CHAPTER - I

INTRODUCTION AND DESIGN OF THE STUDY

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Chapter - 1
INTRODUCTION AND DESIGN OF THE STUDY

1.1 Introduction

Cotton is a white gold. It is one of the most important cash crops in India. As a raw material for the textile industry, cotton contributes significantly to the agricultural and industrial economics of India and exerts considerable influence on India’s economy.

Textile industry is an important and emerging sector in both the global and Indian economy. India has many of the ingredients conducive to a thriving cotton textile industry, which incidentally is one of the oldest organised industries in India. The ingredients include a burgeoning middle-income population, a huge annual cotton crop and a textile tradition of thousands of years.

India is one of the major cotton producing as well as cotton consuming countries in the world. The area under cotton crop in India is the largest, constituting nearly one fourth of the world cotton area. Cotton is of vital importance, both in our agricultural economy as well as in our industrial economy.

Cotton accounts for more than 75 percent of the annual fibre consumption in the spinning mills in India and about 58 percent of total fibre consumption in the Textile sector in India. It engages millions of farmers, while another about 60 million people depend on activities relating to cotton cultivation, cotton trade and its processing for their livelihood. India is the only country in the world that grows not only the four cultivated species of cotton but also their intra-and inter-specific hybrids on a commercial scale. Though the number of varieties in cotton cultivation exceeds seventy-five, nearly 98 percent of the production is contributed by about twenty-five varieties only. Thus, cotton is the principal raw material for domestic textile industry comprising of 1603 spinning mills and 208 composite mills with an installed capacity of 35.36 million spindles (spinning + composite), 0.43 million open-end rotors (spinning + composite) and 0.91 million looms (composite + weaving) in the organised sector plus another 1196 small scale spinning units with 38.6 million spindles plus 0.15 million rotors as on 31st July
2006. The Textile Industry of which the cotton is the predominant raw material contributes about 4 percent to the GDP of the country and is the largest foreign exchange earner for the country. Hence growth and development of cotton and cotton industry has a vital bearing on the overall development of the Indian economy.

The textile industry is the single largest industry in the country. Its share in industrial production was about 21 percent in 2006. The industry also accounts for 4 percent of the GDP. The industry provides direct employment to over 20 million people and indirect employment to millions engaged in allied activities like cultivation of cotton, ginning and pressing, manufacture of man-made fibres filaments, textile machinery, stores and spares and byes and chemicals and contributes annually to the coffers of the government.

The export performance of textile industry paves way to a great extent in increasing foreign exchange position of the country. This also shows that the textile industry is working progressively. Textile export accounts for more than \( \frac{1}{3} \)rd of the country’s total export earnings with a meagre import content of less than three percent and is the single largest earner of foreign exchange.

During the year 2005-06 the share of textiles export including handicrafts, Jute and Coir in India’s total exports was 16.63 percent. India’s textiles exports have registered strong growth in the post quota period. Textiles exports grew from US $ 14 billion in 2004-05 to US $ 17 billion in 2005-06, recording a growth of 21.77 percent. Therefore, the Government has fixed a higher target of US $ 19.73 billion for the year 2006-07.

The potential of cotton for assisting the economic growth of the country can be assessed from the fact that it has a share of more than 70 percent in our fibre consumption as against around 40 percent share that cotton has in the world consumption of fibres, in cotton yarn, India is now the largest exporter, holding a share of more than 25 percent of world trade. While India is not a major exporter of fabric, cotton fabrics do have a very high share in our fabric exports. In our garment exports, cotton garments

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1. India, Country Statement on Cotton, 65th Plenary Meeting of the International Cotton Advisory Committee at Goiania, Brazil 10th to 15th September, 2006.

2
have a share of over 70 percent, which again is substantially higher than the world average.³

1.2 Importance of Cotton and Textile

The Textile and clothing industry constitutes an important source of income and employment for many countries in the world. This industry is very diverse and heterogeneous with its activities range from the production of raw materials (fibre) to the manufacture of a wide variety of semi finished (yarn, fabric, made-ups) and finished (Apparel/garments) products.

Textile and clothing are closely related to each other. Textile provides the major input to the clothing industry, creating vertical linkages between the two. Textile and clothing industry is also intertwined with primary industries like agriculture, chemicals and machineries. Because of its rich contribution to income, exports and employment, this industry plays key role particularly in the development process of developing countries.

Cloth is one of the basic necessities of human beings in the civilised world. India has been the home of cotton for centuries. The country in general and Karnataka state in particular has been producer of cloth since time immemorial. Apart from being a source of providing one of the basic needs of human being, the cotton textile industry of India plays a crucial role in the socio-economic structure of our country. In spite of the rapid growth of other industries, the cotton textile industry still continues to be one of the important industries in the country from the point of view of investment, cotton consumption, employment, production and export.⁴ The textile industry is the second largest employer after agriculture in India.

