CHAPTER III
PROFILE OF THE TEXTILE INDUSTRY AND THE STUDY AREA

3.1 INTRODUCTION

The Indian textile industry has a great legacy, which is perhaps unmatched in the history of India’s industrial development. This industry had rapidly developed at a very earlier stage. At present the Indian textile industry is one of the oldest and leading industries in the world. It contributes to the growth of economy in terms of its industrial output, investment and employment. After agriculture, the textile industry is one of the largest providers of employment for people and it is the second highest employer in the country.

This study focuses more about technology automation and labour skill development in textile industry. In this third chapter, the researcher has briefly discusses on the historical background of world textile industry and Indian textile industry, sectoral overview of Indian textile industry and growth, developments, process of the industry, importance of technology in textile industry, benefits and types of technology automation in textile industry, human resource requirements, need of skill upgradation training and its type, schemes for skill developments and seminars for textile industry.

3.1.1 INTRODUCTION TO TEXTILES

The meaning of the word textile must be made quite clear. The dictionary states that the word is derived from the Latin word texere; but a wider meaning than simply that of weaving must be accepted. Since that is only one of various ways at making textile fabrics. It is now generally accepted that a textile is a fabric made
from fibers. The fibers may either be converted into yarn first and then the yarns put together in variety of ways to make fabrics or the fibers can be converted directly into a fabric.

3.1.1.1 Meaning of Textiles

The term ‘textile’ is a Latin word originating from the word ‘texere’ which means ‘to weave’. Textile refers to a flexible material comprising of a network of natural or artificial fibres, known as yarn.

A textile is a flexible material consisting of a network of natural or artificial fibres often referred to as thread or yarn. Yarn is processed by spinning raw wool fibres, linen, cotton or other material on a spinning wheel to produce long strands known as yarn. Textiles are formed by weaving, knitting, crocheting, knotting or pressing fibres together (felt).

The words ‘fabric’ and cloth are commonly used in textile assembly trades (Such as tailoring and dressmaking) as synonyms for textile. However, there are subtle differences in these terms in specialized usage. Textile refers to any material made of interlacing fibres. Fabric refers to any material made through weaving, knitting, spreading, crocheting (or) bonding. Cloth refers to a finished piece of fabric that can be used for a purpose such as covering a bed.

3.1.1.2 Uses of Textiles

Textiles have an assortment of uses, the most common of which are for clothing and containers such as bags and baskets. In the household, they are used in carpeting, upholstered furnishings, window shades, towels, covering for tables, beds, and other flat surfaces and in art. In the workplace, they are used in industrial
and scientific processes such as filtering. Miscellaneous uses include flags, backpacks, tents, nets, cleaning devices, such as handkerchiefs; transportation devices such as balloons, kites, sails, and parachutes; and strengthening in composite materials such as fibre glass and industrial geotextiles. Textiles can be used as a material for children to use and explore in their classrooms as another elements of learning.

Textiles are used for industrial purposes, and chosen for characteristics other than their appearance, are commonly referred to as technical textiles. Technical textiles include textile structures for automotive applications, medical textiles (e.g. implants), geotextiles (reinforcement of embankments), agro textiles (textiles for crop protection), protective clothing (e.g. against heat and radiation for fire fighter clothing, against molten for welders, stab protection, and bullet proof vests. In all these applications stringent performance requirements was met. Woven of threads coated with zinc oxide nanowires, laboratory fabric has been shown capable of “self- powering nano-systems” using vibrations created by everyday actions like wind or body movements\textsuperscript{106}.

3.2 HISTORY OF WORLD TEXTILE INDUSTRY

The textile industry has a very long history in the world. In the year 1800’s, the textile industry was successfully started in England. The England was the only potential country for cotton manufacturing. The industry was started with hand spinner weaving material and after that, a year later the hand spinner weaving process was automated using automation technologies. The first textile mill was

started 1771 in Cromford, England by Sir Richard Arkwright. In the newly industrialized world the city was the one of the largest and most productive cities. In 1764 “Spinning Ginny” machine was introduced by James Hargreaves. At the same time the machine allowed one person to spin 16 threads of cotton. It is the first hand powered multiple spinning machine. So the city got the name of “Golden Age of the City” and “Manchester of Cotton”. The first water powered cotton mill was introduced in the same year and used carding cotton in the place of Royton, Lancashire and England. In the period of 1764, spinning and weaving process was mechanized. In 1769 Richard Arkwright patented the “Water Frame”. The frame produced a better thread compared to the Spinning Jenny.

During the year 1792, Samuel Slater started his own yarn spinning mill in Pawtucket Rhode Island. He was called Father of “American Industry and the Founder of the American Industrial Revolution”. He got ideas to start this factory after visiting Arkwright’s factory and then he also started his own mill. He was the first successful person to introduce “Automated Yarn Spinning” in U.S.

In the year 1794, the “Cotton Gin” was developed by Eli Whitney. It has revolutionized the cotton and textile industry. In 1781 the Steam Engine was invented by Boulton and Watt. It was very easy to use in the cotton factory. In United States cotton mills in North-Eastern states declined rapidly by the end of the nineteenth century as factories spread to the south where cotton was harvested. Many United States textile factories failed and moved overseas in the late 20th century as it became cheaper to manufacture goods in China, India and other Asian countries\textsuperscript{107}.

3.2.1 HISTORY OF INDUSTRIAL REVOLUTION

At the beginning of the 18th century, the key British Industry was the production of textiles made of wool from the large sheep founding areas in the midlands and across the country. It is the labour intensive activity and it was providing employment throughout Britain with the main centres being the West Country, Norwich and Environs and the west Riding of Yorkshire. The accounts of export trade in woollen goods for more than a quarter of British exports during most of the 18th century doubling between 1701 and 1770. The exports of the cotton industry centered in Lancashire had grown tenfold during this time, but still accounted for only tenth of the value of the woollen trade\textsuperscript{108}.

In 18th century, textile industry was known for its mass production of yarn and cloth which became a mainstream industry. In the year 1734, John Key had introduced the \textbf{“Flying Shuttle”} and the shuttle increased the speed for the production or manufacturing process of a single weaver in the loom. The manufacture of cotton cloth, Richard Arkwright used waterwheels to power looms in 1771. In 1779, the \textbf{“Spinning Mule”} was invented by Crompton. The Spinning Mule was allowed for better control over the weaving process.

In 1782, Samuel Grey established a mill named \textbf{“Quarry Bank Mill”}. He had built the mill on the river Bollin at styal in Cheshire. The mill was initially powered by a water wheel and it was installed steam engines were installed in 1810. The first \textbf{“Power Loom”} was designed by Edmund Cartwright in the year 1784 and it was built in 1785. In the next 47 years, the process was completely automatic.

machine, which was invented by Kenworthy and Bullough. Then he introduced the Lancashire Loom and it was a semi-automatic power loom. It was a self-acting and stopped when the shuttle operated. A number of factories used Steam Engine in 1790’s. Eli Whitney had invented the Cotton Gin in 1792. It automatically separated the cotton seeds from the short stable cotton fiber.

1800’s, witnessed a spread in the use of chemical bleaches and dyes in industries. All processes were done in the same factory. Joseph Marie Jacquard had invented the Jacquard Loom. The loom was weaved the complex designs. The first weaving machine of “Robert Power Loom” was invented in 1812. In 1856, the William Perkin had invented the first synthetic dye. In the period of 1820 - 1840, Industrial revolution changed over to the new manufacturing process and it included hand production methods to machines, new chemical manufacturing, iron production processes improved the efficiency of water power. The development of machine tools increased the use of steam power.

Major changes happened in textile industry in the 20th century. Because of the continuous technological developments and inventions of new machinery fuelled the industrial growth. In 20th century, the shuttleless loom had been employed to increase production speed and to improve efficiency. Today the industry uses many advanced technologies like Air Jet Looms, Projectile Weaving, Rapier Weaving and New Jacquard Shedding Concepts to increase the efficiency and quality.

---

112 en.wikipedia.org/wiki/textile-industry accessed on 02.04.2013 at 3.30 pm
3.3 HISTORY OF TEXTILE INDUSTRY IN INDIA

In India, the textile industry was started from very ancient time and the industry was one of the traditional industries of India. In the 19th century, the Modern Textile Industry was the first textile mill in India and it was established at Calcutta nearby fort gloster in 1818. But the cotton textile industry originally started during 1850’s at Bombay. The first cotton textile mill was established in Bombay in 1854. It was established by a Parsi cotton merchant and the mill was engaged for trade. The majority of the early mills did handiwork and they engaged in yarn and cloth trade in home and marketed the products to China and Africa.

In Ahmedabad, the first cotton mill was established in 1861. So the industry was spread to trading class of Gujarati. In the second half of the 19th century the cotton textile industry was rapidly progressed and 178 cotton mills were started at end of the 19th century. During 1900, the cotton textile industry was in bad state due to the great famine and a number of mills of Bombay and Ahmedabad were to be closed down for long periods.

The Indian cotton textile industry had a great stimulus in the period of Second World War and Swadeshi Movement. The First World War gave an impetus to the industry, but the post war depression hampered the progress of the industry for a certain period. The position of the industry was examined by the Tariff Board in 1926 which recommended that the mills should diversify their production instead of concentrating on the production of course, grey cloth. In the period of 1922 to 1937, the Bombay mills changed hands. 178 textile cotton mills were established in 1901 with 4.05 lakh looms. In 1921, 249 mills were established with 13.35 lakh looms. In 1941, 396 mills were established with 20 lakh looms. In 1945, 417 mills were
established and employed 5.10 lakh workers. The imports of textile machinery formed a very important item in the machinery imports into the country. In 1949-50, the value of these imports set up a high record of Rs. 14.1 crores.

During the Indian independence period, cotton textile industry was affected and the Indian union got 409 mills and Pakistan got 14 mills and 22 % of land. After that India had imported cotton from Pakistan and other countries. In 1951 and 1982 the period of after independence, 11 million to 22 million spindles were established. Further it increased over 26 million by 1989-90.

The origin of textile mill industry dates back to 1818, when the first cotton mill was set up in Bengal. The mill was actually established in 1854 at Bombay. The number of spindles and looms installed in 1914, that is, just before the outbreak of the first world war was 6,778,895 and 104,179, employing 2,60,000 people. During the year 1929 these figures rose to 8,907,064, 174,992 and 3,46,925 respectively and the year 1951 the total number of mills reached 445 with an installed capacity of 11,240,635 spindles and 201,484 looms, giving direct employment to about 7,48,000 persons.

3.4 TEXTILE INDUSTRY IN INDIA

The Indian textile industry is one of the oldest and emerging industries in the world and it occupies a unique place in the country. The textile industry is one of the world’s largest producers of garments. It is the second largest producer of textiles and garments in the world after China. The major reason for these,

---

114 www.scribd.com/doc/39708922/history-of-textile-industry-in-india. accessed on 24.05.2013
availability of raw materials such as cotton, silk, wool, jute and it made the country with skilled workforce of a sourcing hub. It also plays a most important role in Indian economy and the industry mainly depends upon the textile manufacturing and export. It contributes around 14 % to Industrial production, 4 % to the Gross Domestic Product (GDP) and 17 % to the country’s export earnings, 18 % of employment in the industrial sector and 27 % of its total foreign exchange through textile exports. The textile industry is the second largest employment provider in India. It provides direct employment to 45 million people and the industry continues to provide employment opportunities for millions of skilled and unskilled people. So far 54.85 million people work on its allied industry.\(^\text{116}\)

In the period of April to December 2013, the production had increased by about 4 %, cotton yarn production increased by 10 %, blended and 100 % cotton non-cotton yarn production increased 8 % and 6 % in cloth production by mill sector.\(^\text{117}\) India’s share in Global Textiles has increased by 17.5 % in 2013. The government of India plans to spend US$ 9.1 billion for textile industry in the 12th five year plan. The industry has the potential to increase its share in the world trade from 4.5 % to 8 % and it will be reach $ 80 billion by 2020.\(^\text{118}\)

According to the report of Technopak advisors, the Indian Textiles and Apparel Industry is expected to grow US $ 223 billion by 2021. The industry also accounts 24 % of the world’s spindle capacity and 8 % of global rotor capacity.\(^\text{119}\)

\(^{116}\) www.ibef.org/industry/textiles.aspx accessed on 25.10.2013
\(^{119}\) http://indianbusiness.nic.in/index.php?param=industryservices_landing/351/1accessed on 19.10.2014 at 5.30 pm.
The textile vision Document framed by the National Manufacturing Competitiveness Council (NMCC) has projected that the India’s textile exports will reach US $ 300 billion by 2024-2025\(^\text{120}\).

### 3.5 CLASSIFICATION OF TEXTILE SECTOR

Indian textile industry can be divided into several segments; some of segments are listed below;

1. Cotton Textiles
2. Silk Textiles
3. Woollen Textiles
4. Man-Made Fiber
5. Jute Textiles

### 3.5.1 COTTON TEXTILES

Cotton sector plays a most important role in our growth of economy and the Indian textile industry is mostly cotton based industry. India is the second largest cotton producer country in the world and the third largest suppliers of cotton textiles. Favourable weather conditions and soil are the major factors impacting cotton production. The cotton cultivation is India was estimated 37 million bales of cotton in 2013-2014. The year of 2013-2014, cotton yarn production had increased by 2 %. The states of Gujarat, Maharashtra, Andhra Pradesh, Haryana, Punjab, Madhya Pradesh, Rajasthan, Karnataka and Tamil Nadu are the major cotton producers in India\(^\text{121}\).

\(^{120}\) [www.ibef.org/industry/textiles.aspx accessed on 22.09.2014 at 9.30 pm.]

\(^{121}\) [www.ibef.org/exports/cotton-industry-india.aspx accessed on 16.09.2012 at 11.am]
3.5.2 SILK TEXTILES

The silk industry occupies a unique position in India and it is a main player in the global scenario. **India ranks second in the production of silk** and it contributes about 18% to the total of the global silk production. Silk weaving has been carried out by Indians since time immemorial. The quality of silk products manufactured in India has got a wide demand throughout the globe. The sericulture is a significant cottage industry in India. Around 56 lakh people are dependent on this industry in our country. The industry is a labour intensive industry operating on around 54,000 villages in all over the country. The industry provides employment for more than 6 million people (6 lakh people) in the rural areas

3.5.3. WOLLEN TEXTILES

India is the **seventh largest producer of woollen** products. It accounts for nearly 2% of total world production. The country has the third largest sheep population of 6.15 crores. In the year 2013-2014, the export of wool and wool-blended products was US$ 2326 million. Nearly 45 million kg of raw wool was produced annually accounting to 3.1% of the total world wool production.

3.5.4 MAN-MADE FIBER

The Indian man-made fiber manufacturing is one of rapidly growing sector in the Indian economy. **India is the fourth largest producer of synthetic yarns globally.** The man-made fiber accounts 68% of all fibres produced worldwide and it includes 82% of Europe and Turkey. The demand has been continuously

---

increasing for the Indian synthetic fibres due to the quality. Indian textile industry accounts for 9.0% of the global textile fibre production. It is the fifth largest man-made fibre producer in the world, after China, South Korea, Taiwan and Japan. Global production of the industry is 24.0 Million Tonnes (MT) of manmade fibre. India produces 1.5 million tonnes. India’s share of the world man-made fiber output is very low at only 7.0%.

