementation of SCM?

3.2.2 Objective(s) of the Study

In order to find out appropriate answers to the research questions raised above, following objectives for the research have been formulated.

➢ To study the management’s perception about reasons for implementation of SCM practices in the organization
To study the management’s perception about the issues and challenges related to the implementation of SCM practices in the organization

To study the management’s perception about the benefits of the implementation of SCM practices in the organization.

3.2.3 Research Approach

The above description of types of research focuses that there are two basic approaches to research:

1) Quantitative Approach
2) Qualitative Approach

The present study largely follows a quantitative approach. Therefore, the variables identified for the study have been measured using different rating scales in order to get a quantifiable response from the respondents. These responses finally have been used for analysis using appropriate statistical tools / techniques to glean meanings out of the data.

Therefore, a survey research where a sample of population has been studied (questioned or observed) to determine its characteristics, and is then inferred that the population. The details of the same have been given in the subsequent sections.

3.2.4 Types of Research Design

The present study has been conducted in two phases.

Phase-I of the research follows an exploratory research design. The basic purpose is to identify the factors and variable and formulate problem for more precise investigation or of developing the working hypotheses from an operational point of view. The major emphasis of this phase of the study was to identify the aspects related to the implementation of SCM in an organization. Therefore, in-depth interviews were conducted with the executives associated with the department related to supply chain management.

Some of the questions that were asked during the interview are related to;

- Reasons and motivation for implementation of SCM
• Perception about SCM performance
• Issues and challenges faced by the company
• Perception about the outcome of implementation of SCM

Moreover the personal experience of the researcher also helped in identifying some of these variables, which ultimately helped in designing the instrument for Phase II of the study that follows descriptive research design.

Phase-II of the research follows a descriptive research design. Based on the variables / factors identified during the phase-I of the study, a questionnaire was designed (See Appendix-1). The questionnaire comprises of three parts. Part-I of the questionnaire aims to collect the basic details of the firms that participated in this study. Part-II of the questionnaire deals with the issues and challenges that the firms faced while implementing SCM. The management’s perception about the SCM’s performance and the outcome of the SCM implementation is included in Part-III of the questionnaire.

3.3 Sampling Design

In order to fulfill the research objectives an appropriate sampling design is prepared as per following:

3.3.1 Universe

The universe for this study comprises of all the Large, Medium & Small Scale companies of India.

3.3.2 Sampling Frame

In order to make the study more meaningful, engineering goods manufacturing firms of Gujarat having different scale of operation (Large, Medium, and Small Scale) have been considered in the sampling frame. The firms that may or may not have implemented SCM or may be in the process of implementation of SCM have been included in the sampling frame.

3.3.3 Sampling Units

Representatives of the company of different scales that have implemented or not implemented or in the process of implementation of supply chain management.
3.3.4 Sampling Method/Technique

Non-probability convenience sampling method

3.3.5 Sample Size

In all, about 90 firm’s representatives were contacted. Out of these, about 44 firms’ representatives responded to questionnaire as per the requirement of the research and hence included in this study. Out of these 44 respondent firms, 8 firms are large scale, 12 firms are medium scale and 24 firms are small scale.

The data, which were received, are from the Gujarat and the details are as follow:

1) V.V.Nagar : 2
2) Vadodara : 8
3) Hazira : 1
4) V.U.Nagar : 18
5) Nadiad : 2
6) Ahmedabad : 8
7) Sojitra : 1
8) Kambhat : 1
9) Savali : 1
10) Waghodiya : 1
11) Ankleshwar : 1

3.3.6 Types of Data: Primary as well as Secondary data

Primary data were received by taking appointment and brief discussion over phone as detailed discussion was not possible over phone. During personal interview questionnaire was filled by the company executive/owner.

Secondary data was collected in the form of annual reports of the company and on the basis of annual report following ratios were calculated and detailed analysis is shown in Chapter 4;

1) Current Ratio
2) Quick/Acid Test/Liquid Ratio
3) Inventory Turnover Ratio
4) Equity
5) Leverage Ratio
6) Performance Ratio
7) Return on Equity Ratio
8) Return on Investment Ratio

3.3.7 Instrument Used in Research

A structured Questionnaire was used as an instrument for data collection.

3.3.8 Hypotheses for the Study

Ha$_{(1)}$: As far as the organizations intention to implement the SCM is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha$_{(2)}$: As far as the organizations intention to increase the annual turnover is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha$_{(3)}$: As far as the growth rate of the organizational is concerned there is an association between, implementation of SCM by the firms, the scale of operation and their attention on various activities (Operational activities, Tactical activities, Current programming strategies).

Ha$_{(4)}$: As far as the organizations intention to problem faced related to raw material is concerned, there is an association between implementation of SCM by the firms and the scale of operation.

Ha$_{(5)}$: As far as the organizational intention to complain of late delivery of raw materials is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha$_{(6)}$: As far as the organizational intention to give good delivery rate is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).
Ha(7): As far as the resistant of employees is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(8): As far as the important of SCM is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(9): As far as the challenges faced by companies to improve SCM are concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(10): As far as the issues faced by companies to improve/implement SCM is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(11): As far as the method of implementation of SCM is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(12): As far as the perception about resources is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(13): As far as the effectiveness of SCM department is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(14): As far as the usefulness of SCM practices is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(15): As far as the documentation burden concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(16): As far as the cost incurred in implementing SCM concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(17): As far as the customer complaint as a part of non conformity is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).
Ha(18): As far as the continuous improvement in process and environment in implementing SCM concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(19): As far as the different objectives in implementing SCM concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

Ha(20): As far as the organizations intention to increase the annual turnover is concerned, implementation of SCM by the firms is dependent on the scale of their operation (Small, Medium or Large).

3.3.9 Data Analysis

The data collected through the questionnaire has been analyzed using various statistical tools. For this, SPSS data analysis software is used.

3.4 Significance of the Study

➢ The outcome of the study is expected to help practicing managers in implementing SCM practices in organizations of different scales of operations.

➢ The research shall also enhance the understanding of concept and implementation of SCM practices in the organization.

3.5 Limitation of the Study

➢ Though enough care has been taken, the responses may not be fully free from the bias.

➢ The research findings are based on survey of select small, medium and large scale companies of Gujarat and thus have a limited generalizability.