The cloth is the second basic need of the man, which serves as the second skin to his personality. Variety in clothing necessitates variety in textile. Presently the cotton textile is very much in demand by the individual and society because of its smooth soft textile. Comfort characteristics and over persistence in the fashion world when compared

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³ Rajaram Jaiparia, Chairman, Empowering Cotton as engine of Indian economy, ICMF. Bombay.
to man-modes. There is always a consistent search for new fashionable cloth that meets the specific requirements of the present generation. Thus value addition in cotton has been playing a vital role and is the need of the day.

Cotton textile, the oldest manufacturing industry occupies an important place in the national economy. For the successful monitoring of progress of the industry, it is essential to make an appraisal of capacity utilisation. Capacity utilisation in the textile industry includes among others.  

1.3 Understanding Certain Terms:

Fibres attached to the seeds of plants of the mallow like tropical genus gossypium, used in making thread or fabric. The fibres of any of these plants are used in making textiles and other products. Thread or cloth manufactured from the fibre of these plants. The cotton plant is a source for many important products other than fabric. Among the most important is cottonseed, which is pressed for cotton seed oil is used in commercial products such as salad oils and snack foods, cosmetics, soap, candles, detergents and paint. The hulls and meals are used for animal feed Cotton is also a source for cellulose products, fertiliser, fuel, automobile tire card, pressed paper and card board.

The quality of cotton mainly depends upon the length of the fibre; cotton has been classified into three types: Long staple cotton, Medium staple cotton and Short staple cotton.

**Long staple cotton:** Cotton with a fibre length of more than 1½ inches is considered as long staple cotton and it is also the best variety of cotton. It is used for the manufacture of super fine fabrics, parachute cloth. It is grown in U.S.A., West Indies, Egypt. The variety is produced in small quantity of the 10 percent of cotton in the world.

**Medium staple cotton:** Cotton with a fibre length of 1 inch to 1½ inches is considered as Medium staple cotton. It yields sufficiently strong and white fibre and it is used to
manufacture medium quality fabrics. It is grown in U.S.A., Peru, Russia and African countries.

**Short staple cotton:** Cotton with a fibre length of less than 1 inch is considered as short staple cotton. It is used for manufacturing of under garments and household fabrics. It is grown in Brazil, India and China.

The word textile was derived from the Latin word texare (weaving). A broad classification of any material that can be worked into fabric, such as fibres and yarns including woven, knitted bonded, felted, needle punched fabrics, lace and crocheted goods have to do with weaving or woven fabrics.

Cotton is grown in fields and the ‘Kapas’ is plucked during harvest. The fibres themselves are attached to the seed several hundred fibres on each seed. The ‘Kapas’ so plucked contains a variety of foreign matter such as leaves, sand etc. Before the cotton reaches the mill the fibres are removed from the seeds. This operation is known as ‘ginning’ is done in factories situated close to the cotton fields.

**Ginning**

It is a machine that separates the seeds, seed hulls and other small objects from the fibres of cotton. The implement or machine is used to pull the cotton fibres from the seed. Each fibre grows from the seed like hair from the head. There is a mechanical process of separating the cotton fibres from the seeds. The Charkha, used in India from antiquity consists of two revolving wooden rollers through which the fibres are drawn leaving the seeds.\(^7\)

The cotton module is cleaned, compressed, tagged and stored at the gin. The cotton is cleaned to separate dirt, seeds and short lint from the cotton. At the gin, the cotton enters module feeders that fluff up the cotton before cleaning. After cleaning, cotton is sent to gin stands where revolving circular saws pull the fibre through wire ribs, thus separating seeds from the fibre.

\(^7\) [http://www.answers.com/topic/cotton-gin.](http://www.answers.com/topic/cotton-gin.)
The results of the evaluation determine the bale's value. Inspection results are available to potential buyers. After inspection, bales are stored in a carefully controlled warehouse. The bales remain there until they are sold to a mill for further processing.8

**Bale:** A bag, sack, square or oblong package is made of cotton (170kg) or a bundle or package of cotton compressed and bound with and or wire weight 170 kgs. A large package of raw or finished material tightly bound with wire and often wrapped.

**Spinning**

Cotton is spun into yarn on the mule frame or the ring frame. Drawing, twisting and winding are the three chief operations of machine. Yarn is the final product of the foregoing operations, i.e., spinning, drawing out, twisting and winding of fibres into a continuous thread or yarn. From antiquity until the industrial revolution, spinning was a household industry. The roughly carded fibre was at first held in one hand and drawn out and twisted by the other hand.9

The processing of raw cotton by modern methods begins with the breaking of compressed bales (coverage 170kgs.) Carding engines complete the cleaning process, eliminate short and broken fibres and separate and align those remaining into soft, rope like “slivers”. To obtain high-quality yarn, combers process fine (thin) cotton into slivers, removing as much as 20 percent of the shorter fibres. Drawing frames begin the process of attenuating and twisting the slivers and enhance their regularity by drawing them between rollers and arranging them in parallel rows. A series of machines collectively known as “speed frames” conclude the preparation of cotton for the spinning frames, principally by further drawing out and twisting the material into a rope called “roving” and adding strength to the fibres by making them clinking to each other more closely. In the spinning stage, frames equipped with ring spindles draw and twist the fibers into yarn while winding them on a bobbin. The process is continuous with drawing, twisting and winding taking place simultaneously. During the preparatory and spinning process cotton suffers a loss in weight of 9-12 percent. In comparison, man made filament fibers spun into yarn on cotton textile machinery incur a negligible loss.