3.5.5 JUTE TEXTILES

India is the second biggest exporter of Jute in the world. The jute sector occupies an important place in Indian economy particularly in eastern region and plays a pivotal role in the Indian economy. Jute is used to make many multi utility products and it is eco-friendly. The jute industry provides direct employment to 0.26 million workers and supports the livelihood of 4 million farm families. During the year 2013-2014 fiscal year, the jute product exports in India reached Rs. 28 million. The RBI data, during the fiscal year of first half of the year 2013-2014, the export of jute and jute products from the country totalled US$ 181.8 million. The jute mills are mainly located in West Bengal, Andhra Pradesh, Assam, Odisha, Uttar Pradesh, Bihar, Tripura, Chhattisgarh and India has around 78 jute mills. The industry accounts for an annually turnover of Rs.6, 500 crore and it also contributing to exports to the tune of nearly Rs.1000 crore.

3.6 TEXTILE MANUFACTURING PROCESS

In textile industry, the process of cloth manufacturing involves a number of sequential processes until completion. The Indian textile industry is one of the

---

124 The Ministry of Environment and Forests, Government of India report-2010, September pp.3-1
leading industries in the world. This industry has a unique place in the economic growth of the nation. Textile sector comprises of few major processes.

**FIGURE NO: 3.1**

![Diagram showing the textile process flow: Raw Material → Spinning → Weaving/Knitting → Dyeing + Printing + Finishing → Garments Manufacturing]

3.6.1 SPINNING SECTOR

The spinning process is the final stage of staple yarn manufacturing. It is the final opportunity for a fibre to interact with the machine. In the spinning process, the goodness of fibre preparation through the different preceding processes can easily be evaluated. A failure in spinning is often a result of a default in the preparatory process.

There are different spinning technologies available in today’s technology. Each technique is unique in its principle and in its requirements of fibre quality. New spinning techniques involve high drafting where the input fiber strand (the drawn sliver) is separated, partially or fully, into approximately single fibers, flown
in an air stream, and reconsolidated to form the yarn. These techniques are highly sensitive to fiber quality, and to the presence of fine trash and dust.

### 3.6.1.1 THE PRINCIPLES OF SPINNING

In any spinning methods, three main mechanisms are used to convert fibers into a yarn. These mechanisms are:

- **Drafting mechanism**
- **Fiber coherence mechanisms**
- **Winding mechanism**

The drafting mechanism works on the same principle as the drawing process: sliding fiber over one another without elongating or stretching them. The objective of drafting in the spinning process is to reduce the size of the fiber strand down to the desirable size of yarn.

The fiber coherence mechanism produces cohesive forces to hold the fibers together in the yarn by introducing inter-fiber three-dimensional cross-linking. In any spinning system, the coherence mechanism is responsible for providing yarn strength.

The winding mechanism involves winding of yarn on a package (bobbin or a cone), and building the yarn along the length of the package. Proper yarn winding is extremely important particularly in weaving preparation. Yarn tension should be uniform and the appearance of the package is a critical factor.

### 3.6.1.2 DEVELOPMENT IN SPINNING

Yarn production on the old type spinning frame was a costly operation owing to limitations imposed on spindle speeds by having the flyer mounted at the
upper extremity, where the spinning package was also located, both these tending to throw the spindle off balance and causing undue vibration at high speed. The introduction of the dead spindle and overhung flyer a quarter of a century ago effected substantial economies in production cost by permitting considerably higher speeds, the production of larger yarn packages and more important still-application of automatic doffing mechanism with a considerable saving in the labour force required in this department.

Fiber control in drafting was for long a compromise between rove twist and appropriate settings of breast plate and guide rods. The introduction of slip draft mechanism in recent years offers a more positive means of fibre control and permits the use of longer spinning drafts.\textsuperscript{126}

3.7 CLASSIFICATION OF SPINNING TECHNIQUES

There are four major spinning technologies:

- Ring Spinning
- Rotor Spinning (open-end spinning)
- Air- Jet Spinning
- Friction Spinning

These spinning techniques may be classified in many different ways. In principle, spinning techniques may be divided into two main categories.

1. Continuous spinning
2. Interrupted spinning

\textsuperscript{126} Caldwell, S.A.G. (1954), “100 year’s Progress in Jute and Linen Manufacture”, \textit{The India Textile Journal- Special Souvenir} number. pp.504
In **Continuous Spinning**, the fibre flow is continuous from the feeding point to the delivery point; and fibres are under a full mechanical control. The conventional ring spinning is a continuous spinning process. In **Interrupted Spinning**, fibres undergo a complete or partial separation (rotor, and air jet spinning, respectively) before they are reconsolidated into a yarn. The primary reason for the interruption in fibre flow is to allow separation of the fibre coherence mechanism and the winding mechanism. This separation results in producing larger yarn packages, increasing production, and introducing strength at minimum energy consumption.

### 3.7.1 RING SPINNING

The ring spinning is mostly used for the processing in textile industry and it was invented in 1828. It is the most common method in the world, because of high speed and good quality. The ring spinning system is the most flexible system. It is characterized by the continuity fibre strand from roving (the input stand) to yarn. The input fibre stand is draft using roller – drafting to reduce its size down to the desirable yarn count. The fiber being delivered at the nip of the front roller form a triangle called the spinning triangle. The bottom end of this triangle represents the twisting point or the point at which raising at begins.

In the spinning triangle, different fibers have different tensions depending on their position in the triangle. Fibers in the center of the triangle are usually slack and those in the outer layers are under maximum tensions. Then fibers are released from the nip of the front roller, those exhibiting high tension tend to move towards the center displacing the initially central fibers to the outer layers. This
phenomenon is called fibre migration. The effect of fiber migration is to enhance fibre crosslinking, and consequently yarn strength.

The coherence mechanism in ring spinning is twisting. Twist is inserted to the fibres by a traveller rotating around a ring. Winding is made simultaneously with twisting. For each full turn of twist, the yarn package must make a full turn around its axis. Thus, yarn strength is a result of twisting, and fibre migration. Today, the latest ring spinning machines are used for better quality and to increase the speed of production. There are two types of ring spinning machines.

- G 32 Ring Spinning Machine
- G 36 Ring Spinning Machine.

3.7.2 ROTOR SPINNING (OPEN-END (OR) SPINNING)

In rotor spinning, the drafting mechanism consist of three different zones:

1. Mechanical drafting using opening roll
2. Air drafting using an air stream and transporting duct
3. Condensation mechanism

The use of a fibre sliver requires large amounts of draft to reduce its size down to that of the yarn size. A sliver may have more than 20,000 fibres. Before this number of fibres is reduced to a value of about 100 fibre per cross section in the yarn, it must first be reduced to as low two fibers to initiate the interruption or the discontinuity in fibre flux. This immense reduction requires high speed mechanical drafting supported by air drafting.

The coherence mechanism in rotor spinning is achieved by twist insertion resulting from the high speed rotation of the rotor. The amount of twist is
determined by the ratio between the rotor speed and the yarn delivery speed. The lack of tension differential similar to that in ring spinning yields no signification fibre migration. In addition, the lack of full mechanical control, resulting from the creation of an open end, leads to less fibre orientation and a yarn structure consisting of a core that is fully twisted (similar to ring spun yarns), and an outer layer that is partially twisted.

The condensation action, on the other hand, resembles a doubling effect of several fibres which enhances the uniformity of rotor spun yarns. This is one of the reasons that rotor spun yarn exhibits better uniformity than comparable ring spun yarns.

The winding mechanism in rotor-spinning is separated from the other two mechanisms. The yarn package is no longer the rotating twisting element as in ring spinning. The rotating twisting element is the rotor which is of much smaller size than the yarn bobbin. This allows much higher speed in rotor spinning than in ring spinning, and consequently higher production. Furthermore, there is no limitation on the size of yarn package; this eliminates further winding of yarn in the weaving preparation. The rotor spinning is also called break spinning. This type of spinning is less labour intensive. It is functioning faster than ring spinning. For this spinning, rotor speeds up to 1, 40,000 rpm. There are two types of rotor spinning machines used in textile industry.

- R 60 Rotor Spinning Machine
- R 35 Rotor Spinning Machine
The essential features of the rotor spinning system, which are

- The feed roller and feed plate
- A saw-tooth or pin-covered roller called an opening roller
- A tapered tube termed the transport channel
- A shallow cup called a rotor (a groove is cut into the internal peripheral surface, termed the rotor groove)
- A flanged tube (called the doffing tube) which faces the rotor base, coaxial to the rotor spindle
- A pair of delivery rollers that feed the spun yarn to the winding unit.

3.7.3 AIR-JET SPINNING

It is a fully automatic machine. The machine design includes individual drivers for spinning and winding units. It permits high speed winding. At present the industry uses J 20 Air jet spinning machine. Air jet spinning utilizes high roller-drafting to reduce the size of the input silver down to the desired yarn size. The coherence mechanism in air-jet spinning is quite unique. It is achieved by blowing out with compressed air through air nozzle holes of about 0.4mm diameter to from an air vortex. The air revolves at high speed (more than 3million rpm)

To simplify the principle of the coherence mechanism, let us examine the case of only one air nozzle (nozzle b). When air rotates in the clockwise direction, it twists the fibers fed to the nozzle. When the yarn leaves the nozzle, untwisting takes place. Thus, with one air nozzle, a case of false twisting would be achieved.
The rotating part in air-jet spinning is air. This allows much higher rotational speed than that of the rotor. Consequently, the production rate of air-jet spinning is higher than that of rotor spinning.

### 3.7.4 FRICTION SPINNING

As in the case of rotor spinning, friction spinning utilizes an opening roll for drafting and separating fibres of the input fibre strand (silver). After passing the opening roll, fibres are carried to a collecting point between two friction drums by means of air current. At this point, the yarn is formed by twisting imparted by the relative rotation between the surface of the drums and the yarn end. Thus, the coherence mechanism is friction between fibre and the yarn itself. At each turn of the yarn end, the yarn is given one turn of twist. The amount of twist in friction spinning is determined by the ratio between the yarn diameter and the drum diameter. Consequently, a very high degree of twist may be imparted.

Since friction spinning requires interruption of fibre flow by collecting fibre on friction drums prior to marking the yarn, a loss of fibre orientation may be expected. Another factor of disorientation results from the landing of fibre at high speed on slow moving friction drums. This mode of landing immediately prior to twisting makes it difficult to adjust for fibre disorientation. The impact nature of this landing compresses the fibre against the friction drum which results in a looped yarn structure. Since these loops do not effectively contribute to the strength of the yarn, friction-spun yarns have less strength than comparable rotor spun yarns\(^{127}\).

3.8 WEAVING SECTOR

Weaving is the core of the textile manufacturing process. In India, 5 million looms are installed and it is the highest in the world. For weaving, India utilizes 1.8 million shuttle looms which is 45 % of the world’s capacity. Handlooms machineries are worth 3.90 million of which 8.5 % of it are of world standard. This sector has been consistently employing large number of people. About 12.4 million people are employed in the weaving industry and 40 % of them are women.
The Indian apparel share in the world trade has increased from current level of 4.5 % to 8 %. It is predicted to reach US $5 billion by 2020. India has a great potential to increase the textiles and apparel share. The government has also introduced the Integrated Textile Park scheme for weaving industry development. “Centres of Excellence” for research and training will encourage the development of the weaving industry.\textsuperscript{128}

3.8.1 Basic Weaving Operations

Weaving operation involves four major repeated operations.

\textbf{Shedding}

In shedding, alternate warp yarns are raised to insert the filling yarn into the warp to form a shed. Shedding is automatically performed by the harness on the modern weaving looms. A harness is a rectangular frame to which a series of wires, called heddles, are attached. As each warp yarn comes from the warp beam, it passes through an opening in the heddle. The operation of drawing each warp yarn through its appropriate heddle eye is known as drawing in.

\textbf{Picking}

As the warp yarns are raised through shedding, the weft yarn is inserted through the shed by a carrier device. A single crossing of the filling from one side of the loom to the other is called a pick. Different methods are used for carrying the filling yarn through the shed in different kinds of looms. There are many types of looms including shuttle loom, shuttle less loom and circular loom.

\textsuperscript{128} www.indianmirrrior.com/indian_industries/2012/weaving_2012.html accessed on 14.08.2013 at 2.30 pm.
Shuttle Loom

The **Shuttle Looms** is considered to be the “First Generation of Weaving Machines”. The development of shuttle loom had different stages. Such as hand loom, power loom (non-automatic) and automatic loom. In hand loom, every operation was performed manually. In some instances, the shedding was performed by foot operation.

Power loom is a non-automatic loom on which supply in the shuttle is changed by hand. Automatic shuttle loom is the power operated machine on which the shuttles are changed automatically. All of the shuttle looms are single phase machines, i.e., each form one shed at a time, then one filling yarn is placed in the fabric at a time.

Shuttleless loom

The shuttle looms were replaced by “Shuttleless Loom” weaving machines, which are considered to be the “Second Generation of Weaving Machines”. Now, the filling insertion rate also has reached a stagnation point around 2000 m/min with the modern single phase weaving machines such as Air Jet Weaving, Projectile Weaving; Rapier and Water Jet Weaving; and are the popular shuttleless looms. One reason for this stagnation is the fact that shedding, filling insertion and beat-up motions have to be done subsequently in single phase machines. This necessity to wait to insert one pick after another prevents the single phase machines to achieve significantly higher filling insertion rates than 2000 m/min.

For shed formation and filling insertion, relatively large masses have to be moved fast in an oscillating pattern. The stress on the mechanisms involved and the
strain on the yarn have increased continuously and in some areas it is move close to physical limits. Because of the intermittent weft yarn with every pick attained a critical value of almost 70 m/s (250 km/h) and is stressed almost to its tensile limit.

Further increase in production rates of woven fabrics (woven area / machine hour) requires new technologies, such as multiphase weaving. A multiphase weaving machine is one in which several phase of working cycle take place at any instant such that several filling yarns can be inserted simultaneously. In these machines more than one shed is formed at a time; therefore, they are called multi-shed weaving machines. This concept is drastically different than single phase machines in which each of the five functions takes place subsequently. Therefore, it is appropriate to consider the Multiphase Weaving Machines as the “Third Generation of Weaving Machines”\(^\text{129}\).

3.8.2 AIR JET WEAVING

Air jet weaving is a type of weaving, in which the filling yearns is inserted into the warp shed with compressed air. A schematic of air-jet weaving utilizing a multiple nozzle system and profiled reed which is the most common configuration in the market. Yarn is drawn from a filling supply package by the filling feeder and each pick is measured for the filling by means of a stopper.

Upon release of the filling yarn by the stopper, the filling is fed into the reed tunnel via tandem and main nozzles. The tandem and main nozzle combination

provides the high air velocity across the weave shed. Profiled reed provides guidance for the air and separates the filling yarn from the warp. A cutter is used to cut the yarn when the insertion is completed.

The air-jet weaving machine combines high performance with low manufacturing requirements. It has an extremely high insertion rate. Due to its exceptional performance, air-jet machines are used primarily for the economical production of standard fabrics, covering a wide range of styles. Meanwhile, more and more niches and special fabric segments are covered: heavy cotton fabrics such as denim, terry fabrics, glass fabrics, tire cord, etc.

Air jet filling insertion is the simplest way of inserting the filling yarn, which probably explains why air-jet weaving machines are one of the most popular machines in the market today.

The major components of the insertion system are the tandem and main nozzles, ABS brake system and relay nozzles which are relatively simple in design. The insertion medium mass to be accelerated is very small, relative to the shuttle, rapier or projectile machines, which allows high running speeds.

