



## Ancient to contemporary—The saga of Indian handloom sector\*

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Handloom industry is among the oldest industries in India, dating back to Saraswati-Indus Civilization, and various archaeological findings and ancient texts manifest its existence. The handloom sector is the second largest employment provider after agriculture, and accounts for nearly 15% of the cloth production in India. The uniqueness and versatility in weaves and designs of textiles from various regions of the country illustrate the rich tradition of India. Indian textiles gained prominence during ancient and medieval times; however, the colonial period destroyed the handloom industry and weavers. Britishers strategically broke the handloom industry by exporting raw material from India and selling finished textile products back to India, which consequently affected the Indian economy. The significance of the Indian handloom was recognized later and became a huge part of the freedom struggle, thus establishing the Swadeshi Movement in 1905 for revival of the Indian Handloom. In this paper, the journey of the Indian handlooms, the current scenario, the challenges, and the policy measures implemented to revamp the sector have been discussed.

**Keywords:** Fabric, Handlooms, Khadi, Textiles, Weaver

### 1 Introduction

The handloom industry in India is among the largest and oldest cottage industries<sup>1</sup>. This intricate crafts sector represents the diverse and astounding culture along with the ageless traditions of India. Indian handlooms have a rich legacy and have been praised globally for their styles and aesthetics, artistry, dexterity and expertise since time immemorial<sup>2</sup>. From Kashmir to Kanyakumari, every region in India has its own techniques used to weave unique fabrics. From Pashmina of Kashmir to Kalamkari of Andhra Pradesh, from Bandhani of Gujarat to Muga silk of Assam, handlooms have played a major role in bringing India to the global forefront<sup>3</sup>. According to the Annual Report of the Ministry of Textiles 2020-21, nearly 15% of the cloth production in India comes from this sector<sup>4</sup>. The significance of the handloom sector can be understood by the fact that this age-old tradition of Indian handloom is celebrated on 7th August as Handloom Day to honour the country's first Swadeshi movement which began in 1905<sup>5</sup>.

This strength of the handloom sector lies in its uniqueness, flexibility of production, creative designs and weaves, innovation in accordance with consumer

demand and it also illustrates the rich tradition of India. It has sustained itself by transfer of skills to the next generation<sup>6</sup>. The handloom sector is eco-friendly, flexible and adaptable to market needs. It requires less capital and minimal power consumption, and produces superior quality textiles<sup>7</sup>. Also, certain customised designs and intrinsic weaves can be made only through handlooms<sup>8</sup>.

Handloom weaving in India is carried out for household consumption as well as for commercial purposes. The hand-woven fabric production from India constitutes 95% of total global production as per Ministry of Textiles Report 2020-21<sup>4</sup>. The sector consists of 28.2 lakhs handlooms across the India; 25.2 lakhs are located in rural areas and only 2.9 lakhs in urban areas as reported in the Fourth All-India Handloom Census 2019-20<sup>8</sup>. The total number of handloom workers enumerated in the fourth census are 35,22,512, with 72.3% women employed in the sector. The handloom industry generates second-largest employment for the rural population with 30,53,691 handloom workers after agriculture. The handloom census report 2020-21 states that the north-eastern states account for more than 50% of the weavers and looms in the country. Assam has the highest workforce (48%) with 11,07,428 weavers and 1,76,453 allied workers followed by West Bengal (23.6%), Tamil Nadu (9.1%), Manipur (8.4%), Uttar Pradesh (7.1%) and Tripura (5.1%)<sup>8</sup>.

\*Dedicated to Azadi Ka Amrit Mahotsav (India).

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Handloom industry contributes significantly to the economic growth of the country and plays a significant role in export earnings. The export of handloom products in FY20 from India was valued as US\$ 319.02 million, whereas in FY21, it was reduced to US\$ 223.19 million. The major importer of these products are the US with US\$ 83.11 million trade, followed by the UK (US\$ 18.99 million), Australia (US\$ 10.7 million), Germany (US\$ 9.94 million), and France (US\$ 9.73 million)<sup>9</sup>. The prime handloom export centres are Panipat, Kannur, Varanasi, and Karur, where handloom products such as floor coverings, table linen, bed linen, curtains, and embroidered textile materials are produced for export markets<sup>10</sup>.