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8 Ibid.
9 [http://www.answers.co.uk/topic/spinning?cat=technomogy](http://www.answers.co.uk/topic/spinning?cat=technomogy)
Approximately two thirds of man made fibers come from chemical producers already processed as filament year.¹⁰

**Spindle:** A rod or pin tapered at one end and usually weighed at the other, on which fibres are spun by hand into thread and then wound. A similar rod or pin is used for spinning on a spinning wheel. Any of one various mechanical parts that revolves or serves as an axis for larger revolving parts, as in a lock, axle, phonograph tunable is spindle.¹¹

A stick or pin used to twist the yarn in spinning. Spinning machine is that, which draws, twists and winds yarn. A small domestic spinning machine with a single spindle is driven by hand or foot. A rod or pin tapered at one end and usually weighted at the other, on which fibres are spun by hand into thread. A similar rod or pin used for spinning on a spinning wheel.¹²

**Rotors:** In the modern method of spinning rotors are used.

**Yarn:** A textile thread is obtained by twisting of consecutively disposed and straightened ultimate composite fibre.

**Count:** The count of yarn is the numerical designation given it to indicate its size and is the relationship of length to weight.

**Waste:** By-products created in the manufacture of fibres, yarns and fabrics.

**Fibre:** The fundamental unit used in the fabrication of textile yarns and fabrics is a slender filament a fine thread like part of a substance.

**Fabric:** A cloth that is woven or knitted with any textile fibre.

**Staple:** Term used to indicate length of fibre that requires spinning and twisting in the manufacture of yarn.

1.4. Cotton Textile in India and Karnataka

1.4.1. Introduction

More than 85 lakhs hectares of land is under cultivation of cotton in India and we produce nearly 160 lakhs bales of cotton in a year. India has a strong base of textile mills with an installed capacity of 3.7 crore spindles and the industry employs about 3.5 crore people. Besides crores of people are engaged directly or indirectly in marketing of cotton, cotton yarn and cotton fabrics both knitted and woven and marketing of innumerable varieties of garments catering to the needs of 100 crore people of our country.13

1.4.2. Textile in India

"The history of cotton and textiles is not only the history of growth of modern industry in India, but in a sense it might be considered the history of India" – Jawaharlal Nehru. It is said that the mother of textile industry, its source of origin, is the spider’s web.

The history of king cotton is as old as the history of India from time immemorial, India was the only country known for its cotton fabrics, the rest of the world being clad mostly in wool wrote Prof. Dantwala in his monumental treatise, “A Hundred Years of Indian Cotton”. An examination of the samples of appeared found in the excavation at Mahanjodaro disclosed to the world the height of excellence reached in the manufacture of cotton textiles in India some 5,000 years ago.14

The classical Indian civilisation developed from the earlier Vedic Civilisation, which was created by the Aryans, an invading people, who first came to India around 1500 B. C. The period 320 B. C. 320 A. D. provides us with a great deal of data regarding the costumes worn by the people in those days. Eight to ten varieties of dresses were in vogue. Fashionable costumes such as Kurta – Salwar, Cholis, Gowns and many dress as well as tailored costumes were used in those days, especially in the north western region. Cotton clothes were the main export items of Harappans to

13 Rajaram Jaipuria op. cit.
Mesopotamia and were carried in ships having sails. Herodotus told the Greek world, perhaps for the first time, of the Indian trees that bore wool. “Surprising in beauty and in quality the wool of sheep and the Indians wear clothing from these trees”.15

The foundation of the Indian textile trade with other countries began as early as the second century B.C. Kalyan, a port, was place in that time from where textiles were exported. A variety of fabrics, including cotton brocade, is mentioned in Chinese literature as Indian products exported to China.16

The first cotton mill in India – Fort Gloster Mills was established in 1818 near Calcutta. The second mill came into existence around 1830. In 1854 Bombay saw its first Textile mill. In 1855, the more successful Broach Cotton Mills Company was set up in Ahmedabad, Gujarat. Then the focus was diverted to south when, in 1880 a Textile mill in Ambasamudram was established.17

Towards the end of the last century, there were no fewer than 156 mills with a total complements of 4.05 million spindles and 36,000 power looms. These were mostly concentrated in Ahmedabad. Presently there are over 700 mills with an installed capacity of over 20 million spindles. It is reported that most of the mills are sick and are taken over by a Government owned autonomous body National Textile Corporation.18

The textile and clothing industry in India makes an enormous and multi-faceted contribution to the domestic economy and external trade. It is the largest manufacturing sector in India, accounting for around 14 percent of India’s industrial output. The impact of environmental standards on this industry’s exports would have larger impact on the growth of Indian economy.

The yield per hectare in India is very low as compared to the other producing countries of the world. The world average productivity of the crop is around 600 kg per hectare but Indian productivity just reaches 470 kg per hectare and some countries have a

16 Prasad, Foreign Trade and Commerce in Ancient India; Abhinav Publications, New Delhi, 1977, P 206.
18 Prasad, op. cit. P 27.
yield of 2500 Kgs per hectare. During 2005-2006 per hectare yield of cotton in India is 478 kgs compared to the previous year 470 kgs.