3.8.2.1 The advantages of air-jet weaving machines are:

- High productivity
- Low initial outlay high filling insertion rates
- Simple operation and reduced hazard because of few moving parts
- Reduced space requirements
- Low noise and vibration levels
- Low spare parts requirement
- Reliability and minimum maintenance

### 3.8.3 WATER – JET WEAVING

A water jet weaving machine inserts the filling yarn by highly pressurized water. The tractive force is provided by the relative jet. If there is no velocity difference between the filling yarn and the water jet. If there is no velocity difference between the water and yarn, then there would be no tension on the yarn, which would result in curling and snaring of the yarn. The tractive force can be affected by the viscosity of the water and the roughness and length of the filling yarn; higher viscosities cause higher tractive forces. The viscosity of water depends on the temperature.

The first water jet weaving machine was KOVO, which was developed by Vladimir Svaty at the research institute for Textile Technology in Czechoslovakia and was displayed at the Brussels Textile Machinery Exhibition in 1955. This machine had a speed of 600 ppm with a reed width of 40 inches. Up to 12 harnesses were possible.

The Prince Jet loom was another earlier water-jet weaving machine. It had a reed width of 65 inches at 400 ppm speed. The width and speed of the water-jet loom gradually increased and the modern water-jet weaving machines can have a speed of around 1,500 ppm, while the maximum reed width is 3 m and the filling insertion rate is 1800 mpm.

Water-jet weaving machines have the same basic functions of any other type of weaving machines. The principle of filling insertion with a water jet is similar to
the filling insertion with an air-jet: they both use a fluid to carry the yarn. However, there are some differences that affect the performance and acceptance of water jet weaving machines.

### 3.8.4 PROJECTIVE WEAVING

Projective weaving machines use a projectile equipped with a griper to insert the filling yarn across the machine. The unique principle of projectile filling insertion allows the insertion of practically any yarn: cotton, wool, mono- and multifilament yarns, polypropylene ribbon, and even hard fibres like jute and linen. This is because all yarns, fine or coarse, are securely gripped and inserted by the projectile, resulting in a wide variety of fabrics to complex jacquard cloths. Energy required for picking is built up by twisting a torsion rod. On release, the rod immediately returns to its initial position, smoothly accelerating the projectile glides through the shed in a rake shaped guide. Braked in the receiving unit, the projectile is then conveyed to its original position by a transport device installed under the shed.

#### 3.8.4.1 The projectile weaving machines offer the following advantages:

- Low power consumption
- Reduced waste of filling material due to unique clean, tucked-in selvages
- Quick warp and style change
- Mechanical and operational reliability and ease of use
- Low spare parts requirement and easy maintenance
- Long machine life
Another major advantage of projectile weaving machine is that more than one width of fabric can be woven at a time. Different widths, from 33 cm to 540 cm, make the projectile weaving machine even more economic, saving energy and space.

3.8.5 RAPIER WEAVING

Rapier Weaving comes in many types. Early models contained one long rapier device that travels along the width of the loom to carry the weft from one side to the other. Another type of rapier looms has two rapiers, one on each side of the loom. They may be rigid, flexible or telescopic. One rapier feeds the weft halfway through the sheds of warp yarns to the arm on the other side, which reaches in and carries it across the rest of the way. Rapier looms are very efficient and their speed ranges from 200 to 260 ppm. These looms can manufacture a variety of fabrics ranging from muslin fabric to drapery fabrics and even upholstery130.

3.8.5.1 Rapier Weaving machines can be divided into two types:

- Single Rapier Machines
- Double Rapier Machines

3.8.5.2 Single Rapier Machines

A single rigid rapier is used in these machines. The rigid rapier is a metal or composite bar usually with a circular cross section. The rapier enters the shed from one side, picks up the tip of the filling yarn on the other side and passes it across the

weaving machine while retracting. Therefore, a single rapier carries the yarn in one way only and half of the rapier movement is wasted. Also, there is no yarn transfer since there is only one rapier.

The single rapier’s length is equal to the width of the weaving machine; this requires relatively high mass and rigidity of the rapier to ensure straight movement of the rapier head. For these reasons, single rapier machines are not popular. However, since there is no yarn transfer from rapier to rapier, they are suitable for filling yarns that are difficult to control.

3.8.5.3 **Double Rapier Machines:**

Two rapiers are used in these machines. One rapier called the giver, takes the filling yarn from the yarn accumulator on one side of the weaving machine, brings it to the center of the machine and transfer it to the second rapier which is called the taker. The taker retracts and brings the filling yarn to the other side. Similar to the single rapier machines, only half of the rapier movement is used for filling insertion.

3.8.5.4 **Circular Looms**

These looms are particularly used for creating tubular fabrics rather than flat fabrics. A shuttle device in it circulates the weft in a shed formed around the machine. A circular loom is primarily used for bagging material\(^{131}\).

---

3.9 GARMENT SECTOR

The Indian garment industry is a major contributor to the economic development in our country. The garment industry of India is the world’s second largest producer of textiles and garments. This industry accounts for 24% of the world’s spindle capacity and it also contributes 14% for the industrial production. According to the Apparel Promotion Council, India’s garment exports to the European Union has increased 5.9% in the period of January – May 2013, the China and
Bangladesh declined 9.7% and 1.8% year on respectively. In the first half of the financial year 2013, India has exported apparel worth of $7.9 billion. In the second half there was a rise of 13%. The financial year of 2014, apparel exports are projected to reach $20 billion by the end of 2014 as predicted by Union Textiles Ministry. 

FIGURE NO: 3.4

PROCESS FLOW CHART OF GARMENT MANUFACTURING

3.10 GROWTH OF INDIAN TEXTILE INDUSTRY

The Indian textile industry is fuelled by strong domestic consumption as well as rising export demand. The growth of this sector has a direct impact on the improvement of Indian economy. The most significant invention in the Indian textile industry has been the beginning of Man-Made Fibers (MMF). India has effectively positioned its innovative range of MMF textile in almost all the countries across the globe. Man-made fibers have experienced a ten percent growth and filament yarn production has too experienced a six percent growth during February 2014.

Cotton yarn production has significantly increased by about ten percent during February 2014 and by about another 10 % during April 2013 to February 2014. Blended & 100 % cotton yarn production increased by 6 % during February 2014. There was an eight percent increase during the period (April 2013-February 2014).
The production of cloth using power looms and hosiery had increased by 2 % and 9 % respectively during the end of February 2014. The total cloth production grew almost by 4 % during February 2014 and three percent during the period (April 2013 - February 2014).

According to the latest report by Apparel Export Promotion Council (AEPC) Textile exports during April 2013 was around $ 28.53 billion, compared to US $ 24.90 billion during January 2013. It is predicted that India is expected to reach US $ 60 billion of textile exports over the next three years with all necessary support of the Indian government.

The Indian textile sector has witnessed a spurt in global investments during the last 5 years. The industry has attracted Foreign Direct Investment (FDI) worth Rs 6,710.94 crore (US $ 1.11 billion) during April 2000 to February 2014.

### TABLE NO 3.1
GROWTH RATE OF TEXTILE SECTOR IN INDIA

<table>
<thead>
<tr>
<th>S. No</th>
<th>Year</th>
<th>Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2005-2006</td>
<td>10.1</td>
</tr>
<tr>
<td>2.</td>
<td>2006-2007</td>
<td>11.7</td>
</tr>
<tr>
<td>3.</td>
<td>2007-2008</td>
<td>7.5</td>
</tr>
<tr>
<td>4.</td>
<td>2008-2009</td>
<td>-5.7</td>
</tr>
<tr>
<td>5.</td>
<td>2009-2010</td>
<td>4.8</td>
</tr>
<tr>
<td>6.</td>
<td>2010-2011</td>
<td>5.8</td>
</tr>
<tr>
<td>7.</td>
<td>2011-2012</td>
<td>-3.6</td>
</tr>
<tr>
<td>8.</td>
<td>2012-2013</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Source: FICCI Report, November 2013

3.11 EXPORT SCENARIO OF INDIAN TEXTILES AND CLOTHING INDUSTRY

India’s textiles and clothing industry is one of the pillars of the national economic organization. It is also one of the largest contributing sectors of India’s exports worldwide. The report of the Working Group established by the Planning Commission on boosting India’s manufacturing exports during 12th Five Year Plan (2012 - 17), envisages India’s exports of Textiles and Clothing at USD 64.41 billion by the end of March, 2017. The textile industry accounts for 14% of industrial production, which is 4% of GDP and accounts for almost 11% share of the country’s total exports basket. India’s textile exports registered a robust growth of US$ 22.15 billion in 2007 - 08 to 33.31 billion in 2011 - 12, registering a CAGR of 8.50% during 11th Five year Plan. The increase continued in 2006 - 07 with T&C exports of US $ 19. 15 billion recording an increase of 9.28% over the previous year and reached USD 22.15 billion in 2007 - 08 denoting an increase of 15.7% but declined by over 5% in 2008 - 09.

Exports of Textiles & Clothing grew from USD 21.22 billion in 2008 - 09 to USD 22.41 billion in 2009 - 10 and has touched USD 27.47 billion in 2010 - 11. In the fiscal year 2011 - 12 (P), exports of textiles and clothing, has risen by 20.05% over the fiscal year 2010 - 11 to touch USD 33.31 billion. Country - wise analysis indicates India’s textile products, including handlooms and handicrafts, are exported to more than a hundred countries.\(^{134}\)

\(^{134}\) Source: Ministry of textiles, Strategic plan (2012-2017), February 2014
TABLE NO: 3.2

INDIAN TEXTILE EXPORTS SCENARIO

<table>
<thead>
<tr>
<th>S. No</th>
<th>Year</th>
<th>Exports ($billion)</th>
<th>Share of Textiles in Total Exports (%)</th>
<th>Growth Rate of Exports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2001-2002</td>
<td>11.6</td>
<td>24.5</td>
<td>6.90</td>
</tr>
<tr>
<td>2.</td>
<td>2002-2003</td>
<td>12.4</td>
<td>23.5</td>
<td>8.9</td>
</tr>
<tr>
<td>4.</td>
<td>2004-2005</td>
<td>14</td>
<td>16.8</td>
<td>25.0</td>
</tr>
<tr>
<td>5.</td>
<td>2005-2006</td>
<td>17.5</td>
<td>16.9</td>
<td>9.1</td>
</tr>
<tr>
<td>6.</td>
<td>2006-2007</td>
<td>19.1</td>
<td>15.2</td>
<td>16.2</td>
</tr>
<tr>
<td>7.</td>
<td>2007-2008</td>
<td>22.2</td>
<td>13.6</td>
<td>-5.2</td>
</tr>
<tr>
<td>8.</td>
<td>2008-2009</td>
<td>21</td>
<td>11.4</td>
<td>6.4</td>
</tr>
<tr>
<td>9.</td>
<td>2009-2010</td>
<td>22.4</td>
<td>12.6</td>
<td>24.1</td>
</tr>
<tr>
<td>10.</td>
<td>2010-2011</td>
<td>27.8</td>
<td>11</td>
<td>24.1</td>
</tr>
<tr>
<td>11.</td>
<td>2011-2012</td>
<td>33.1</td>
<td>10.8</td>
<td>19.1</td>
</tr>
<tr>
<td>12.</td>
<td>2012-2013</td>
<td>31.2</td>
<td>10.4</td>
<td>-5.7</td>
</tr>
</tbody>
</table>

Source: Textile Ministry and FICCI Report 2013

3.12 EXPORT TARGETS FOR TEXTILE INDUSTRY

The export committee reviewing the National Textile Policy (NTP) 2000 and formulating NTP 2013 has a target of trebling the share of India in world exports of textiles and clothing. It would require India’s exports to grow at a Compound Annual Growth Rate (CAGR) of 15.1 % over the next ten years\(^\text{135}\).

\(^{135}\) FICCI Report, November 2013 accessed on 19.08.2014.
TABLE NO: 3.3
THE SHARE OF INDIA IN WORLD TEXTILE EXPORTS

<table>
<thead>
<tr>
<th>S. No</th>
<th>Year</th>
<th>World Textiles Exports ($ billion)</th>
<th>India’s Exports ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2012</td>
<td>708</td>
<td>31</td>
</tr>
<tr>
<td>2.</td>
<td>2013</td>
<td>743.4</td>
<td>35.7</td>
</tr>
<tr>
<td>3.</td>
<td>2014</td>
<td>780.6</td>
<td>41.1</td>
</tr>
<tr>
<td>4.</td>
<td>2015</td>
<td>819.6</td>
<td>47.3</td>
</tr>
<tr>
<td>5.</td>
<td>2016</td>
<td>860.6</td>
<td>54.4</td>
</tr>
<tr>
<td>6.</td>
<td>2017</td>
<td>903.6</td>
<td>62.6</td>
</tr>
<tr>
<td>7.</td>
<td>2018</td>
<td>948.8</td>
<td>72.1</td>
</tr>
<tr>
<td>8.</td>
<td>2019</td>
<td>996.2</td>
<td>83.0</td>
</tr>
<tr>
<td>9.</td>
<td>2020</td>
<td>1046.0</td>
<td>95.5</td>
</tr>
<tr>
<td>10.</td>
<td>2021</td>
<td>1098.3</td>
<td>109.9</td>
</tr>
<tr>
<td>11.</td>
<td>2022</td>
<td>1153.3</td>
<td>126.5</td>
</tr>
<tr>
<td>12.</td>
<td>2023</td>
<td>1210.9</td>
<td>145.6</td>
</tr>
</tbody>
</table>

Source: WTO and FICCI Estimation

3.13 THE TEXTILE AND APPAREL SUPPLY CHAIN

The Textile and Apparel Supply Chain comprises diverse raw material sectors, ginning facilities, spinning and extrusion operations, processing sector, weaving and knitting factories and garment (and other stitched and non-stitched) manufacturing that supply an extensive distribution channel. This supply chain is possibly one of the most diverse in terms of the raw materials used, technologies deployed and products developed. This supply chain supplies about 70% by value of its yield to the domestic marketplace. The distribution channel comprises wholesalers, distributors and a large bit of small retailers selling garments and
fabrics. It is just recently that large retail formats are emerging thereby increasing diversity as well as volume on display at a single position. Some other characteristic of the distribution channel is the potent bearing of ‘agents’ who secure and consolidate orders for manufacturers.

Exports are traditionally executed through Export Houses or Procurement/commissioning offices of large global apparel retailers. It is estimated that there exist 65,000 garment units in the organized sector, of which about 88 percent are for woven cloth while the remaining are for knits. However, only 30–40 units are large in size (as a result of long years of reservation of non-exporting garment units for the small scale sectors – a regulation that was removed recently). While these firms are spread all over the country, there are clusters emerging in the National Capital Region (NCR), Mumbai, Bangalore, Tirupur/Coimbatore, and Ludhiana employing about 3.5 million people.

According to our estimate, the total value of production in the garment sector is around Rs.1,050 – 1,100 billion of which about 81 per cent comes from the domestic market. The value of Indian garments (eg. saree, dhoti, salwar kurta, etc.) is around Rs.200–250 billion. About 40 per cent of fabric for garment production is imported.

The weaving and knitting sector lies at the heart of the industry. Three distinctive technologies are used in the sector – handlooms, power looms and knitting machines. They also represent very distinctive supply chains. The handloom sector (including khadi, silk and some wool) serves the low and the high ends of the value chain – both mass consumption products for use in rural India as well as niche products for urban & exports markets. It produces, chiefly,
textiles with geographical characterization viz., cotton and silk sarees in Varanasi) and in small batches. Handloom production is mostly rural (employing about 10 million, mostly, household weavers) and revolves around master-weavers who provide designs, raw material and often the loom.

