

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The review of literature presented in the previous chapter provides critical insights on various facets and aspects of subject under study. This helped in deciding objectives of the study. This chapter also describes the research methodology adopted to pursue these objectives. This chapter further presents, research design including sampling technique; data collection, methods followed in carrying out this study, the techniques used and the limitations of the study.

Cotton Textile is one of the most important industrial sub-sector in India. It is based on abundantly available raw cotton. It continues to be one of the largest industry and commands the strongest comparative advantage in resource utilization. It provides large number of employment to industrial labour force and is also one of the highest foreign exchange earners in the country. Hence, the Textile industry commands a special status owing to its linkages with primary sector, being a necessity, employment generated and foreign exchange earnings in the country. The introduction of Bt cotton in various countries has brought about a paradigm shift in availability and quality of cotton, impacting Textile industry globally. Appreciating importance of Textile industry and its contribution to the economy the Government has announced special Textile packages from time to time with an aim of healthy growth and development of this industry. The economic revival programmes are backed by radical reforms in tax regime including incentives for exports, trade policy and revival of sick mills, with sole objective of accelerating production and exports of textile products through maintaining sustainability and international competitiveness of this industry.

The impact of these measures, despite cropping of new problems and issues, has been healthy to some extent on Textile industry. These measures have been helpful in rebuilding confidence amongst entrepreneurs. Stabilization of market forces hence ensured supply of raw materials at feasible costs, reducing conflict amongst competing sub-sectors. Reducing the cost of production to a certain level through monetary and fiscal reforms also contributed to boost health and

performance of cotton and textiles in India. Besides these measures reduction of interest rates due to control of galloping inflation by commercial banks has been very beneficial. Quick disbursement of duty draw back rebates also eases the working capital requirements of textile firms.

In recent times, “Bt Cotton” has been a much talked and debated, hot topic among agricultural communities and also among policy makers, social activists, NGOs, politicians and other stakeholders because of its controversial nature. Bt Cotton is a genetically engineered form of natural cotton. The main advantage of utilizing biotechnology in agriculture are the possibilities of increase in productivity through the use of newer varieties that possess properties such as better quality, resistance to pests, diseases, and other stressful conditions like drought, salinity, or water logging.

Bt Cotton is produced by inserting a synthetic version of a gene from the naturally occurring soil bacterium *Bacillus thuringiensis*, into cotton. The primary reason this is done is to induce the plant to produce its own Bt toxin to destroy the bollworm, a major cotton pest. The gene causes the production of Bt toxin in all parts of the cotton plant throughout its entire life span. When the bollworm ingests any part of the plant, the Bt cotton toxin pierces its small intestine and kills the insect.

Among the insects, cotton bollworms are the most serious pests in India causing an annual loss of at least US\$300 million. Together these pests and diseases result in an estimated loss of 50 to 60 per cent of potential yield. Farmers therefore use a cocktail of expensive chemical pesticides to control pest infestation. Pesticides accounted for one-third of total cultivation costs.

Bollworm alone used to take a heavy toll, costing farmers an annual US\$ 235 million (Rs 11 billion). This accounts for more than a third of current pesticides sales in India. So to mitigate this yield loss incorporating insect resistance has become the prime objective of cotton improvement efforts in India. But painfully no bollworm resistance is available in the germplasm. Thus the efforts got diverted to harness genetic engineering technology for bollworm resistance in India in 1990s with import of genetically modified (GM) cotton and initiation of research programmes in national laboratories.

This situation leads to various problems for whole of textile industry, such as contamination in cotton, uncertain cotton price scenario, variation in cotton quality, difference in dye pick up of fabric, large rejections in fabric and garments, cotton production not matching the increased demand of cotton in India and abroad and India losing its status as large cotton producer

Problems faced by industry includes regular cotton crop failures, substantial increase in prices of raw cotton, the conventional edge of raw cotton prices has eroded and the prices of raw cotton and cotton yarn are at par with international prices, uncertain viability of textile firms with raw material at international prices, severe competition from cheap suppliers viz. India - China in the conventional market. India by virtue of its cheaper cotton is able to compete in international markets.

3.2 Objectives

The adoption of Bt cotton has led to a considerable impact on textile industry. An extensive review of literature and further study on the subject facilitated choosing objectives of the study which are presented below. The objectives of this study delves on various issues related with adoption of Bt cotton in the country and its impact on Indian cotton Textile industry. The specific objectives are:

- 1) To study adoption and production of Bt cotton in Gujarat.
- 2) To study growth of textile sector vis-a-vis Bt cotton adoption in Gujarat.
- 3) To study policy changes relevant to Textile sector and Bt cotton production.
- 4) To study trends in exports in textile.
- 5) To study impact of Bt cotton usage on export of cotton yarn and fabrics.

The above objectives will be pursued by using following methodology.

3.3 Hypothesis:

3.4 RESEARCH METHODOLOGY

The research methodology is the specification of method of acquiring the information needed to structure or solve the problem as decided in the objectives of the study. This section describes

the research methodology adopted to pursue objectives of present study. The research is aimed to study the Bt Cotton usage on export of textiles yarn and fabric, from India, as a consequence of its increasing adoption, with particular reference to cotton yarn and fabrics in Gujarat. Further the scope, research design in terms of data collection, sampling technique; methods followed in carrying out the research, the techniques used and the limitations of the study are also detailed here.