The country is responsible for the origination and domestication of the cotton crop. The Indian cotton production constitutes 21 percent of world production. India produces large number of cotton varieties and hybrids. Though the number of varieties in cultivation exceeds seventy five, 98 percent of the production is contributed by about 25 varieties only. 19 Cotton is produced in India in three zones northern zone, central zone and southern zone. In those zones main producing of cotton crop states are Maharashtra, Gujarat, Andhpradesh, Haryana, Panjrab Rajasthan, Karnataka, Tamil Nadu and Madhya Pradesh. The above mentioned states cover around 95 percent area under cotton cultivation as well as output in India. 20 The details of the cotton cultivation area, yield and production of cotton during the last 9 years is given at Table 1.1.

Table 1.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (in lakh hectares)</th>
<th>Yield (Kg/hr)</th>
<th>Production (lakh bales 170kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-98</td>
<td>89.04</td>
<td>302</td>
<td>158</td>
</tr>
<tr>
<td>1998-99</td>
<td>92.87</td>
<td>302</td>
<td>165</td>
</tr>
<tr>
<td>99-2000</td>
<td>87.31</td>
<td>304</td>
<td>156</td>
</tr>
<tr>
<td>2000-01</td>
<td>85.76</td>
<td>278</td>
<td>140</td>
</tr>
<tr>
<td>2001-02</td>
<td>87.30</td>
<td>308</td>
<td>158</td>
</tr>
<tr>
<td>2002-03</td>
<td>76.67</td>
<td>302</td>
<td>136</td>
</tr>
<tr>
<td>2003-04</td>
<td>76.3</td>
<td>399</td>
<td>179</td>
</tr>
<tr>
<td>2004-05</td>
<td>57.86</td>
<td>470</td>
<td>243</td>
</tr>
<tr>
<td>2005-06</td>
<td>86.77</td>
<td>478</td>
<td>244</td>
</tr>
</tbody>
</table>

Source: Cotton Advisory Board and Cotton Corporation of India.

19 India country statement on cotton; 65th plenary meeting of the international cotton advisory committee at Goiania, Brazil, 2006.
20 Rajaram Jaipuria op. cit.
Today cotton is an integral part of textile in India. This sector is also very important for the country as it provides a large number of employment opportunities and also contributes significantly to the Gross Domestic Product of the country.

As on 2006 there were 17.79 cotton/man-made fibre textile mills (non-SSI) in the country with an installed capacity of 34.10 million spindles and 39,500 rotors.\textsuperscript{21} India has the destination of having the highest loomage in the world accounting for 61 percent of the total looms. However, in terms of high technology shuttle less looms India’s share is only 2.8 percent of the world loomage in the year 2005. The details of the number of mills, spindles and looms during the year 1997-98 to 2005-2006 are given in the Table 1.2.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Year & No. of Mills & Spinning (million) & Looms (in thousand) & Total (in thousand) \\
\hline
1997-98 & 1504 & 278 & 1782 & 33.88 & 124 \\
1998-99 & 1543 & 281 & 1824 & 34.72 & 123 \\
1999-00 & 1565 & 285 & 1850 & 37.08 & 83 \\
2000-01 & 1568 & 286 & 1854 & 37.91 & 85 \\
2001-02 & 1579 & 281 & 1860 & 38.32 & 82 \\
2002-03 & 1565 & 249 & 1814 & 39.03 & 80 \\
2003-04 & 1564 & 223 & 1787 & 37.03 & 83 \\
2004-05 & 1560 & 221 & 1781 & 37.46 & 87 \\
2005-06 & 1558 & 221 & 1779 & 34.10 & 86 \\
\hline
\end{tabular}
\caption{Number of Mills, Spindles and Looms in India}
\end{table}

Source: Ministry of Textiles Annual reports and http://texmin.nic.in/annualrap/AR05-06-03pdf

The mill consumption of cotton (both organised and small scale spinning units) during 2005-06 has gone up by about 12 percent and is placed at 3.45 million tons (20.20 million bales) as against 3.06 million metric tons (18.00 million bales) during the year 2004-05. The non mill consumption of cotton in 2005-06 has marginally increased to 0.26 million metric tons (1.50 million bales) as against 0.24 million metric tons (1.40

\textsuperscript{21} http://texmin.nic.in/annualrap/AR05-06-03pdf, Annual report 2005-06 p. 37.
million bales) during the previous year. The total consumption of cotton during 2005-06 was 3.69 million metric tons (21.70 million bales) as against 3.30 million metric tons (19.80 million bales) during 2004-05. The details of the cotton consumption in textile industry during the 9 years are given in the Table 1.3.