Weaving, using power looms, was traditionally done by composite mills that combined it with spinning and processing operations. Over the years, government incentives and demand for low cost, high volume, standard products (especially sarees and grey cloth) moved the production towards power loom factories and away from composite mills (that were essentially full line variety producers). While some like Arvind Mills or Ashima transformed themselves into competitive units, others gradually closed down. Most of the mills are located in Gujarat and Maharashtra. Most of the woven cloth comes from the power looms (chiefly at Surat, Bhiwandi, NCR, Chennai). Weaving sector is predominantly small scale, has on an average 4.5 power looms per unit, suffers from outdated technology, and incurs high co-ordination costs. Knits have been more successful especially in export channels. Strong production clusters like Tirupur and Ludhiana have led to growth of accessories sector as well, albeit slowly. The hosiery sector, on the other hand, has largely a domestic focus and is growing rapidly.\footnote{Chandra, P. (1998), “Technology Practices and Competitiveness: the Primary Textiles Industry in Canada, China, and India,” ed. P. Chandra, Himalaya Publishing House, Mumbai.}
3.14 INVESTEMENT IN TEXTILE SECTOR

The quantum of investment is one of the crucial factors affecting the Indian textile industry. Levels of investment in the textile industry are determined on the basis of the following schemes / polices of the government

- Technology Upgradation Fund Scheme (TUFS)
- Capital Subsidy Scheme for Power loom Units
- Industrial Entrepreneurship Memorandum (IEM) & Letter of Intent (LOI) / Direct Industrial License (DIL)
- Scheme for Integrated Textile Parks (SITP)
- Foreign Direct Investment (FDI)

In the year 1999-2000, 407 applications were received under TUFS amounting Rs. 5,771 crore and 309 applications were sanctioned (Rs. 2,421 crore). In the following year applications received under TUFS increased steeply to 719 amounting Rs. 6,296 crore. In 2001-02, number of applications received from claiming TUFS fell significantly, but most of them were sanctioned. In the following year applications received and sanctioned started increasing and in 2006-2007, the number of applications filed increased almost 12 times (Rs.12, 336) compared to previous year and highest in the last 13 years.

However, in 2007-08, only 2408 applications were filed, most of which i.e. 94 % were sanctioned. In 2008-09, the number of applications filed more than doubled, and nearly all of them were approved. In 2010-11, the number of applications received were only 256 as the scheme was suspended by the

---

137 FICCI Report, November 2013 accessed on 19.08.2014
government from June 2010 to April 2011. Under restructuring TUFS, from
April 2013, 3974 applications were filed out of which 3576 applications were
sanctioned\textsuperscript{138}.

\textbf{TABLE NO: 3.4}

\textbf{TECHNOLOGY UPGRADEATION FUND SCHEMES}

<table>
<thead>
<tr>
<th>Year</th>
<th>Application received</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>Total cost of projects (Rs. Crore)</td>
</tr>
<tr>
<td>1999-00</td>
<td>407</td>
<td>5771</td>
<td></td>
</tr>
<tr>
<td>2000-01</td>
<td>719</td>
<td>6296</td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td>472</td>
<td>1900</td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td>494</td>
<td>1835</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>867</td>
<td>3356</td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td>986</td>
<td>7941</td>
<td></td>
</tr>
<tr>
<td>2005-06</td>
<td>1086</td>
<td>16194</td>
<td></td>
</tr>
<tr>
<td>2006-07</td>
<td>12336</td>
<td>61063</td>
<td></td>
</tr>
<tr>
<td>2007-08</td>
<td>2408</td>
<td>21254</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>6113</td>
<td>56542</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>2384</td>
<td>28005</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>256</td>
<td>397</td>
<td></td>
</tr>
<tr>
<td>2011-12 and 2012-2013</td>
<td>3974</td>
<td>37655</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>32,502</td>
<td>2,48,209</td>
<td></td>
</tr>
</tbody>
</table>

\textit{Source: FICCI Report, November 2013}

In the year 2003-04, only 4 applications were received for Capital Subsidy
Scheme for Power loom units amounting to Rs.0.48 crore all of which were
sanctioned. In the following Year 2004-05, 323 applications were received (Rs

\textsuperscript{138} FICCI Report, November 2013 accessed on 19.08.2014.
83.86 crore) of which less than half i.e. 150 were sanctioned and disbursed. Number of applications received increased till 2006-07 but in the year 2007-08 applications received fell drastically, only 470 applications were received for the capital subsidy for Power loom units. In 2009-10, of applications received again fell before rising on 2010-11.

**TABLE NO: 3.5**

**CAPITAL SUBSIDY SCHEME FOR POWER LOOM UNITS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Application received</th>
<th>Amount(cost of Machinery) (Rs. Crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>4</td>
<td>0.48</td>
</tr>
<tr>
<td>2004-05</td>
<td>323</td>
<td>83.86</td>
</tr>
<tr>
<td>2005-06</td>
<td>564</td>
<td>201.03</td>
</tr>
<tr>
<td>2006-07</td>
<td>863</td>
<td>353.23</td>
</tr>
<tr>
<td>2007-08</td>
<td>470</td>
<td>184.09</td>
</tr>
<tr>
<td>2008-09</td>
<td>470</td>
<td>233.73</td>
</tr>
<tr>
<td>2009-10</td>
<td>301</td>
<td>133.53</td>
</tr>
<tr>
<td>2010-11</td>
<td>361</td>
<td>182.2</td>
</tr>
<tr>
<td>2011-12</td>
<td>466</td>
<td>261.38</td>
</tr>
<tr>
<td>2012-13</td>
<td>507</td>
<td>444.74</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,329</strong></td>
<td><strong>2,078.27</strong></td>
</tr>
</tbody>
</table>

*Source: FICCI Report November 2013*

The Industrial Entrepreneur Memorandum (IEMs), it can be observed that investment in textile sector slowed down except in the year 2010. In 2008, 343 IEMs were filed (amounting Rs.11244 crore) out of which only 124 were issued amounting to hardly 20% of the filed amount. In 2009, IEMs & LOIs filed for the textile sector dropped to 326. In 2010, 427 IEMs & LOIs were filed (amounting Rs.
26,566 crore) and again only a few (87) were issued. In 2011 and 2012, the number of IEMs & LOIs filed fell down to 370 and 327 respectively (with 53 and 64 issued respectively). In April – July 2013, 193 IEMs were filed (amounting to Rs. 76009 crore) out of which only 24 were issued.

**TABLE NO: 3.6**

**INDUSTRIAL ENTREPRENEUR MEMORANDUM (IEM) FILED IN DIFFERENT YEARS IN TEXTILE SECTOR**

<table>
<thead>
<tr>
<th>Years</th>
<th>IEMS filed</th>
<th>Investment (Amount) Rs. Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>343</td>
<td>11,244</td>
</tr>
<tr>
<td>2009</td>
<td>326</td>
<td>9,200</td>
</tr>
<tr>
<td>2010</td>
<td>427</td>
<td>26,566</td>
</tr>
<tr>
<td>2011</td>
<td>370</td>
<td>26,174</td>
</tr>
<tr>
<td>2012</td>
<td>327</td>
<td>14,839</td>
</tr>
<tr>
<td>2013 (January – July)</td>
<td>193</td>
<td>76,009</td>
</tr>
</tbody>
</table>

*Source: FICCI Report, November 2013*

- 61 textile parks have been sanctioned under SITP and production has started in 26 out of these 61 projects. Lot more needs to be done for faster growth of the sector.

- Textiles sector received a Foreign Direct Investment (FDI) inflow of $164 million in 2011-12 indicating a growth of 26 % over the previous year. The sector has received a cumulative FDI of $ 1.15 billion from April 2000 till June 2013. Indicating FDI has a very small role to play in this sector so far.

---

139 FICCI Report, November 2013
3.15 CHALLENGES FACED BY INDIAN TEXTILE SECTOR

Today’s textile industry is passing through a very difficult phase due to multiple challenges.

1. Lack of Product Innovation:

Most of our textile manufacturing companies pay cursory attention to this area, be it in terms of putting right resources or technology. As a result, most of the companies turn out same or similar products with intense competition cutting into each other’s margin and settle with a very thin bottom line, leading to a “vicious cycle”. Personal zeal and efforts for real product development and to be different from others in terms of actual differentiation of product attributes or performance take a back seat. Although one will come across department like “Design & Development” in almost all companies, they are either mere copying / duplicating customer’s designs or typing to create different versions of the same concepts or product. As a result, we have not been able to act as a “leader/innovator”, but have become a follower.

2. Training and Development:

It is a fact that in the last 20 years or so, bright and intelligent student are not coming to take up “Textile Engineering and Allied Courses”. Instead, more and more student are opting for better opportunity lines elsewhere (like IT, Computer science etc). Many of those who do pursue this line, finally change the stream after graduation, resulting in perpetual shortage of good talent in the industry. For instance, in the machine operator’s area, workers are opting for those industries, which are able to afford a much higher wage than the highly labour-
intensive and lower paying textile industry, resulting in acute shortage of good manpower both at white collar and blue collar levels. Thus in these circumstances, if the industry desires to sustain, there is no option but to go in for structured and organized training programmers right from machine operator to all levels of staff.

It has to be woven in the daily work profile and some mandatory training hours must be fixed. This will help the industry in several ways, like better yield, higher productivity, lesser absenteeism and lesser downtime of the machines. An amalgamation of all above actions will give at least 2 to 3 percent boost in the bottom line, which is significant.

3. **High Utility Cost:**

All textile processes, right from spinning to weaving to processing, consume huge power. Power tariff and availability, both have become a major issue in the last 10 years or so. Apart from power, coal and gas have seen escalating prices in last few years, pushing the cost of production up and thereby rendering us increasingly uncompetitive in global market. Industry needs to work very seriously towards reduction of power cost by plugging all weak areas as there may not be respite from its inflation in short to medium term.

4. **Fragmented Eco - System:**

Textile industry has been working in isolated pockets and it is too much fragmented. Most of the composite units have closed down and thereby dependency on each other has increased multi-fold. While end-customer is looking for a complete package, the manufactures struggle within themselves to arrange all elements with right quality, consistency and on-time delivery. Moreover, the lack of professionalism is one of the major setbacks here.
The suppliers always depend upon their back-end vendor and any deviation at the back-end supply pushes the shipment beyond a manageable limit and creates customer dissatisfaction. While many people believe that fragmentation is better in terms of cost competitiveness, however, in real world it has more pitfalls than advantages.

5. Very High Interest Cost:

India is one of the top most high finance cost country in the world and the borrowing cost here ranges between 12 and 15 percent. As the profit margin in the textile industry is already thin due to its very nature and also due to lack product innovation and differentiation, it presents all entrepreneurs with a major challenge. The problem in even more acute, when a new project is set up. Although most of the companies are able to manage profit at the operating level, the problem start with repayment to bank in terms of working capital interest and interest on long-term capital asset. Although this a common problem cutting across all spectrum of industry in the country, the textile sector is more prone to it owing to the poor level of EBITA. Thus, managing all kinds of inventory, right from raw material to finished goods, and proper selection of machines at the project stage are critical to keep the burden of interest payment low.

6. Ability to Tackle Environmental Issues:

This is one of the most burning issues, especially in relation to textile processing area, which consumes huge supply of water and thermal power. Due to growing awareness, of the environmental concerns, and to perform our duty as a responsible citizen, it is important for manufacturing units to have 100 percent
control and compliance in this respect. However, this has huge cost repercussions on a firm, thereby putting further pressure on the margin. Moreover, in many cases, authorities unnecessarily harass many genuine factories and the cost of malpractices adopted by a handful of firms in the industry is borne by all.

7. Threat of Import:

Due to World Trade Organization (WTO) agreement and liberalization of trade, textile is no longer a protected industry. Today, huge imports are coming into India in virtually all categories of textile products. Many importers indulge in the malpractice in terms of imports duty component, resulting in our own indigenous products becoming costly against imported goods. However, as there is no way to curtail import, we have to be more cost effective by process innovation and automation. Companies in the sector need to strive hard to reduce the cost in all stages of manufacturing, without compromising the quality.

8. High Rental in Retail Area:

India has seen huge change in terms of retailing and as apparel is one of the largest categories in modern retailing, large numbers of outlets have come up in the form of EBO/MBO and LFS. Today’s generation has better purchasing power and they willingly spend in this category and thereby flaunt their status.

Many textile majors are now focused on retailing. Although almost all retail brands have improved their top line in last 10 years or so significantly, the same does not apply to their bottom line performance. One of the major reason is a very high rental of retail space. High rental has worked as a deterrent to make a healthy bottom line and so many stores have been closed in the last 5year. Thus, selection
of stores in proper locations with a trade-off between sales and rental is highly critical.

9. **Fluctuation in Raw Material Rates:**

As stated above, most of the industry is fragmented and so output of one segment (for example yarn for spinning unit) becomes the input of another industry (the weaving industry) and so on. This system does not serve the cause of the final product manufacturers, like apparel makers, to make a proper business plan with a capability to hold the rate at least for one particular season, leading to plethora of uncertainties.

The domestic rates of raw materials, like fiber, yarn, fabric etc. not only fluctuate due to demand and supply side factors but also due other factors, like global market scenario, government policy etc. All these factors have a cascading effect, which makes it difficult to suggest any statistical pricing formula.

CHART NO: 3.1

TRENDS IN COTTON RATE ON MONTHLY BASIS

![Chart showing trends in cotton rate on monthly basis](image)

10. Currency Fluctuations:

The textile sector in the country, being heavily dependent on exports, is vulnerable to fluctuation in exchange rate of Rupee against dollar. It is believed that a weak Rupee is favorable to exports, but what is even more important there is a minimum volatility in the exchange rate\textsuperscript{140}.

\textbf{CHART NO: 3.2}

\textbf{EXCHANGE RATE}

\textit{Source: Indian textile statistics and year book April 2014, CII report.}

3.16 CURRENT STATISTICS OF TEXTILE INDUSTRY

The Indian textile industry accounts for the economic growth. It contributes 13% of the country’s export earnings. The domestic textile and apparel industry in India estimated to reach USD 100 billion by 2016-2017 from the USD 100 billion in 2013-2014. Exports in textiles and apparel from India are expected to increase to USD 65 billion by 2016-2017 from USD 40 billion in 2013-2014.

The total fabric production in India is expected to grow to 112 Billion square metres by 2016-2017 from 64 Billion square metres in 2013-2014. India’s fibre production in 2013-2014 is 7 million tonnes and is expected to reach 10 million tonnes in 2016-2017.

The textile industry has provided employment for more than 35 million people. It is expected to create more 47 million skilled workers by 2015. The Skills for Employment in Apparel Manufacturing (SEAM) Programme trains youth to become sewing machine operators, garment checkers, garment finishers and spinning mill operators and weavers. Till now they have trained 1,02,289 and placed 89,679 workers in reputed textile firms.\[141\]

### 3.17 SCHEMES FOR TEXTILE INDUSTRY

#### 3.17.1 TECHNOLOGY UPGRADATION FUND SCHEME

The Technology Upgradation Fund Scheme (TUFS) was launched on April 1, 1999, for a period of five years, and was subsequently extended upto March 31, 2007. The Scheme provides interest reimbursement/capital subsidy/Margin Money subsidy and has been devised to bridge the gap between the cost of interest and the capital component to ease up the working capital requirement and to reduce the transaction cost etc. The Scheme is an important tool to infuse financial support to the textiles industry and helps it to capitalize on the vibrant and expanding global and domestic markets, through technology upgradation, cost effectiveness, quality production, efficiency and global competitiveness.

\[141\] www.ifsets.com accessed on 27.09.2014 at 7.45 pm
The Scheme was approved on 29.08.2013 for continuation till 2017 with modified financial and operational parameters and major focus on modernization of power loom sector. Interest reimbursement and capital subsidy for brand new shuttle less looms have been increased from 5% to 6% and 10% to 15% respectively.