India was renowned as an exporter of textiles to the rest of the world in the ancient and medieval period. However, during British rule the sector underwent drastic decline and witnessed large-scale unemployment among the weaver's community<sup>11</sup>. Besides, the destruction of the Indian handloom sector badly affected Indian economy and decimated the nation's self-esteem. It is the same reason, why post 1857, revival of Indian handloom synergised with freedom movement and Khadi became the symbol of freedom struggle and self-reliance. After independence, not only the declining trend in the handloom sector was arrested but also the sector started growing due to persistent developmental and welfare measures of the Governments. However, post liberalization the sector again witnessed a declining trend. However, in the last two decades the sector again is on the path of revival due to positive interventions of the Government. In 2006, Government of India launched the India Handloom brand to bring confidence among consumers by creating credibility about the handloom products. Since then, 1590 registrations under 184 product categories have been issued and sales of INR 926.23 crore generated<sup>12</sup>. Growth of E-commerce in recent times, has also led to increased visibility of the handloom products and also, provided a platform to the weavers to increase their reach<sup>6</sup>. These have created opportunities for better credit facilities, marketing opportunities, capacity building and skill upgradation, product and market diversification, greater understanding of consumer demands and infrastructure development. In the last decade, there has been even more significant growth in the sector attributed to several central and state Government

initiatives, such as Make in India, Skill India Mission, cluster building and other initiatives<sup>13</sup>. Some of the flagship programmes of Central Government focusing on the growth of sector and welfare of the weavers include:

(i) The National Handloom Development Program is a central sector scheme to provide logistical support, design inputs, technology upgradation, marketing support, etc. The key elements of the program are block level handloom census, marketing assistance, concessional credit, cluster projects, handloom park and R&D projects. The E-Dhaga mobile application was launched in 2016 to help weavers in making payments, information dissemination, and tracking the status of shipment.

(ii) The Comprehensive Handloom Cluster Development Scheme to develop mega handloom clusters. Eight mega handloom clusters, viz. Varanasi, Guntur, Virudhanagar, Murshidabad, Sivasagar & Prakasam districts, Godda & neighbouring districts in Jharkhand, Bhagalpur in Bihar and Trichy are under its ambit.

(iii) The Yarn Supply Scheme for increasing the availability of yarns to eligible handloom weavers at a reasonable price.

(iv) The Handloom Weavers Comprehensive Welfare Scheme to assist weavers in availing social security benefits for holistic development of the sector. Mahatma Gandhi Bunkar Bima Yojana (MGBBY) and Pradhan Mantri Jivan Jyoti Yojana (PMJJY) are the two schemes in this<sup>12,14</sup>.

## 2 History of Indian Handloom

The handloom textiles of India are probably the oldest industry as accounted by historical evidence, such as Indian muslin which was used by Egyptians for dressing their mummies even before 5000 B.C. The earliest fragment of cotton cloth with a Hansa (swan) design was dug from a site near Cairo in Egypt<sup>15</sup>.

### 2.1 Handloom in Ancient India

There are several archaeological pieces of evidence found at various sites of the Saraswati - Indus Valley Civilization, namely Harappa, Mohenjo Daro, Chanhudaro, Lothal, Urkatoda and Kalibangan. The famous terracotta figurines from Mehrgarh (Fig. 1) and sculpture of "Priest King" (Fig. 2) from Mohenjo Daro wearing turban and a robe with or without embroidery respectively show early evidences of well-developed textile and apparel industry<sup>16,17</sup>.

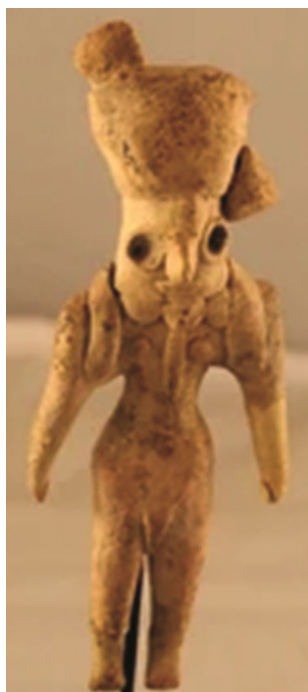


Fig. 1 — Terracotta figurine found at Mehrgarh<sup>16</sup>

During that period, cotton was probably the most commonly used fibre among other fibres, such as wool, jute, hemp, and silk. Wild indigenous silk moth species found at Harappa and Chanhudaro, and silk thread inside copper beads found from Harappa indicate prevalent use and production of silk<sup>17</sup>.

Earliest specimens of spindle and spindle whorls of stone, clay, metal, terracotta, needles, dye vats together with woven and madder-dyed (herb dye) cotton fragments wrapped round a silver pot excavated at different sites shows that inhabitants of the Saraswati Indus valley were well versed with the art of spinning, weaving, dyeing, and sewing<sup>16</sup>.

The high frequency of clothing metaphors and several terms related to weavers in Rigveda indicate that spinning and weaving were highly advanced and honoured occupations in vedic society. In Rigveda, a weaver was described as “Vasovaya”, the male weaver as “Vaya” and female weaver as “Vayitri”. The terms “Vasas”, “Vasana” and “vastra” refer to cotton manufacturers. References to embroidery also surfaces in vedic texts in the form of *pesas* or an embroidered garment<sup>18</sup>. A woollen thread called “Varna Sutra” is mentioned in the later Samhitas and the Brahmanas. Samhitas mention that woollen threads are made of goat’s hair and sheep’s wool. There was growth and evolution in techniques of weaving as confirmed by the frequent



Fig. 2 — Sculpture of priest king<sup>16</sup>

use of terms for ‘warp’ and ‘woof’. *Apastamba Srauta Sutra* of the era provides the earliest reference to the printed fabric in the word *Chitranta*<sup>16,19</sup>. Panini in *Ashtadhyayi* refers to the *tantra* as loom, *avaya* as the place where the weaver plied his loom and *pravani* as the shuttle<sup>16</sup>.