Table 1.3
Consumption of Cotton in India (in lakh bales)

<table>
<thead>
<tr>
<th>Year</th>
<th>Mill Sector</th>
<th>Other (SSI mills)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-98</td>
<td>149.78</td>
<td>6.54</td>
</tr>
<tr>
<td>1998-99</td>
<td>145.53</td>
<td>6.24</td>
</tr>
<tr>
<td>1999-00</td>
<td>150.59</td>
<td>8.37</td>
</tr>
<tr>
<td>2000-01</td>
<td>149.36</td>
<td>10.97</td>
</tr>
<tr>
<td>2001-02</td>
<td>147.00</td>
<td>11.7</td>
</tr>
<tr>
<td>2002-03</td>
<td>142.42</td>
<td>11.63</td>
</tr>
<tr>
<td>2003-04</td>
<td>150.39</td>
<td>12.99</td>
</tr>
<tr>
<td>2004-05</td>
<td>163.98</td>
<td>16.57</td>
</tr>
<tr>
<td>2005-06</td>
<td>182.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Source: Office of the Textile Commissioner, Mumbai

Total yarn production in India had increased by 5 percent during 2005-06 to 3,386 million kg from previous years 3,223 million kgs. The rise in total yarn production, including cotton as well as blended and non-cotton yarn has been mainly due to modernised expansion and integration of the industry. The production of cotton yarn has seen as increased of 8.4 percent from 2,273 million kg in 2004-05 to 2,462 million kg in 2005-06. The textile industry accounts for 14 percent of industrial production in 2005-06.

The textile industry has shown an impressive growth of 18.9 percent in 2005-2006, as against 15.9 percent in the previous year. The production of cotton textile recorded 9.7 percent growth, according to the data released by the Central Statistical Organisation (CSO). Cotton textile industry is labour intensive and offers maximum employment in the country. The increase in employment occurred mainly in spinning

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and preparatory operations. The current textile sector employees are around 35 million people including manufacturers, suppliers, wholesalers, exporters and importers of cotton textiles, hand looms, woollen and other textiles. The wages of Indian textile workers is the second lowest in the world. Only the cotton/man made Fibre Textile Mill Industry is the single largest organised industry in the country employing 10 lakh workers in 2005-06.

India has the capability of becoming one of the leading exporters of textiles. India is the largest exporter of the cotton yams in the world accounting up to 450 million kgs i.e. 17 percent market share. Indian garment industry is working to improve the yarn quality and to increase the production of cotton yarn. The country’s exports of textiles and clothing are set to touch a new high of $ 15 billion in 2005-06 after reaching a record $ 13.04 billion in 2004-05. During the year 2005-06, the country’s exports are placed at 0.80 million metric tons (4.70 million bales of 170 kg each). The top ten markets for cotton yarn are South Korea, Bangladesh, Hong Kong, Japan, Italy, Taiwan, Mauritius, China, North Korea and Egypt. These ten markets together held a share of around 63 percent of total cotton yarn exports in the year 2005-06. The textile shares nearly 35 percent of the country export earnings. India imports around 22 lakhs bales of cotton, which is same as the 12 percent of the domestic production. The share of textile in the total import bill is as low as 2 percent.

1.4.3. Cotton Textile in Karnataka

The cotton textile industry of Karnataka made its beginning in 1884 with the starting of a mill at Gulbarga by name the Mahaboob Shahi Kalburga Mills (MSK) with the active support of the Government of Nizam of Hyderabad. Another mill was started in 1887, but these two mills had to face serious problems very soon and the State Government rushed for their rescue. This even marked an important landmark in the history of industrial development, as it was the first instance of state participation in industry.


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After independence both central and state Governments encouraged the textile industry. In 1951, the state had 16 cotton mills with the installed capacity of 3,64,192 spindles and 43,000 looms. At the end of 1995, there were 57 mills in the organised sector with installed capacity of 14,00,322 spindles and 6,350 looms. Out of 57 mills 35 are in private sector, 18 in co-operative sector and 4 mills are owned by National Textile Corporation (NTC).

In Karnataka cotton cultivated area is 4.13 lakh hectares, with the production of 6.50 lakh bales and productivity is 268 kgs per hectare (2005-06). The Karnataka state produces cotton which is about 6 percent of the cotton produced in the country. India is the 3rd largest cotton producer in the world and Karnataka state acquired 6th place in India. Maharastra and Gujarat states are first and second largest producers of cotton in India. The main cotton growing districts in Karnataka are Raichur, Dharwad, Gadag, Bijapur, Gulbarga, Bagalkot, Davangere and Belgaum.

Besides other varieties, Karnataka grows extra long staple DCH-32, which has limited consumption in the state. Attention has to be paid to reduce adulteration and contamination of the cotton from the state of picking through the state of marketing, ginning and pressing. The inconsistency in the quality of raw cotton has seriously affected the quality of yarn. Cotton cultivation; yield and production have been given below in the Table. 1.4

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Table 1.4
Cotton Cultivation Area, Yield and Production in Karnataka