In addition, a pilot project for financing high tech shuttle less looms on hire purchase basis for decentralized power looms sector has also been introduced. Margin Money Subsidy in lieu of interest reimbursement and capital subsidy has also been increased from 20% to 30% and subsidy cap from Rs. 1 crore to Rs. 1.5 crore for brand new shuttle less looms. Sectoral cap of 26% is applicable only for spinning sector and there is no cap on other sectors.

Capital subsidy is also increased from 25% to 30% in respect of Handloom and Silk Sectors. Margin Money Subsidy cap for MSME and Jute Sector has also been increased from Rs. 45 lakh to Rs. 75 lakh and 10% of the approved outlay for new sanctions has also been earmarked for MSME units.

The scheme is administered through 3 nodal agencies, 36 nodal banks and 108 co-opted PLIs. The scheme, since its inception, has propelled investment of more than Rs. 2, 50, 000 crore till 31.03.2014. An amount of Rs. 18579.40 crore has been released towards subsidy under the Scheme as on 31.03.2014. Planning Commission has approved an allocation of Rs. 11952.80 crore under TUFS for the 12th Five Year Plan.
<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Applications</th>
<th>Project Cost</th>
<th>Sanctioned Loan Amount</th>
<th>Loan Under TUFS</th>
<th>CAP for Project Cost</th>
<th>Subsidy for all</th>
<th>CAP for Subsidy Amount</th>
<th>Subsidy claimed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning</td>
<td>282</td>
<td>9642.8</td>
<td>5965.1</td>
<td>5414.8</td>
<td>12194</td>
<td>1093.0</td>
<td>210</td>
<td>268</td>
</tr>
<tr>
<td>Weaving</td>
<td>946</td>
<td>3572.2</td>
<td>2656.5</td>
<td>2527.5</td>
<td>6097</td>
<td>712.3</td>
<td>225</td>
<td>830</td>
</tr>
<tr>
<td>Processing</td>
<td>507</td>
<td>4804.8</td>
<td>2367.1</td>
<td>2239.8</td>
<td>9849</td>
<td>662.9</td>
<td>424</td>
<td>462</td>
</tr>
<tr>
<td>Garments</td>
<td>585</td>
<td>1096.1</td>
<td>698.3</td>
<td>642.7</td>
<td>3752</td>
<td>175.3</td>
<td>200</td>
<td>543</td>
</tr>
<tr>
<td>Others</td>
<td>1644</td>
<td>18460.3</td>
<td>10266.8</td>
<td>9399.7</td>
<td>15008</td>
<td>2503.7</td>
<td>799</td>
<td>1572</td>
</tr>
<tr>
<td>Total</td>
<td>3964</td>
<td>37612.1</td>
<td>21953.7</td>
<td>20224.6</td>
<td>46900</td>
<td>5147.3</td>
<td>1858</td>
<td>3675</td>
</tr>
</tbody>
</table>

Source: Office of the Textile Commissioner, Ministry of Textiles
### TABLE NO: 3.8

#### PROGRESS OF TECHNOLOGY UPGRADATION FUND SCHEME

<table>
<thead>
<tr>
<th>Period</th>
<th>Received</th>
<th>Sanctioned</th>
<th>Disbursed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Application</td>
<td>Project cost</td>
<td>No. of application</td>
</tr>
<tr>
<td>1999-2000</td>
<td>407</td>
<td>5771</td>
<td>309</td>
</tr>
<tr>
<td>2000-2001</td>
<td>719</td>
<td>6296</td>
<td>616</td>
</tr>
<tr>
<td>2001-2002</td>
<td>742</td>
<td>1900</td>
<td>444</td>
</tr>
<tr>
<td>2002-2003</td>
<td>494</td>
<td>1835</td>
<td>456</td>
</tr>
<tr>
<td>2003-2004</td>
<td>867</td>
<td>3356</td>
<td>884</td>
</tr>
<tr>
<td>2004-2005</td>
<td>986</td>
<td>7941</td>
<td>986</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1086</td>
<td>16194</td>
<td>1078</td>
</tr>
<tr>
<td>2006-2007</td>
<td>12336</td>
<td>61063</td>
<td>12589</td>
</tr>
<tr>
<td>2007-2008</td>
<td>2408</td>
<td>21254</td>
<td>2260</td>
</tr>
<tr>
<td>2008-2009</td>
<td>6113</td>
<td>56542</td>
<td>6072</td>
</tr>
<tr>
<td>2009-2010</td>
<td>2384</td>
<td>28005</td>
<td>2352</td>
</tr>
<tr>
<td>2010-2011 (Upto June 2010)</td>
<td>256</td>
<td>397</td>
<td>256</td>
</tr>
<tr>
<td>2011-2012</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2012-2013</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2013-2014</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total (As on 28.06.2010)</strong></td>
<td><strong>28528</strong></td>
<td><strong>210554</strong></td>
<td><strong>28302</strong></td>
</tr>
</tbody>
</table>

*Source: Office of the Textile Commissioner, Ministry of Textiles, Government of India*
PROGRESS (CLCS – TUFS)

The 20% Credit Linked Capital Subsidy Scheme under CLCS-TUFS for power loom units had been launched on 6th November 2003. Under the scheme, Rs. 350.38 crores has been disbursed to 4,078 cases.

TABLE NO: 3.9
CREDIT LINKED CAPITAL SUBSIDY SCHEME UNDER CLCS - TUFS

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>YEAR</th>
<th>NO. OF UNITS</th>
<th>AMOUNT OF SUBSIDY RELEASED (Rs. IN CRORE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2003-2004</td>
<td>4</td>
<td>00.10</td>
</tr>
<tr>
<td>2.</td>
<td>2004-2005</td>
<td>150</td>
<td>06.00</td>
</tr>
<tr>
<td>3.</td>
<td>2005-2006</td>
<td>368</td>
<td>23.00</td>
</tr>
<tr>
<td>4.</td>
<td>2006-2007</td>
<td>958</td>
<td>68.89</td>
</tr>
<tr>
<td>5.</td>
<td>2007-2008</td>
<td>436</td>
<td>35.92</td>
</tr>
<tr>
<td>6.</td>
<td>2008-2009</td>
<td>404</td>
<td>32.48</td>
</tr>
<tr>
<td>7.</td>
<td>2009-2010</td>
<td>363</td>
<td>30.57</td>
</tr>
<tr>
<td>8.</td>
<td>2010-2011</td>
<td>233</td>
<td>17.72</td>
</tr>
<tr>
<td>9.</td>
<td>2011-2012</td>
<td>296</td>
<td>24.32</td>
</tr>
<tr>
<td>10.</td>
<td>2012-2013</td>
<td>533</td>
<td>63.63</td>
</tr>
<tr>
<td>11.</td>
<td>2012-2014</td>
<td>333</td>
<td>47.75</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4078</td>
<td>350.38</td>
</tr>
</tbody>
</table>

Source: Annual Report 201-2014, Ministry of textiles, Government of India

3.17.2 SCHEME FOR INTEGRATED TEXTILE PARK (SITP)

The Scheme for Integrated Textile Parks (SITP) was approved in the 10th Five Year Plan to provide the industry with world-class infrastructure facilities for setting up their textile units by merging the erstwhile ‘Apparel Parks for Exports Scheme (APES) and Textile Centre Infrastructure Development Scheme (TCIDS).
The scheme targets industrial clusters/locations with high growth potential, which require strategic interventions by way of providing world-class infrastructure support. The project cost will cover common infrastructure and buildings for production/support activities (including textiles engineering, accessories, packaging), depending on the needs of the ITP. There will be flexibility in setting up ITPs to suit the local requirements. An ITP will have the following components:

- **Group A** - Land.

- **Group B** – Common Infrastructure like compound wall, roads, drainage, water supply, electricity supply including captive power plant, effluent treatment and telecommunication lines etc.

- **Group C** – Buildings for common facilities like testing laboratory (including equipment's), design center (including equipment's), training center (including equipment's), trade center/display center, ware-housing facility/raw material depot, one packaging unit, crèche, canteen, workers’ hostel, offices of service providers, labour rest and recreation facilities, marketing support system (backward/forward linkages) etc.

- **Group D** – Factory buildings for production purposes.

- **Group E** - Plant & machinery.

- **Group F** - Work space for textile units and workers’ hostel which may be made available on rental/hire purchase basis.

The total Project Cost for the purpose of this Scheme includes the cost on account of components of ITP, as listed under Groups B, C, D and F above,
provided the ownership of the factory buildings vests with the SPV. The technical fee shall not be covered in the project cost.

3.17.2.1 STATUS FOR IMPLEMENTATION- SCHEME FOR INTEGRATED TEXTILE PARKS (SITP)

- Forty Textiles Parks have been sanctioned during 10\textsuperscript{th} and 11\textsuperscript{th} Five Year Plan. Estimated project cost (for common infrastructure and common facilities) of the 40 sanctioned projects is Rs. 4,141 crore, of which Government of India assistance under the scheme would be Rs. 1,428 crore. An amount of Rs. 1,111.74 crore has been released under SITP.

- 2292 entrepreneurs will put up their units in these parks covering an area of 4307.97 acre. The estimated investment in these parks will be Rs. 19,456.90 crore and estimated annual production will be Rs 33,568.50 crore. These Parks are in Andhra Pradesh (5), Gujarat (7), Maharashtra (9), Tamil Nadu (7), Rajasthan (6), Karnataka (1), Punjab (3), West Bengal (1) and Madhya Pradesh (1).


- 21 new parks were sanctioned in October 2012 with project cost of Rs. 2329.06 crore and Government of India contribution is Rs. 819 crore in the
following States:- Andhra Pradesh (2), Gujarat (1), Himachal Pradesh (1), J&K (1), Karnataka (1), Maharashtra (6), Rajasthan (4), Tamil Nadu (2), Tripura (1), Uttar Pradesh (1), West Bengal (1). An amount of Rs. 106.48 crore has been released towards 21 new parks up to 31.03.2014.

3.17.3 ADDITIONAL GRANT FOR APPAREL MANUFACTURING UNITS UNDER SITP

The Finance Minister, in his Budget Speech 2013-14 proposed to set up Apparel Parks within the SITPs to house apparel manufacturing units. To incentivize such apparel parks, the Finance Minister proposed to allocate Rs.50 crores to the Ministry of Textiles to provide an additional grant of upto Rs.10 crore to each park. CCEA in its meeting held on 3rd October, 2013 approved Rs.50 crore for setting up 5 Apparel Manufacturing Units with a grant of Rs.10 crore each within the existing ITPs in accordance with Budget Announcement 2013-14 and the Guidelines for setting up an apparel manufacturing unit with a textile park.

3.17.4 DECENTRALISED POWERLOOM SECTOR SCHEME

The decentralised powerloom sector is one of the most important segments of the Textile Industry in terms of fabric production and employment generation. It provides employment to 59.20 lakh persons and contributes 62 % to total cloth production in the Country. 60 % of the fabrics produced in the powerloom sector are of man-made fiber. More than 60 % of fabric meant for export is also sourced from powerloom sector. The readymade garments and home textile sectors are heavily dependent on the powerloom sector to meet their fabric requirement. There are approximately 5.30 lakh powerloom units with 23.68 lakh powerlooms as on 28.02.2014.
The technology level of this sector varies from plain loom to high tech shuttleless looms. There are approximately 1.25 lakh shuttleless looms in this sector. It is estimated that more than 75% of the shuttle looms are obsolete and outdated with a vintage of more than 15 years and have virtually no process or quality control devices/attachments. However, there has been significant up-gradation in the technology level of the powerloom sector during the last 6 - 7 years.

3.17.5 COMPREHENSIVE HANDLOOMS DEVELOPMENT SCHEME (CHDS)

CHDS has been formulated by merging the components of Integrated Handlooms Development Scheme (IHDS), Marketing & Export Promotion Scheme (MEPS) and Diversified Handlooms Development Scheme (DHDS), implemented during the 11th Plan. Sub-components of the CHDS are as follows:

- Cluster development programme
- Handloom marketing assistance
- Development and strengthening of the Handloom Institutions
- Handloom census
- Implementing innovative ideas
- Publicity, advertisement, monitoring, training and evaluation of the Scheme.

CHDS has been approved by competent authority on 13th November 2013. Prior to the approval, IHDS, M&EPS & DHDS were implemented.
3.17.6 INFRASTRUCTURE TECHNOLOGY DEVELOPMENT SCHEME

The scheme aims at the development of world class infrastructure in the country to support handicraft production, and enhance the product quality and cost to enable it to compete in the world market.

**The objectives of the scheme are as follows:**

1. To develop infrastructure in an equitable manner to support handicraft industry in the country.

2. To ensure availability of required technology, product diversification, design development, raw material banks, and marketing & promotion facilities in nearest vicinity possible.

3. To enhance the competitiveness of the products in terms of increased market share and ensuring increased productivity by higher unit value realization of the products.

4. To improve the resource pool of skilled persons in the country by developing high class institutes that provide certified courses and degrees in Handicraft field – enhancing skill development in the country.

3.17.7 EXPORT PROMOTION, BRAND PROMOTION AND TECHNOLOGICAL UPGRADEATION BY ISEPC & SMOI

India has a rich heritage in silk weaving, dyeing, printing, embroidery and craftsmanship supported by a strong domestic market. With the declining Chinese production and export, India is poised for a quantum jump in silk production and is set to become a key player in the international market. Generic promotion of Indian silk needs to be taken up to create a mental picture of the uniqueness and comforts
of Indian silk and the mind-set that the Indian silk has no real substitute and it enjoys the status that is exclusive and rich in Indian traditional designs.

This kind of brand image can create a market niche for Indian Silk in domestic and global markets, developing a knowledge base about Indian Silk in domestic and global platforms. Brand building process of Indian Silk should include various publicity and promotion programmes in the form of Exhibitions, Road Shows, Mass Media Campaigns covering print and electronic media, by participation in the Domestic and International Exhibitions, Trade Fairs, Promotional Schemes, Seminars, Workshops etc. With the above objective scheme of Brand promotion of Indian Silk, has been conceptualized, formulated and designed in 2013-14 and approved with an outlay of 5.02 crores on 07.01.2014 to be implemented through SMOI & ISEPC under monitoring of CSB.

3.17.8 HIRE-PURCHASE SCHEME FOR POWERLOOM SECTOR UNDER TECHNOLOGY UPGRADATION FUND SCHEME (TUFS)

This scheme has been approved under Revised Restructured Technology Upgradation Fund Scheme (RR-TUFS). Under the Scheme, the hirer (SPV) would procure the machines and then provide them on hire-purchase basis to the weavers. The risk and rewards incidental to the ownership of the asset is transferred to purchaser but not the actual ownership until end of the period. Ultimate ownership will transfer only at the end of the term of hire-purchase.

3.17.9 INTEGRATED PROCESSING DEVELOPMENT SCHEME (IPDS)

Cabinet Committee on Economic Affairs (CCEA) in its meeting held on 30th October, 2013 approved implementation of Integrated Processing Development
Scheme (IPDS) at a total cost of Rs.500 crore during the 12th Five Year Plan. The objective of the Scheme is to facilitate the textiles industry become globally competitive using environment friendly processing standards and technology, to create new processing clusters/centres specifically in the area of water and waste management and to encourage research and development work in textiles processing sector. The scheme will provide Government support for establishing common infrastructure to catalyse private sector investments in the major processing clusters.