Exploratory study is important for obtaining a good grasp of the phenomena of interest and for advancing knowledge through good theory building and hypotheses testing. In this study, the exploratory research includes literature reviews in order to gain more detailed information about the research problems and issues related with the Bt Cotton usage on export of textiles from India with particular reference to cotton yarn and fabrics. Descriptive research is typically more formal and structured than Exploratory research (Malhotra, 2005). It is based on large, representative samples and the data obtained are subjected to quantitative analysis. The findings from this research are used as input into managerial decision making. In this study, descriptive study is undertaken in order to ascertain and describe the characteristics of the variables of the Bt Cotton usage on export of textiles from India with particular reference to cotton yarn and fabrics.

3.4.1 Research design

A research design is a framework or blueprint for conducting a research study. It details procedures necessary for obtaining the information needed to structure research problem for achieving desired objectives. The present study is exploratory as well as descriptive in nature. Therefore primary as well as secondary information has been collected and analysed in this study.

The primary data has been collected from cotton farmers by using a well structured questionnaire. At the same a separate well structured questionnaire has been administered to spinning mills which were using cotton produced in Gujarat for collecting desired data and information to fulfill objectives. The plan of sample farmers and respondents has been given below.

3.4.2 Sample Size and Data collection Plan

The table shows regional distribution of farmer respondents. The state of Gujarat has been divided based on three regions producing cotton. These regions and districts have been shown in table below.

Table 3.1: Regional Distribution of Farmers

Region	District	Total
Saurashtra 1	Amreli, Bhavnagar, Botad, Porbandar	115
Saurashtra 2	Junagadh, Surendranagar, Rajkot, Jamnagar	97
Central and Other	Dahod, Surat, Kheda, Vadodara, Gandhinagar	68
Total		280

Table 3.2: District and Taluka wise distribution of respondents

District	Taluka	Frequency
Amreli	Amreli	18
	Babra	2
	Lathi	10
	Rajula	10
	Total	40
Bhavnagar	Bhavnagar	47
	Mahuva	4
	Palitana	3
	Talaja	5
	Total	59
Botad	Botad	4
Dahod	Dahod	24
Gandhinagar	Gandhinagar	7
Jamnagar	Jamnagar	19
Junagadh	Junagadh	10
	Keshod	11
	Total	21
Kheda	Kheda	17
Porbandar	Porbandar	12

Rajkot	Rajkot	29
Surat	Surat	13
Surendranagar	Surendranagar	28
Vadodara	Dabhoi	3
	Karjan	2
	Vadodara	2
	Total	7

Both primary and secondary data has been collected during this study for this purpose a questionnaire was specially prepared and pre tested for administering to sample respondents. Two separate questionnaires were prepared and tested for collection of data from farmers growing cotton and managers and/or owners of spinning mills located in cotton growing regions of Gujarat. As a result of adoption of Bt cotton by farmers the cotton producing areas have expanded in the state beyond traditional cotton growing areas. An attempt was made to incorporate cotton growing farmers from these non-traditional areas as well.

The spinning mills using cotton produced in Gujarat were chosen based on personal contact. In all 20 spinning mills from Gujarat as well as other states in India were purposefully selected in accordance with convenience of data collection with authenticity and reliability for fulfilling objectives of the study.

Sample unit: Since the objective of the present study is to analyze the Bt Cotton usage on export of textiles from India with particular reference to cotton yarn and fabrics the active ginners, farmers and mills is taken as the sample unit.

Sample size : The data was collected through personally administering specially prepared questionnaire for farmers producing cotton in Gujarat. For this purpose visit to various cotton producing belt like Bhavanagar, Lathi, Junagadh, Talaja, Amreli, Kheda, Dahod, Manavdhar, Vijapur, Kadi, and Palej to get this information was made and respondents were personally contacted for filling the pre designed questionnaire for this purpose. In all survey of a sample of 280 cotton growing farmers and 20 cotton yarn producing spinning mills was undertaken.

3.4.3 Research instrument

Individual interviews were done and a structured questionnaire was used as the data collection instrument. The questionnaire was selected because it enabled the investigator to be consistent in asking questions and data yielded was easy to analyse with the help of SPSS computer software. Research respondents were interviewed directly to avoid misinterpretation and to ensure clarity on all issues. The researcher designed an interview schedule with both open-ended and closed questions.

3.4.4 Data preparation and analysis

The raw data which was collected with the help of the questionnaires was coded in the SPSS statistical software, to convert the raw data into a suitable form. Once the data was transferred into the software the data analysis was initiated and accordingly interpretation was done. Different data analysis techniques were used to get the meaningful outcome from the data. The statistical tools used are frequency distribution, Chi-square test, etc. wherever applicable.

Scope of the Study:

The study has been undertaken exclusively in the state of Gujarat, as Gujarat is one of the main major states producing cotton in India. Farmers in the state of Gujarat have been one of the early adopter of Bt cotton for production discontinuing production of traditional cotton, once Bt cotton was introduced in the country. This study is based on both primary and secondary data collected in accordance with objectives of study.

The data has been collected from farmers who grow cotton in Gujarat and spinning mills located in Gujarat during the study period. The primary survey was undertaken during 2011 to 2014 years. For sourcing secondary information extensive study of published research papers and articles and Government reports, policy documents have been referred during this period. A greater focus has been assigned to cotton production, textile industry and other related issues pertaining to Gujarat. The sample respondents have been chosen in the cotton producing districts of cotton producing regions of Gujarat according to convenience, who were willing to provide information.