<table>
<thead>
<tr>
<th>Year</th>
<th>Area In lakh hectares</th>
<th>Yield In kg/per hectares</th>
<th>Production in lakh bales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-98</td>
<td>5.18</td>
<td>246</td>
<td>7.5</td>
</tr>
<tr>
<td>1998-99</td>
<td>6.08</td>
<td>245</td>
<td>8.75</td>
</tr>
<tr>
<td>1999-00</td>
<td>5.4</td>
<td>220</td>
<td>7.00</td>
</tr>
<tr>
<td>2000-01</td>
<td>5.6</td>
<td>235</td>
<td>7.75</td>
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<tr>
<td>2001-02</td>
<td>5.91</td>
<td>201</td>
<td>7.00</td>
</tr>
<tr>
<td>2002-03</td>
<td>3.93</td>
<td>216</td>
<td>5.00</td>
</tr>
<tr>
<td>2003-04</td>
<td>3.13</td>
<td>228</td>
<td>4.20</td>
</tr>
<tr>
<td>2004-05</td>
<td>5.21</td>
<td>261</td>
<td>8.00</td>
</tr>
<tr>
<td>2005-06</td>
<td>4.13</td>
<td>268</td>
<td>6.50</td>
</tr>
</tbody>
</table>

Source: Cotton Advisory Board- 2007

The state’s share of garment production is 20 percent and that of exports is about 8 percent of the national figures. Total number of spindles installed is 1.14 million, which is 3 percent of the total number of spindles in the country (2004-05).

Karnataka is well known for its Textile Industry. The contribution of the textile sector to the socio-economic development of the state is quite significant. Since ancient times, the state has prominent textile centres. The weavers of the state are known for their ingenious skill for making rich, fine and elegant clothes, with intricate designs. The textile industry occupies a unique position in the economy of the state in terms of its contribution to industrial production, employment and export. After delicensing the spinning sector in the country has undergone a drastic change. During the year 2004-05, in the state there were 203 ginning units, 60 pressing units and 35 textile mills working with an installed capacity of 6,96,334 spindles. The details of the cotton textile mills of the state have given in the Table 1.5.
Table 1.5
Cotton Textile Mills in Karnataka State

<table>
<thead>
<tr>
<th></th>
<th>No. of Mills</th>
<th>No. of Spindles</th>
<th>No. of Rotors</th>
<th>No. of Looms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>62</td>
<td>1142142</td>
<td>9544</td>
<td>8870</td>
</tr>
<tr>
<td>Not working</td>
<td>27</td>
<td>445808</td>
<td>2892</td>
<td>2870</td>
</tr>
<tr>
<td>Working</td>
<td>35</td>
<td>696334</td>
<td>6652</td>
<td>6000</td>
</tr>
</tbody>
</table>

Source: Karnataka Textile mills Association, 2005.

The handloom sector in Karnataka is known for its heritage and the tradition of excellent craftsmanship. As per the 1995-96 census in the state, there were 76,604 handlooms and over 1,89,000 weavers engaged in this activity. However, this number has come down steadily over the years and as in 2004-05, there remained only 46,675 looms.

Karnataka has about 88,566 power looms as per the survey conducted in 1995-96 and at present it is observed that about 50 percent of the power looms are idle. The major reasons for such a decline are poor productivity, outdated technology, lack of design development and proper marketing. In spite of all these shortcomings, 4 to 5 lakh weavers are working in power loom sector in the state.

Karnataka, especially Bangalore, has had a strong Garment industry for a long time. The sector has registered a sharp growth in exports in recent years. There are about 15,000 garment units of different sizes concentrated in and around Bangalore. The sector provides employment for over three lakh persons in Bangalore. Bellary is emerging as the next largest centre for the garment industry, next to Bangalore, particularly for jeans over 430 registered tiny and small garment industries are functioning in Bellary employing 3,000 persons. Garment export from Karnataka occupies 2nd position in terms of value next only to Electronics and computer software. Bangalore has occupied first place in the state for the export of garments to America and most of the producing garments are exporting to the America from Bangalore.

The strength of cotton as an engine of growth for our industry and the potential of the textile industry to drive the country's economic growth are well recognised. But both the cotton and textile sectors have been facing serious challenges in the country. If a low yield and high contamination have been the bane of our cotton, outdated technology and irrational government policies have contributed to the decline of the textile industry.

1.5. Importance of the Study

Davangere, the heart of Karnataka state is situated, geographically also, almost at the centre of Karnataka state. Davangere alone claimed eight textile mills clearly indicating the great important city had played with respect to textile industry. Around Davangere, cotton was a major crop and the city was situated in a cotton belt. The five big business families of this city are Shri. Rajanahalli Hanumanthappa, Shri Chigateri Murigeppa, Shri. Gundi Mahadevappa, Shri. R.Y. Amberkar and Shri. Rangappa Thimappa of Malladihalli – the famous cotton merchants of this city- whom the investigator wishes to called ‘Ziabatsus of Davangere’ have changed this small township into a big industrial centre, an agro predominant area into a commercial centre, a cattle market into a cotton market. These five big business families converted Davangere into a ‘Workshop, of the cotton textile in the Karnataka state’ and a ‘carrier of the state trade,’ All the cotton mills in Davangere district have been established by private individuals. Out of the 9 textile mills 6 are closed, another one is closed when researcher was working (2005), only two mills are working at present stage.