3.17.10 TEXTILE WORKERS’ REHABILITATION FUND SCHEME (TWRFS)

The Textile Workers’ Rehabilitation Fund Scheme came into force with effect from 15.09.1986 with the objective to provide interim relief to textile workers rendered unemployed as a consequence of permanent closure of any particular portion or entire textile unit. Assistance under the Scheme is payable to eligible workers only for the purpose of enabling them to settle in another employment. Such assistance is not heritable, transferable or capable of being attached on account of any other liabilities of the worker. The worker’s eligibility shall cease if he takes up employment in another registered or licensed undertaking. The rehabilitation assistance will not be curtailed if the worker fixes himself in a self-employment venture.

3.18 HUMAN RESOURCE REQUIREMENTS IN TEXTILE INDUSTRY

Modernisation of technology requires skilled workforce and technically skilled operators for the textile industry. The Textiles & Clothing sector needs skilled labourers to operate machines. It is categorized as follows:

2. Other related industries where there is a dearth of skilled workforce are Handloom, woollen, Sericulture, Handicrafts, Jute.

The mainstream Textiles and Clothing sector has potential to employ about 17 million incrementally within 2022.

**TABLE NO: 3.10**

**PROJECTED HUMAN RESOURCE REQUIREMENT IN TEXTILE & CLOTHING SECTOR (IN MILLIONS)**

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2012</th>
<th>2018</th>
<th>2022</th>
<th>Incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main – Stream Textile &amp; Clothing Industry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinning</td>
<td>1.2</td>
<td>1.5</td>
<td>2.0</td>
<td>2.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Fabric Manufacturing</td>
<td>5.1</td>
<td>6.5</td>
<td>9.0</td>
<td>11.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Fabric Processing</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Garmenting</td>
<td>6.5</td>
<td>8.6</td>
<td>12.6</td>
<td>15.8</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Sub – Total</strong></td>
<td>13.1</td>
<td>16.9</td>
<td>24.1</td>
<td>29.9</td>
<td>16.8</td>
</tr>
<tr>
<td><strong>Other Related Sectors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handloom Sector</td>
<td>6.7</td>
<td>7.0</td>
<td>7.2</td>
<td>7.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Woollen Sector</td>
<td>1.9</td>
<td>3.2</td>
<td>4.3</td>
<td>5.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Sericulture</td>
<td>6.3</td>
<td>7.0</td>
<td>7.9</td>
<td>8.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Handicraft Sector</td>
<td>7.0</td>
<td>8.0</td>
<td>9.0</td>
<td>9.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Jute Industry</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Sub- Total</strong></td>
<td>22.3</td>
<td>42.6</td>
<td>53.2</td>
<td>61.6</td>
<td>26.2</td>
</tr>
</tbody>
</table>

*Source: National Skill Development Corporation*
### TABLE NO 3.11

**HUMAN RESOURCE REQUIREMENT (FROM 2006-2007 TO 2015-2016)**

**TEXTILE AND CLOTHES**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Investment (Rs. Crs)</th>
<th>Total man power requirement (in lacs)</th>
<th>Supervisor in lacs</th>
<th>Workers in lacs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning</td>
<td>45,000</td>
<td>5.75</td>
<td>0.86</td>
<td>4.88</td>
</tr>
<tr>
<td>Weaving</td>
<td>30,000</td>
<td>1.57</td>
<td>0.23</td>
<td>1.33</td>
</tr>
<tr>
<td>Processing</td>
<td>30,000</td>
<td>1.76</td>
<td>0.26</td>
<td>1.50</td>
</tr>
<tr>
<td>Knitting</td>
<td>10,000</td>
<td>0.92</td>
<td>0.14</td>
<td>0.78</td>
</tr>
<tr>
<td>Garmenting</td>
<td>25,000</td>
<td>40.0</td>
<td>6.0</td>
<td>34.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,40,000</strong></td>
<td><strong>50.0</strong></td>
<td><strong>7.5</strong></td>
<td><strong>42.5</strong></td>
</tr>
</tbody>
</table>

*Source: Textile Commissioner, Ministry of textiles, Government of India*

### TABLE NO: 3.12

**EMPLOYMENT DETAILS IN TEXTILE AND ALLIED SECTOR**

<table>
<thead>
<tr>
<th>S. NO</th>
<th>Sector/Industry</th>
<th>Employment (In Million No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As on March 2011 (prov.)</td>
</tr>
<tr>
<td>I. Textile sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Cotton/man-made Fiber/Yarn Textile/Mill Sector (including SSI spinning &amp; exclusive weaving units)</td>
<td>1.40</td>
</tr>
<tr>
<td>2.</td>
<td>Man-made Fiber/Filament Yarn Industry (Including text rising industry)</td>
<td>0.24</td>
</tr>
<tr>
<td>3.</td>
<td>Decentralized Power looms</td>
<td>5.08</td>
</tr>
<tr>
<td>4.</td>
<td>Handloom sector</td>
<td>7.00</td>
</tr>
</tbody>
</table>

146
<table>
<thead>
<tr>
<th></th>
<th>Industry/Activity</th>
<th>Profit (1)</th>
<th>Profit (2)</th>
<th>Profit (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Knitting sector</td>
<td>0.45</td>
<td>0.52</td>
<td>0.07</td>
</tr>
<tr>
<td>6.</td>
<td>Processing sector</td>
<td>0.44</td>
<td>0.51</td>
<td>0.07</td>
</tr>
<tr>
<td>7.</td>
<td>Woolen sector</td>
<td>3.20</td>
<td>3.68</td>
<td>0.48</td>
</tr>
<tr>
<td>8.</td>
<td>Readymade Garment sector (Including text rising sector)</td>
<td>11.22</td>
<td>12.90</td>
<td>1.68</td>
</tr>
<tr>
<td>9.</td>
<td>Sericulture</td>
<td>7.70</td>
<td>8.86</td>
<td>1.16</td>
</tr>
<tr>
<td>10.</td>
<td>Handicraft Sector</td>
<td>8.00</td>
<td>9.20</td>
<td>1.20</td>
</tr>
<tr>
<td>11.</td>
<td>Jute Industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) Organized jute industry</td>
<td>0.26</td>
<td>0.30</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(ii) Decentralized jute Industry</td>
<td>0.20</td>
<td>0.23</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td><strong>Total (I)</strong></td>
<td><strong>45.19</strong></td>
<td><strong>51.97</strong></td>
<td><strong>6.78</strong></td>
</tr>
</tbody>
</table>

### II. Allied Sector

<table>
<thead>
<tr>
<th></th>
<th>Industry/Activity</th>
<th>Profit (1)</th>
<th>Profit (2)</th>
<th>Profit (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cotton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) Cotton Agriculture</td>
<td>20.00</td>
<td>23.00</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>(ii) Cotton Ginning/Pressing</td>
<td>1.3</td>
<td>1.50</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>(iii) Cotton Trade</td>
<td>19.0</td>
<td>21.85</td>
<td>2.85</td>
</tr>
<tr>
<td></td>
<td><strong>Sub-Total</strong></td>
<td><strong>40.3</strong></td>
<td><strong>46.35</strong></td>
<td><strong>6.05</strong></td>
</tr>
<tr>
<td>2.</td>
<td>Sheep rearing</td>
<td>2.8</td>
<td>3.22</td>
<td>0.42</td>
</tr>
<tr>
<td>3.</td>
<td>Jute Agriculture</td>
<td>17.0</td>
<td>19.55</td>
<td>2.55</td>
</tr>
<tr>
<td>4.</td>
<td>Textile Machinery Industry &amp; accessories</td>
<td>0.1</td>
<td>0.12</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td><strong>Total (II)</strong></td>
<td><strong>60.2</strong></td>
<td><strong>69.23</strong></td>
<td><strong>9.03</strong></td>
</tr>
</tbody>
</table>

**Grand Total (I+II)**: **105.4** **121.20** **15.81**
3.19 NEED OF SKILL DEVELOPMENT TRAINING FOR LABOURS IN TEXTILE INDUSTRY

The textile industry is providing enormous employment opportunities for both skilled and unskilled workers. Previously, textile sector did not face much of upgradations in technology and the labours were not highly educated. It has impacted the textile sector very much as the labours are unable to understand the technical know-how. In today’s highly competitive world, all the business sectors have started adopting new technologies to improvise their industries growth. The technological development of today’s modern world lies in providing effective training to the manpower employed in the industry. The developments in new technology also lead to increase in the massive vocational training for labourers and thereby induction of skilled workforce to the textile sector.

The major shortcoming in textile sector is the lack of skilled labours. The Industry must give top priority for the development of textile labourers’ skill set. Due to the technological developments, the labourers are forced to master specialised skills to work with modern technology. The labourers need to understand the importance of upgrading skills related to the process in the Industry and should try to utilise the training programmes offered by government or private institutions.

On the job training programmes have helped labours to get hands on experience working with technology. The adaptation of technology is not for providing fillip to the growth of the sector alone it also helps to build specialised workforce specialised in specific processes. In view of this fact, the government of India has given fillip to labours skill development and to increase the employment prospects government has set up many training centres which train the unemployed
labours on the latest trends in technology. The proper and appropriate training will
generate the count of skilled labours in the industry. The government should
concentrate more on “Skill Upgradation Programmes” incurring less cost. As it will
be beneficial to all categories of people.

3.20 SCHEMES FOR TEXTILE INDUSTRY FOR SKILL
UPGRADATION

The skill development remains the key element for the growth of Indian
textiles. The investment made towards training will not only benefit the individual
labourers but also it will contributes to the industries development as a whole.
Utilisation of proper training and knowledge helps to get the industry’s momentum
going. The trained labour reduces the wastage of raw material and performs the task
allotted to him in an efficient manner. In general, the textile industry labours are not
much educated. They are not aware about the latest technological advances in the
textile sector. The labours require adequate training to hone their skills and
knowledge in the various textile operations. To address this issue, The Ministry of
Textiles, Government of India offers a lot of skill development training for textile
labours.

3.21.1 SCHEMES FOR SKILL UPGRADATION

The government offers some special schemes for textile industry labours to
enhance their skills and knowledge through these schemes.

1. Craftsman Training Schemes
2. Skill Development Initiative Schemes
3. Integrated Skill Development Scheme
4. Modular Employable Skills
5. Apprenticeship Training Scheme
6. Crafts Instructor Training Scheme
7. Advanced vocational training scheme and Hi-tech training scheme
8. National Institute of Rural Development
9. Swarnajayanti Gram Swarozgar Yojana (SGSY) - Rural Development
10. Skill Development Programmes (SDP)
11. National Council of Vocational Training (NCVT)

3.21.2. INTEGRATED SKILL DEVELOPMENT SCHEME (ISDS)

India is poised to become a significant player in the global textile economy both as a consumer and as a producer of textiles. The Indian domestic textiles and apparel market is one of the fastest growing market in the world. The most important growth driver is the robust economic growth that has been witnessed in the country. The textile industry as a part of manufacturing sector has been one of the important sectors to contribute towards and maintain GDP growth. A series of steps taken by the Government over a period of time has helped the industry to grow and sustain growth momentum. These include many schemes which are directly or indirectly sponsored by Central Government.

The Integrated Skill Development Scheme (ISDS) is one of them. It was introduced as a pilot scheme in the last two years of the 11th Five Year Plan with an outlay of Rs. 272 crore including Rs. 229 crore as Government contribution with a physical target of 2.56 lakh persons. The scheme is part of a Government wide focus on creating skill that is needed to enhance the competition advantage of India in the
manufacturing and textile sector. The Scheme has been scaled up during 12th Plan with an allocation of Rs. 1900 crore to train 15 lakh persons.

3.21.3. INTEGRATED SKILL DEVELOPMENT SCHEME (HUMAN RESOURCE DEVELOPMENT)

In the furrow with the Policy Announcement of the Government, in the Current Five Year Plan, the Government has established the Integrated Skill Development Scheme for the Textiles & Apparel Sector, including Jute & Handicrafts., with an objective of capacity building of Institutions providing skill development & training in Textiles Sector. Under this Scheme, the Government has envisaged skill development of 2.56 lakh persons with an overall monetary value of Rs 271.94 crore. Under the Scheme, the Ministry has approved 8 capacity building projects in respect of ATDC, NITRA, ATIRA, BITRA etc. under component-I of the Scheme. Under component-II, the Ministry has engaged a consultant for designing the modalities and matters under which, the private/ seal initiatives would be harnessed.

3.21 PROFILE OF THE STUDY AREA

The present study was carried out in Coimbatore region. It is situated in the western part of Tamil Nadu. It has 47% of total spinning capacity of the country and accounts for more than 40% of yarn exports from India. Coimbatore region comprises of seven districts viz., Coimbatore, Tirupur, Erode, Salem, Namakkal, Dharmapuri and Krishnagiri. The area is heavily influenced by Information Technology, Engineering and Textiles. All these major cities are very much known for the production of different textile products. It's also famed for the quality of its

---

cotton and dyed fabrics and it has a numerous centers that specialize in spinning, weaving, power looms and knitwear. It holds a great number of small, medium and large textile manufacturing plants. The Coimbatore, Tirupur, Erode, Namakkal, Salem districts are the major cities of Tamil Nadu and they function as a major source of foreign exchange.

These small textile enterprises are working successfully and are catering to the needs of the people nearby and due to the efforts shown by the Indian government many textile firms have upgraded themselves with latest technologies and experience improved their productivity and many second hand rings spinning frames are imported from Europe and the demand for technology automation is gaining much importance. This area of Tamil Nadu is principally known for the Industrial activities related to textile and Apparel products.

The technology automation in textile sector has improved immensely in Coimbatore region leading to the development of indigenous machines. It is to be noted that automation is the key to character improvement and cost competitiveness. Most of the latest technologies in automation are concentrating mostly on preparing the new version more flexible, energy efficient and perfect. Now automation has taken space in all the operations included in textile manufacturing i.e. cotton picking, ginning, spinning, weaving and processing and even to some extent in garment making, resulting in enormous increases in productivity and efficiency and contributing to high employment opportunities. More than 35 million people get gained employment by this textile industry directly or indirectly. Moreover, due to this technological updating in textile industry, many textile firms which were running as sick units have become profitable enterprises in the due course of time.
and labour have become skilled and updated. In order to cope with the demand of skilled labourers, textile firms have started recruiting skilled people from various places. Shortage of Skilled labourers would be the biggest constraint for the growth of the Indian Textile market in the global facade. So the researcher has tried to examine the elaborate construction of technology automation and labour skill development in textile firms in Coimbatore region.

3.21.1. SKILL DEVELOPMENT TRAINING PROGRAMMES UNDER SITRA-ISDS

3.21.1.1. INTRODUCTION TO SITRA

South Indian Textile Research Association is also called SITRA. The Research Institution offers training programmes for textile industry labourers. The research institution is located in Coimbatore District. The Coimbatore is the business hub for textile products. The Research Institution of SITRA has been providing training for more than 35 years and has trained more than 1,00,000 labourers in all sectors in textile industry. It also offers in-house programmes for operatives, the hands-on training modules are conducted at the mill premises. It is the only empanelled institution under the Ministry of External Affairs, Government of India. It is offering training programs to foreign nationals in textile related subjects. The training activity was started in the 1947 has witnessed more than 1500 individuals from 80 different countries participating and benefiting from this institution. It also provides training programmes in seven places, viz, Palladam, Somanur, Komarapalayam, Tiruchengode, Chennimalai, Karur, and Rajapalayam.