The importance of the study lies in the fact that there has been no systematic and comprehensive study which has been undertaken by researchers on the capacity utilisation in the textile units. This is particularly true in the case of capacity utilisation in textile units of Davangere district. Though Davangere was regarded as the biggest textile centre in the state no systematic study of the capacity utilisation in the textile units of Davangere district is attempted so far. The study covers the history of 9 Cotton Mills in the district and present working conditions of the textile mills and their capacity utilisation of process wise in textile units. There are various problems in different stages of capacity utilisation. In the case of spinning units 85 percent utilisation of the installed spindles capacity is consider as the minimum to break-even in the context of their cost.
structure. However, 95 percent and above utilisation of the spindle capacity is considered as the ideal one. But, the two textile mills of Davangere district are found under utilising installed spindle capacity such as under utilisation is mainly attributed to inadequate working capital, shortage of raw material, adverse marketing condition, process defects, frequent power failures and high tariffs of power supply, break down of machinery and labour problems etc. These have resulted in under capacity utilisation of textile units in Davangere district. In this context the present study assumes a special significance.

1.6. Statement of the Problem

The present research is selected for the study as many research gaps are found in various studies conducted in this regard. The study undertakes evaluation of two textile mills (4 units) in Davangere district. A sustained and balanced growth of the textile units is vital to the economic growth of a country, as also for fulfilment of the most essential needs of the people. The textile units are considered to be the instruments of progress and prosperity of the countries economy. But, these textile units are encountered with a number of operational and capacity utilisation and process-wise problems. These problems, which have affected the capacity utilisation and financial soundness of the mills adversely, are causing heavy losses.

The textile units of Davangere district are facing the problem of financing, marketing of their goods, the problem of workers and managers have also emerged due to lack of profit for the two textile mills in the study area. So a need is felt to undertake an inter unit dynamic analysis of the capacity utilisation of four units with their different processing. In view of the above it is intended to “Study of Capacity Utilisation of Cotton Textile Units of Davangere District.”

1.7. Objectives of the Study

The following are the important objectives of the present study:
1) To study the present conditions of textile units in Davangere district.
2) To analyse the capacity utilisation of processes in textile units.
3) To study the problems, if any, at various stages of capacity utilisation.
4) To examine causes of under utilisation if any.
5) To suggest suitable remedial measures.
1.8. Hypotheses of the Study

For the purpose of present study the following hypothesis are developed:

H.1. Under utilisation of capacity is because of outdated technology.

H.2. Under utilisation of capacity is because of poor power supply and high cost of power.

H.3. Labour related issues lead to under utilisation of capacity.

H.4. Under utilisation of capacity is due to changes in the cropping pattern.

H.5. Under utilisation of capacity is due to apathetic management.

1.9. Period of the Study

The present study examines the capacity utilisation in the cotton textile units of Davangere district from 1999-2005. However, uniform study period is not followed throughout the study. It is because different textile mills started at different periods. So, working results of the mills are studied from 1997-98 to 2004-05.

1.10. Research Methodology

The present study is based on Primary and Secondary data. And these data are collected from the annual reports of the units; the required Primary data have also been collected from personal interviews with the officials of the mills and workers of the units. The data, thus, collected have been properly classified and analysed with the help of the simple statistical tools i.e. percent, average, growth rate, and ratios. Numerous tables based on secondary data have been generated. Secondary data are collected from managerial data of units, some government publications, journals, news papers, reports, articles etc, for study purpose.

1.10.1. Sampling Design

A detailed and comprehensive questionnaire was prepared and pilot study was made to test the questionnaire. With the help of a pre-tested questionnaire necessary information is collected. For the purpose of study, the managerial employees and labourers were selected from two cotton textile mills (4 units) of Davangere district. Further, the sample has been chosen to include the workers working in the factory which
is situated in the heart of the city and also from the other one unit which is situated a little away from the Davangere city.

In Anjaneya cotton mill Researcher has divided 3 units according to their process, and studied clearly about these three units in the study area. And in Ganesar mill Researcher has studied about one unit of the mill. Totally four units are studied in this research problem. An interview schedule was prepared for 4 units in 3 parts, in the first part process employees were interviewed; in the second part production workers were interviewed and in the third part managerial employees were interviewed in units.

In first part researcher interviewed employees among them were supervisors, operators, engineers, production Managers, Masters and others. About the production process total 50 employees were representing the production process of the 4 units. Among them 50 percent employees were selected on the basis of stratified random sampling.

In second part, about 1520 workers representing the four textile units have been selected on stratified random basis for the purposes of gathering primary data. Overall, this forms a sample of about 20 percent (304 workers) of the total work force of the units.

In third part, about 110 of management employees representing the four units have been selected on stratified random basis for the purposes of gathering primary data. Thus a sample of about 30 percent of the total managerial employees are interviewed, it means 33 respondents in 4 units.

As mentioned in above sampling method, the researcher has explained about Production process capacity utilisation of the four units.

1.10.2 Nature and Source of Data

The study examines the capacity utilisation in the cotton textile units at the micro level. The focus is mainly on analysing the capacity utilisation in all processes in the cotton units of the district. The study covers all aspects of the under utilisation in the units. The study also analyses the economic and non-economic problems and causes of
under utilisation in the units. The study also covers the steps to establish textile mills and suggestions for improving the capacity utilisation in the units.

a. Primary Data

The sample ‘Survey Research Method’ is applied for collection of the primary data. Under this method, primary data on two cotton mills’ (4 units) workers, managerial employees, production process employees and others, is collected through a specific questionnaire, which is a convenient sample. The questionnaire set for this purpose is of descriptive type than numerical.