The institution provides membership’s for all the countries. It is one of the major implementing agencies under the Ministry of Textiles, Government of India. They are
providing Training programmes under the scheme of Integrated Skill Development Scheme. Indian’s ambitious Integrated Skill Development Scheme (ISDS) set to train more 25 lakhs individual in the textile industry. Under the scheme SITRA is offering 13 different skill enhancement programmes in the areas of spinning, weaving, knitting, garments, medical textiles, etc. It would have trained 30,000 persons under ISDS by the end of government’s 10th plan period ending 2016. It is one of the institutions certified by the Government of Tamil Nadu to offer skill based training programmes for the backward and denotified communities in the areas of weaving and knitting.

At present the developing countries are facing labour shortage. The skilled labours can only be generated with the help of quality Training programmes. Large quantity of products have to be produced within limited time and it can be possible only with the help of technology. The Indian textile industry is growing at a rate of 16% per annum, to have trained and qualified manpower to cater the ever growing requirements.

To address the issues in textile industry the Ministry of Textiles, Government of India has launched the project called “Integrated Skill Development Scheme (ISDS)” for augmenting the skill resources of the industry and for improving abilities for skill development.

**The objectives of the Schemes are**

1. To address the trained manpower needs of textiles and related segments by developing a cohesive and integrated framework of training based on the industry needs towards enhancing the competitiveness of the industry in the globalized economy.
2. To increase the employability of residents of the targets areas through imparting of skills in the above segments.
3. To ensure that the scheme is so designed as to cater to the wide range of skill sets required in various segments of the textile industry, while simultaneously ensuring sufficient flexibility to meet its dynamic needs over a period of the next five years.

SITRA has been imparting training to personnel in the textile industry for more than 50 years and has trained close to 80,000 people. It plans to organize 13 different job-oriented programmes under this scheme which include,

1. One-year certificate course in textile technology
2. Training of spinning mill operatives in various departments
3. Theory and practice in meditech- a programme for new entrepreneurs
4. Training of weaving operative
5. Training of weaving fitters
6. Programme on weft knitting technology
7. Programme on warp knitting technology
8. Computer Aided Designing (CAD)
9. Basic garmenting and tailoring
10. Garmenting and embroidery
11. Programme on physical testing
12. Programme on chemical testing
13. Entrepreneur development programme for small weavers

The above mentioned programmes focus on skill development and it also cover basic training, skill upgradation, advanced training in emerging technologies, training of trainers, orientation towards modern technology, retraining,
Skill upgradation, Managerial skill, Entrepreneurship development etc. The training programmes are also contacted and its power loom service centres at palladium, Somanur, Komarapalayam, Salem, Karur, Rajapalayam and Tiruchengode.

3.21.2. TYPES OF TRAINING PROGRAMMES UNDER SITRA- ISDS

The following training programs are conducted for upgrading the skills of power loom owners, weavers and jobbers:

- Powerloom mechanism
- Dropbox mechanism
- Dobby mechanism
- Weaving calculations
- Fabric designs
- Eco friendly dyeing of reactive colours
- Dyeing of vat colours
- Sewing machine operation
- Garment pattern making
- Dyeing technology
- Rapier loom weaver training
- Rapier loom Fitter Training
- Computer aided Jacquard Designing
- Machine embroidering

Seminars\(^{143}\) and workshops are organised periodically on the following topics:

- Entrepreneur development programme
- Quality control

\(^{143}\)http://www.sitra.org.in/index.php/pscs accessed on 14.05.2013 at 8.30 am
- TUF scheme
- Export procedures
- Process control in sizing
- WTO and its implications
- Eco friendly textiles
- Technical textiles

**DETAILS OF TRAINED PEOPLE UNDER SITRA 2013-2014**

The year 2012-2013, 5845 persons are trained under Integrated Skill Development Scheme. For the period of 2013-2014, the institute was conducted 8 different training programmes, 245 personnel in the supervisory and Managerial cadres. 2275 operatives had undergone training during the year on right methods of working in textile mills for effective performance.

**Break up of training programmes conducted under the ISDS 2013 - 2014**

**TABLE NO 3.13**

<table>
<thead>
<tr>
<th>Training Details</th>
<th>No of mills</th>
<th>Batch</th>
<th>No. of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning operatives Training</td>
<td>25</td>
<td>55</td>
<td>1192</td>
</tr>
<tr>
<td>Weaving operatives training</td>
<td>4</td>
<td>5</td>
<td>104</td>
</tr>
<tr>
<td>EDP</td>
<td>2</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>Fitters training</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Computer aided design</td>
<td>2</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Sewing machine operators Training</td>
<td>2</td>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td>Embroidery Training</td>
<td>2</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Technical Textile Programmes</td>
<td>1</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39</strong></td>
<td><strong>70</strong></td>
<td><strong>1453</strong></td>
</tr>
</tbody>
</table>

*Source: Annual Report 2013-2014 – SITRA*
3.22. PROFILE OF TAMIL NADU

The Tamil Nadu is the southernmost state in India and it occupies the extreme south Indian peninsula and has arch cultural heritage. It is the 28th state of India and it the eleven state in the country and it is ranked 7th in the terms of population. Administratively the state of Tamil Nadu is divided into 32 districts. It has 12 city corporations, 125 municipalities, 529 town panchayats and 12,524 village panchayats. Chennai is well-known as Madras and is the state capital. It is the 4th largest city in India and it is one of the eight Metropolitician cities of India. It was the second largest state economy in India in 2012. The state has the highest number (10.56 per cent) of business enterprises and stands second in total employment (9.97 per cent) in India.

It is the fourth largest state of India, and contributed 7.6 per cent to India’s Gross Domestic Product (GDP) in 2012-13. Gross State Domestic Product (GSDP) of Tamil Nadu Grew at a Compound Annual Growth Rate (CAGR) of 16.2 per cent between 2004-05 and 2012-13, reaching US$ 133.1 billion in 2012-13. Tamil Nadu has a range of manufacturing industries like automobiles & components, castings & forgings, pumps & motors, garments & textile products, leather products, chemicals & plastics, etc. It rank first among all states in terms of the number of factories and industrial workers144.

3.22.1 PROFILE OF TEXTILE INDUSTRY IN TAMIL NADU

The textile industry is one of the traditionally well-developed industries in Tamil Nadu. It plays a significant role in the Indian economy by providing direct

employment to an estimated 35 million people, and thereby contributing 4 % of GDP and 35 % of gross export earnings. The textile sector contributes to 14 % of the manufacturing sector. The cities of Coimbatore, Erode, Karur, Gobichettipalayam, Perundurai and Tirupur in Tamil Nadu, are the largest garment exporters in India. Tamil Nadu has a solid production base and accounts for nearly one third of Textiles production in the state. It is predominantly in the private sector, spinning oriented and labour-intensive because of the preponderance of the decentralized sector in most of the segments of the industry.

The Tamil Nadu has around 3, 50,000 power looms manufacturing cotton fabrics and accounts for approximately 30 % of India's export of fabric products. The Erode district in Tamil Nadu is well known for marketing of textile products of handloom, power loom and ready-made garments. 62 % of India's textile trading takes place only in the city of Erode and 56 % of India's total knitwear exports come from Tirupur. The Export Import Policy of 2002–2007 acknowledges Tirupur for its contribution to the export efforts.

Coimbatore accounts for nearly $ 700 million and next to Coimbatore, the town of Karur & Erode generates around $300 million a year in foreign exchange through home textile exports such as bed linens, kitchen linens, toilet linens, table linens and wall hangings. Madurai and Kanchipuram is very famous for handloom sarees. This handloom sarees are on sale all over India. Tamil Nadu, Karnataka, and Kerala are the main states for wholesale sarees. This sarees manufacturing raw materials are purchased from Coimbatore, Erode and Salem. Gobichettipalayam has the India's first automatic silk reeling unit.
Handlooms

Tamil Nadu occupies a pride place in handloom sector with maximum number of handlooms in the Country. Handloom weaving is one of the largest economic activities in Tamil Nadu. There are 4.13 lakh handlooms located in the State in which 2.32 lakh handlooms are functioning with 1130 Handloom Weavers Cooperative Societies and the remaining 1.81 lakh looms are outside the Cooperative fold, thus providing employment to 6.08 lakh weavers.

Powerlooms

The Powerloom Sector in Tamil Nadu has also been playing an important role in meeting the clothing needs of the people. The Powerloom Sector in Tamil Nadu is next only to Maharashtra in terms of number of looms. The Powerloom Sector in Tamil Nadu provides employment to around 9.14 lakh workers. As against 19.03 lakh registered powerlooms in India, 3.66 lakh are located in Tamil Nadu and of that 42,566 are covered under 164 Powerloom Weavers Co-operative Societies.

Textile and Spinning Mills

The Textile Mills are the backbone of Tamil Nadu’s industrial development and are providing massive employment in the State predominantly spinning oriented. The State textile industry has a significant presence in the national economy also. There are 3069 large, medium and small spinning mills in India, of which, 1889 are situated in Tamil Nadu. The spinning mills in the State comprise 18 Cooperative Spinning Mills (5 functioning), 17 National Textile Corporation Mills (7 functioning) and 1854 Private Mills (including 23 Composite Mills). Those
spinning mills provide employment for approximately 2.40 lakh persons. The capacity of the spinning mills in the State is around 18.92 million spindles. The State produces about 1612 million kg of spun yarn per year and this is about 40% of the spun yarn produced per year in the entire nation.

**Garment and Hosiery**

The Garment Sector in Tamil Nadu is one of the fastest growing sectors in the textile industry. It is turned up substantially around Chennai City, with specialization in cotton fiber garments. The Hosiery Units in Tamil Nadu are located at Tirupur and manufacture Knitwear Garments to the tune of Rs.11000 Crores per annum. There are around 4000 knitwear and woven garment production units in the State providing employment to almost 5 lakh persons.

**Processing**

The processing sector determines the core product value, merchandise quality and holds tremendous scope for innovations and control over the terminal end product. Processing is an important value added segment in the Textile Industry. There are about 10397 Hand Processing Units and 2510 Power Processing Units in India, out of which 2614 Hand Processing Units and 985 Power Processing Units are located in Tamil Nadu. The global textile and clothes industry is worth over US $4,395 billion, with clothing accounting for 60 per centime of the market and apparel, the balance 40 per centime. Worldwide trade in this industry is now at US $350 billion and is anticipated to be in the range of US $600 billion by 2010 and US $800 billion by 2014.
3.23. SWOT ANALYSIS OF THE TEXTILE MANUFACTURING IN TAMIL NADU

STRENGTHS

- There are a large number of spinning mills located in the state that manufacture cotton yarn to ease the supply position and generate demand for yarn and supply of fabrics.
- There are large number of power loom owners and looms that are expanding in size over the recent period. The state has a traditional hand loom base which helps in consolidating the power looms and adoption of traditional varieties.
- There exists relatively better infrastructure facilities for transport, electricity etc. that are most favourable for running the power loom weaving factories.
- There are supportive engineering industries located in Coimbatore and elsewhere.
- There is a well-developed ginning industry and cotton cultivation is wide-spread in the state.
- The state has the advantage of possessing adequate disciplined labour supply with low labour cost.
- There are well-established production bases for made-ups export as well as for domestic market.
- The sector enjoys the advantages of catering to short batches for provision of varied designs.
- There are adequate processing facility for yarn dyeing and production of yarn dyed fabrics.
WEAKNESSES

❖ The most serious problem of the industry is the lack of adequate processing facilities; there is over-dependent on hand processors and traditional items.

❖ The majority of the SMEs are tiny and cottage type units without sufficient capital back-up.

❖ Most of the looms in the state are plain looms with low technology level

❖ There is always water scarcity and there is an increasing trend in the paucity of water required for the textile processing industry.

❖ There is also a disadvantages in the form of increased power tariff, fuel cost etc.

❖ There is always a dichotomy in production pattern and a handful of master weavers control the entire production of the cluster.

❖ The demand pattern in the state is observed to be mostly seasonal.

❖ The product diversification in the sector is insignificant.

❖ The quality of wider-width fabrics for meeting the export demand is lacking in many respects, which is acting as a disadvantages to the growth of the industry.

❖ There is inadequate encouragement to manufacture technical textiles, which has greater potential for growth.

OPPORTUNITIES

❖ As per available information, the market for processed cotton fabric will increase in the European and other markets and, therefore, the power loom industry may benefits and expand substantially. Further the growth in the
export segment will be mainly from cotton made-ups and garments along with processed fabrics.

- Grey fabric export is continuing to grow and will show increasing trends.
- Value added products will have greater demand and therefore, processing will play an important role.
- India with traditional designs and craftsmanship can command a greater market share for niche products in made-ups and garments.

THREATS

- Abolition of quota system will lead to fluctuations in the export demand.
- Marketing will be the most problematic area where improvements are called for continuous quality improvement; it will be need of the hour for which urgent measures are called from all stakeholders.
- Increasing competition from other states/centres will be a major problem where the industries have come up afresh and are well developed and technologically more advanced.
- Traditional items like terry towels are manufactured in EOUs all over the country with superior quality. This has been eroding the traditional markets for power loom and hand loom products forcing them to go for product diversification.

3.24. PROFILE OF COIMBATORE DISTRICT

Coimbatore is located in the western part of the state in the Kongu Nadu region and it is the third largest city of Tamil Nadu. The district of Coimbatore is a major commercial and business in the state of Tamil Nadu. After Chennai, the Coimbatore is the second largest city in the India. It is one of the fast growing
second tier metro cities in India. The Coimbatore is known as the textile capital or the “Manchester of south India” due to its textile industry fed by the surrounding cotton fields. Because the Coimbatore is a Cotton Producer City of Tamil Nadu. South India is well known and famous for textile industry. The yarns are supplied to local market as well as exported to other countries. The Coimbatore yarns are famous for quality and pricing. It is the second largest industrialized city of Tamil Nadu. The city is situated near Noyyal River.

Today, Coimbatore is replete with the highest concentration of textile activity in the world. The textile industry in Coimbatore is supported for the textile industries economic growth. There are more than 25,000 textile units running successfully and in which majority of them have started utilising automated technologies. The city of Coimbatore is Ranked 15th in the list of peak competitive Indian cities.

The Coimbatore has textile research institutes like Central Institute of Cotton Research, South Indian Textile Research Association, Sardar Vallabhai Patel International School of Textiles and Management, South Indian Mills Association, central Institute of Cotton Research. The city also houses two of the centers of Excellence for technical textiles proposed by Government of India, namely Meditech and Medical textile research centre based at SITRA.

Today, Coimbatore is hailed as the region with the highest concentration of textile activity in the world. It has numerous centres that specialize in spinning, weaving, power looms and knitwear. A large part of the produce is exported to different countries. Exports include knitwear, woven apparel and home furnishings. The growth of textiles naturally led to the inception of textile machinery
manufacturing. The Southern India Mills' Association (SIMA) was established in 1933, is very active in the Coimbatore region and governs most of the textile industry in South India. SIMA has a membership spread across the southern states and protects the interests of the textile mills and its workers.

3.25 PROFILE OF TIRUPUR DISTRICT

Tirupur\textsuperscript{145} is the city which is known for knitting and garments. It is located on the banks of Noyyal River and it forms a part of the ancient of Kongunadu region of south India. The city has been the biggest foreign revenue spinner in India. The textile products manufactured here through advance technologies are being procured throughout the globe. The Tirupur city is called \textit{“Banian City”} and \textit{“Knitwear City”} of Tamil Nadu and 56\% of knitwear exports come from Tirupur. It also called as a \textit{“Dollar City”} due to its transactions and rotations. It has divided into Tirupur North and Tirupur South.