In the interviews open ended questions are asked to labourers and managerial employees. The required information is rather difficult to collect with the help of a questionnaire. Since the primary data is relating to certain questions, had limitations from the point of view of having extensive information about the recent problems and causes of the under utilisation. The only way was to take out the information from the mills workers and managerial employees through an informal interview. To make the study more realistic the investigator visited the houses of some workers and leaders and collected the information though the horses mouth with due verification.

Table: 1.6
Selection of the Sample Design

<table>
<thead>
<tr>
<th>Name of the units</th>
<th>Capacily utilisation in processes</th>
<th>Causes of under utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Production Processing employees</td>
<td>Workers</td>
</tr>
<tr>
<td></td>
<td>Total employees</td>
<td>Total</td>
</tr>
<tr>
<td>ACM I</td>
<td>12 50 6</td>
<td>425 20 85</td>
</tr>
<tr>
<td>ACM II</td>
<td>13 50 7</td>
<td>325 20 65</td>
</tr>
<tr>
<td>ACM III</td>
<td>11 50 5</td>
<td>280 20 52</td>
</tr>
<tr>
<td>ACM Total</td>
<td>36 50 18</td>
<td>1010 20 202</td>
</tr>
<tr>
<td>SGT</td>
<td>14 50 7</td>
<td>510 20 102</td>
</tr>
<tr>
<td>TOTAL</td>
<td>50 50 25</td>
<td>1520 20 304</td>
</tr>
</tbody>
</table>

21
b. Secondary Data

The study is mainly relied on the secondary data. The necessary secondary data pertaining to cotton spinning textile mills collected from the Shri Anjaneya Cotton Mills (P) Ltd and Shri Ganesar Textile Mills in Davangere district. Secondary data relating to importance of the textile mills, their installed spindle capacity, workers, production process employees, managerial employees, power consumption. Mills annual (Balance Sheets) reports, consumption of material, production of yarn, sales and other reports are collected from mills. Some other information are collected from textile department of Bangalore, District Industrial Centre, Department of Commerce and Chambers, Reports, Booklets, Magazines, Journals, Occasional Papers, Articles, News papers (English as well as Kannada) and collected from Internet for secondary data.

1.10.3 Observation Method

When the work was in production process, observation was made to study the nature of machines, the nature of materials, the nature of tools, the safety measures adopted for workers' safety and the layout of the plant observation of the group at work was also made to study. The interaction taking place between the group members, to correlate with the cohesiveness, observation was made at the units machinery spare parts of cotton textile spinning different department process to note the work, the feed and the cuts adopted by the workers while operating the machines.

1.11 Limitations of the Study

A detailed study of the problem of the capacity utilisation in cotton textile mills of Davangere district by the investigator is the first of its kind. Despite all possible efforts to make the analysis more comprehensive and scientific, a study of this kind is bound to have certain limitations. The investigator is well aware of the limitations of the survey method based on stratified sampling technique. Further, it is inevitable in a study of this kind, though at times analysis had to be drawn based on opinions and observations. In such cases the results are 'near to truth.' However, an honest attempt is
made to resort and analyse the opinions of workers, managerial employees and production process employees of the units.

At the beginning, they were very much hesitant to provide the material. With great difficulty, the investigator persuaded the management, personnel officers and the managers of different departments and was able to succeed in getting the correct information from the primary source, i.e., from the actual records maintained in the mills.

Some limitations of the study are given below:

1. The study comprises only two (four units) cotton textile mills of Davangere district.

2. The data is collected from 1997-98 to 2004-2005. The financial position reflected by the annual reports is true only for the last 8 years.

3. The other issues such as cost-effectiveness, competitiveness, financial viability, etc., are not examined.

However, the study is made as scientific as possible in making allowance to all these limitations.

1.12 Chapters' Design

The whole study has been divided into six chapters.

Chapter I: Introduction and Design of the study

The first chapter provides introduction, importance of cotton and textile, development of textile industry in India and Karnataka. The methodology used for the collection of data, statement of the problem, objectives, hypothesis, importance of the study, sampling design, nature and source of data and limitation of the study.

Chapter II: Concepts and Review of Literature.

This chapter deals with the different concepts of capacity utilisation and contains review of literature.
Chapter III: Present Status of Units

It is devoted to history of textile in Davangere district, the cotton textile mills, present status of units and an analysis of finance, power supply, workforce, raw material, production marketing and others.

Chapter IV: Capacity Utilisation in Processes

This chapter deals with production capacity utilisation in spinning processes and other departments.

Chapter V: Causes of Under Utilisation

The fifth chapter is divided into two sections. First section deals with the labourers' information and second section deals with the managerial employees for production and others.

Chapter VI: Findings and Suggestions

Last chapter provides summary of major findings and suggestions to improve the capacity utilisation.