The majority of the Banian clothes are exported from this area. It the main part for the trade and it is in the center of India. It has gained worldwide response as the most important source of hosiery, knitted garments, casual wear and sportswear cloths. It contributes to a huge amount of foreign exchange in Indian. It exports Rs 120 billion worth of goods \textbf{Netaji Apparel Park (NAP)} has 53 companies manufacturing knitwear for exports. Each unit will be a modal to answer the requirements of international standards in all aspects. In addition to investment of $ 920 billion on infrastructure and factory buildings about $ 13 billion is being

\footnote{en.wikipedia.org/ wiki/Tirupur accessed on 24.06.2013 at 8.10 am}
invested on machinery. It presently provides employment to more than 15,000 people and generates export revenue of 15 billion from the apparels produced in it.

The city is an important trade center of India; Tirupur has gained universal recognition as the leading source of hosiery, knitted garments, casual wear and sportswear. It has an emerged as the Knitwear capital of the country in three decades. Export from Tirupur, which provides employment to over 5 lakh people has crossed Rs. 12,000 crore in 2012. The city of Tirupur has the largest and fastest growing urban agglomerations in Tamil Nadu. Tirupur stands as the life for millions of people in Tamil Nadu. The knitwear industry which is the soul of Tirupur has created millions of jobs for all categories of people.

There are nearly about 3000 sewing units 1326 knitting units 730 dying units the other ancillary units which is uncountable. Some of the world’s largest retailers including C & A Switcher SA, Walmart, Primark, oviesse switcher, Polo Ralph Lauren, Diesel, Tommy Hilfiger, MZS, FILA, HZM, Reebok Import Textiles & Clothing from Tirupur. It is called the Knit Capital of India as it caters famous brand retailers from all over the world. Nearly every International Knitwear brand in the world has a strong production share from Tirupur146.

The first baniyan factory in Tirupur was started in 1925. With the advent of electricity in 1931. More knitting and weaving factories came into existence. The growth of the industries in Tirupur has also faced many problems in its journey in terms of infrastructure, natural raw material sources work force organization, pollution and the industry has taken efforts at times to solve the problems. Still the

Industrial associations and government are working to solve existing problems to make Tirupur a much better place to flourish with these problems getting solved. Tirupur is awaiting its next giant leap soon.

As of 2011 census, Tirupur had a population of 24,79,502 male constitute 12,46,159 of the population and female 12,32,893 roughly equal to the population of the nation of Kuwait. This gave it a ranking of 176th among district in India (out of a total 640). The district had a population density of 476 inhabitants per sq.4m. Its population growth rate over the decade 2001-2011 was 29.69 %. The relatively growth rate was due to an influx of workers from other parts of India due in turn Tirupur’s rapid urbanization during the period. Tirupur had a sex ratio of 988 females for every 1000 males and a literacy rate of 79.1 %

3.26 PROFILE OF ERODE DISTRICT

Erode district was a part of Coimbatore District and it has split from Coimbatore district in 1979 as a new district. The industrial map of Tamil Nadu, erode district has a place of unique important with 40.32 % of population depending on non-agricultural sector. It the administrative headquarters of erode district in the south Indian state of Tamil Nadu. It is located on the banks of River Kaveri. The Handloom, Power loom textile products and ready-made garments industries contribute to the economy of the city. The erode district is known for Power Loom textile manufacturing and cultivation of turmeric in agriculture. The city is located in a cotton growing region and its industries include cotton ginning.

147  www.tsf.org.in/triupur knitwear industry accessed on 24.06.2013 at 8.15 am
148  www.erode.net accessed on 24.06.2013 at 8.30 am.
Erode district is one of the most industrialised in the state of Tamil Nadu. Industry and Trade occupy a place of prominence in the economy of the District.

The city is called “Turmeric City” or “Yellow City”. The products are traded in the city during Tuesday and Wednesdays. The industry succeeded in early days in the area were handloom weaving, carpet manufacturing, cart manufacturing, oil pressing, brass vessel manufacturing etc. the advent of modern era has resulted in the emergence of power loom industries. Bhavani which was noted the world over for its very beautiful carpets, has shrunk into in signification and the industry is almost non-existent now.

Industries that flourished in early days in and around Erode area were handloom weaving and carpet manufacturing. The advent of modern era has resulted in the emergence of powerloom industries. There are 24,189 registered SSI units as on 31 December 2000 in the district besides 59 large scale units. The major industries in and around the city include oil and rice mills, engineering works, automobiles and power looms. Erode stands second in leather processing in the state, next only to Ambur. Paper industry also thrives around the city with some of the largest paper companies like TNPL and Seshasayee paper boards located near river Kaveri. Sugarcane processing industries extract juice from the cane to make sugar and the remains are used for paper manufacturing. There are a lot of Dall Mills, Cotton Textiles, Vanaspathy Manufacturing, Wax and Screen Printing, Powerloom, Sizing, Warping and Printing Press located in the city. It is also one of the largest coconut oil producers in south India

The industry has been able to totally withstand the on slaught of modernisation has been the handloom weaving & include the Erode, Chennimalai
still the district holds their way and the district is noted for its hand loom products, which include cotton sarees bed-spreads, towels, furnishing fabrics. The two other important production centres of sarees are Bhavani & Jambai.

The cotton textile industry in Coimbatore and hand loom industry in Erode district have encouraged the growth of various ancillary industries to meet the needs of the textile mills. Chennimalai, Erode, Gobichettipalayam etc. are important centres where cotton ginning is carried on a large sale. There are also important dying works in erode, Chennimalai and Bhavani. A number of factories engaged in cotton fabric printing in Erode.

The advent of modern era has changed these industries to some extent and the powerloom weaving is slowly replacing it. Erode District is predominantly agricultural in nature is emerging gradually and steadily in food products and beverages sector. The district is occupying 5th place in Small Scale Industries next to Coimbatore, Chennai, Salem and Kancheepuram Districts. The district is having 23918 Registered SSI units as on 31.03.2000. The share of SSI units in Tamil Nadu State is about 5.9 %. 

Erode Taluk is leading among other taluks in terms of number of enterprises, investment level and employment. Erode Taluk is having 38 % of registered MSME units with 54 % of total investment level and 43 % of employment in the district. It is due to the concentration of cotton textiles & readymade garments enterprises in this taluk and their easy accessibility to the market. Next to Erode, Perundurai Taluk is having 4123 number of registered MSME enterprises with 8326.80 lakhs in

---

149 www.erode.tn.nic.in/aboutdist.htm 24.06.2014 at 8.30 am
investment in plant & machinery and providing employment to 18491 person. Bhavani Taluk is having 2386 enterprises, with investment of 4263.79 Lakhs and providing employment to 4432 persons. In Gobi Taluk 2234 units are providing employment to 8932 persons with investment of 5961.60 Lakhs.

Sathyamangalam Taluk is having 1244 registered MSME enterprises, which is the lowest number of enterprises in the district. There are 64 Large Scale Industries in this district. Most of the Enterprises are cotton textiles. 31 enterprises are textile industries. Cottage Industries are providing large scale employment with low cost investment. In Erode District there is 7605 Enterprise registered under cottage industries as on 31.03.2011 and they are providing employment to 12974 persons. Cottage industries, handicrafts Enterprises are also providing employment to the rural artisans. In Erode District there are 5894 Enterprises providing employment to 9734 person\textsuperscript{150}.

In 2011, Erode had population of 2,251,744 of which male and female were 1,129,868 and 1,121,876 respectively. In 2001 census, Erode had a population of 2,016,582 of which males were 1,024,732 and remaining 991,850 were females. Erode District population constituted 3.12 % of total Maharashtra population. There was change of 11.66 % growth in the population compared to population as per 2001. The density of Erode district for 2011 is 391 people per sq.km. In 2001, Erode district administers 5,760 square kilometres of areas. Average literacy rate of Erode in 2011 were 72.58 compared to 65.44 of 2001\textsuperscript{151}.

\textsuperscript{150} www.erode.tn.nic.in/ssi.htm
\textsuperscript{151} Source :Census 2011 in Erode District
3.27 PROFILE OF NAMAKKAL DISTRICT

The Namakkal district is an administrative district in the state of Tamil Nadu. It was newly formed district from Salem district. It consists of Rasipuram, Tiruchengode, Paramathi, Velur, and Kolli Hills. The district is bounded by Salem on the north, Karur on the south, Trichy and Salem on the east and erode on the west. For administrative purposes the district has been divided into 2 Revenue Divisions, 5 Taluks and 30 Revenue firkas and 454 revenue villages.

According to the 2011 census, Namakkal district has a population of 17,21,179 roughly equal to the nation of the Gambia. This gives it a ranking of 282 in India. The district has a population density of 506 inhabitants per sq.km. The population growth rate over the decade 2001-2011 was 15.25 % Namakkal has a sex ratio of 986 females for every 1000 males, and a literacy rate of 74.92 %.

The Namakkal District is noted for Truck and lorry external body building which dates back to 1956. Throughout India Tiruchengode is known for its body building industry for trucks, trailers, tankers and rig unit. Finished trucks and rig units are even exported to foreign countries from Namakkal. Nearly 25,000 people are employed both directly and indirectly in truck body activity and about 300 units in Namakkal and 100 units in Tiruchengode are engaged in this activity.

The district is also well known for poultry and dairy industries, accounting for a bulk of supply of poultry products to neighbouring industries. The district produces about 65 % of the egg output of Tamil Nadu. The city is called “Egg City” or “Poultry Town” and it also called as “Transport City”.

The Rasipuram is one of the important taluk for Namakkal District. The chief industry of the town is “Weaving”. The major occupation of people are weaving
cotton textiles and silk saree. Tiruchengode is another taluk and it is the town of cultural and historical importance. Nearly 37 spinning mills and more than 10,000 power looms are functioning in the area. The important aspect in the taluk is sag. The production nearly 176 sago factories are located in and around the Rasipuram taluk. Sago and starch production in this area are exported to other countries, Ghee product is also famous in this district\textsuperscript{152}.

Tiruchengode is a town of cultural and historical importance. In the 19\textsuperscript{th} century, it was the home of the Tamil Academy called “Pulavarsangam”. Nearly 37 spinning mills and more than 10,000 power looms are functioning in this area. In private sector one sugar mill and paper mill was functioning under private sector. It is famous for Rig vehicles more than 2000 vehicles were engaged in digging of bore wells in all over India. Komarapalayam is a textile town situated on the bank of the Cauvery River, Ganges River of South India, in Namakkal District. Komarapalam is also called “Kumarapalayam”. The Komarapalayam is very famous for its textile industries. So, it also called for “Textile Town”. There are many spinning mills, yarn dyeing processing units, manual dyeing units, weaving units, calendaring units, export oriented units and other related ancillary units in and around Komarapalayam\textsuperscript{153}.

\section*{3.28 PROFILE OF SALEM DISTRICT}

Salem is one of the southern districts of Tamil Nadu. The important towns of Salem are Mettur, Omalur and Attur. The district is well connected to other districts of Tamil Nadu by established road and rail networks. The district is well known for

\textsuperscript{152} www.namakkal.tn.nic.in/profile.html accessed on 24.06.2013 at 8.45 am
\textsuperscript{153} en.wikipedia.org/wiki/komarapalayam accessed on 24.06.2013 at 8.45 am
Mangoes and Steel. It is being the part of Kongu Nadu, is located at the base of Yercaud hills.

The history of handloom and spinning mills dates back to pre-independence period in Salem. Post 1960’s, private handloom weaving began to thrive in the region along with the large scale cooperative sector, handloom weaving and marketing units. Around 1980’s the textile industry saw a massive growth. Many major spinning mills and waste spinning units came up into existence.

The Salem handloom industry is one of the most ancient cottage industries in Salem District of Tamil Nadu. There are more than 75,000 handlooms are working. The total value of cloth produced per annum is estimated at Rs. 5, 000 crores. With 125 spinning mills, with modern weaving units and garment units established itself as one of the major “Textile Center” in Tamil Nadu.

It has important tourist locations such as Mettur Dam, Yercaud hills, Sankari fort, Tharamangalam temple and several other beautiful historical sites. It is also an important textile centre has rich magnesite, bauxite, mineral reserves 90% of Sago suppliers to the country from Salem and it also has rich industrial base with the Salem Steel plant, SISCOL, MALCO, CHEPLAST and with regard to power generation also, the Thermal and Hyderal Plant at Mettur contribute towards power supply to the state.

According to the 2011 census\textsuperscript{154}, Salem district has a population of 34,80,008. The ranking of 89\textsuperscript{th} in India (out of total 640). The district has a population density of 663 inhabitants per square kilometres (1,720/ sqm). Its population growth

\footnotesize{\textsuperscript{154} www.salemdistrictcensus2011, census 2011.co.in. accessed on 25.09.2013}
rate over the decades 2001-2011 was 15.77 %. Salem has a sex ratio of 954 females for every 1000 males and the literacy rate is 73.21 %.

Many handloom societies and dyeing houses were well established. High capacity power looms are actively engaged in garments production in the following areas viz., Gugai, Ammapet, Attayampatti, Vennadur, Magudanchavadi, Rasipuram, Komarapalayam, Pallipalayam, Jalakandapuram and Elampillai\textsuperscript{155}.

3.29 TEXTILE EDUCATIONAL INSTITUTIONS LOCATED IN COIMBATORE REGION

1. Sardar Vallabhai Patel Institute of Textile Management,
2. National Textile Corporation (NTC) Staff College, Coimbatore
3. National Institute of Fashion Technology (NIFT), Tirupur
4. SSM Institute of Textile Technology, Komarapalayam
5. Indian Institute of Handloom Technology (IIHT), Salem.

3.30 MAJOR TEXTILE ASSOCIATIONS IN COIMBATORE REGION

1. South India mills association (SIMA)
2. Tirupur Exporters Associations
3. Tirupur Textile Processors Association (TTPA)
4. Erode District Traders Association
5. Erode Screen Printers Associations
6. Textiles and Garments Association, Erode
7. Salem District Textile Manufacturers Association

\textsuperscript{155} en.wikipedia.org/wiki/salem-district accessed on 24.06.2013 at 9.00 am
SUMMARY

In this chapter the profile of the textile industry and research area has been described. The history and growth of textile manufacture in the World and Indian context have been overviewed. The growth and trade performance of Indian Textile Industry and schemes for textile industry was clearly pointed out in this chapter. The need of skill development and skill requirements of labours in textile industry and its importance in textile industry is also explained in this chapter. The profile of the study area Coimbatore Region (viz., Coimbatore, Tirupur, Erode, Salem, Namakkal Districts) has been collected and briefed here. This chapter also covered the various problems of Textile sectors. From this information the researcher can better understood and formulated her research design.
SPINNING MACHINERIES

3Zinser 421E, Worsted Ring

G 32 ring spinning machine

Ringframe Machine

BARCOPROFILE for air jet and vortex spinning machines

J 20 Air Jet Spinning Machine

J 20 Air-Jet Spinning Machine

Hand loom Weaving

Power jacquard rapier weaving
Manual Dyeing

Blind Stitch Machine

Button Stitch Machine

Flat Lock Machine

Over Lock Machine

Cutting Machine

Zig Zag Machine
TRAINING PROGRAMMES UNDER ISDS SCHEME