The Greek historian Herodotus mentioned cotton and highlighted the popularity of Indian printed fabrics among the women of the eastern Mediterranean. Megasthenese, a Greek ambassador to the court of Chandragupta Maurya mentions about the Indian robes, muslins and brocades in his book *Indica*<sup>2,12,16</sup>. Kautilya’s *Arthashastra* (4<sup>th</sup> Century BCE) mentions cotton as a source of the King’s revenue and has detailed description of skilled artisans for different stages of textile making, i.e. threads (*sutras*), coats (*varma*) and cloth (*vastras*). *Arthashastra* also has mentioned about the material distribution system among spinners and weavers, working of guilds of spinners and weavers, superintendent of yarns (*sutradhyaksa*) responsible for regulating yarn spinning<sup>16</sup>. Textile glossary in Buddhist text *Tales* refers to different types of textile fabrics like linen (*Khoman*), cotton (*kappasikam*), silk (*kosseyam*), other related words like weavers (*tantuvaya*), the place of weaving (*tantavitatathanam*), weaving appliances (*tantabhandam*) and the loom (*tantaka*). Similar to Buddha text, Jain texts also find mention for cotton thread (*Kappasikasuttam*) and cotton cloth (*kappasi kadusam*). Jatakas tales also refer to tools for spinning and weaving<sup>16</sup>.

During the era, cities were gaining glory due to the textile industry. One of the examples is Kasi (Varanasi) which flourished as a regional capital for the textile industry from the time of Mahabharat till the regime of Nandas, the Mauryas and the Sungas.

Referring of Kasi Kingdom as the principal center of the cotton industry in “Jatakas” and mention of fabrics, such as *Kasi Kasikamsu*, *Kasika Vastra*, *Divyavadana*, (a Buddhist Sanskrit text) highlights the textile manufacturing in Kasi<sup>18-20</sup>. Buddhist literature suggests that cotton cloth made in Kashi was used to wrap the body of the Buddha when he attained nirvana. In the 2nd century B.C., Patanjali also indicated that Kasika textile in the Sunga Empire was of better quality than the similar material from Mathura<sup>21</sup>. Kasi was known for "fabric of dreams" kinknab, a Banarasi brocade designed by interweaving silver and gold threads with silk or cotton/silk blended yarns. The brocaded silks with cotton or wool blended with silk were known as Himrus, also the Shikarghar was the finest and most popular motif of Indian kinknab<sup>12</sup>.

During the rule of Mauryas and Sungas, Antalya, muraja, and uttariya, 3 unstitched garments used by both men and women were made using coarse cotton, white cotton, muslin, linen, or silk, and embroidery with gold or other precious stones for people of varying economic status<sup>22, 23</sup>.

By the early Mauryan period (322 -183 BC) Indian textile industry reached historical glory due to the cross-fertilization of ideas, culture, style and technologies. The same was evident from the greater importance of textile in long distance trade exchanges of India established with Egypt, China, Iran, and the Mediterranean<sup>17</sup>. The 1st century Greek text “The Periplus of the Erythrean Sea” mentions the ancient trade routes and trade of muslin from India<sup>16</sup>. During the Kushan’s rule, the textile industry in northern India further benefited and flourished due to gains from the control on silk routes. Within India, the grand Indian trade route consisted of *Uttarapath* and *Dakshinapath*, i.e. northern and southern land routes during this period<sup>16</sup>.

Satavahanas empire controlled the trade of cotton textiles produced in the Deccan belt across the Indian Ocean during 1st century BCE to 3rd century CE. Indian cotton fragments found at Red Sea ports of Berenike in Egypt confirmed this fact<sup>21, 24</sup>.

In southern India, silk textile flourished under the patronage of “Pallavas” and “Cholas” rulers. The epics present a vivid description of the urban market scenes, and many inscriptions and literary texts mention the textiles and weavers<sup>25, 26</sup>. The costumes and fabric in the Deccan region were also influenced by socio economic status of the people<sup>27, 28</sup>. The

making of Kanjivaram silk was established under the Pallava dynasty, and cherished its golden moments under the Chola dynasty<sup>23, 26</sup>. Weavers were encouraged to migrate to the slowly emerging temple towns during the Pallava and Chola periods<sup>27</sup>. Under Pallavas, Kanchipuram was an outstanding centre of cotton and silk weaving. However, under Chola empire more textile centres, Tribhuvanam, Arni, Tirupparkkadal, Virinchipuram, Woraiyur, Tirupati, Kalahasti, Gugai, Madurai, Salem, Sular, Venkatagiri, Dharmavaram, Kumbakonam, Thanjavur and Vridhachalam flourished. Weaving was revered so high for fine quality woven silk sarees Saliyar pattu and Devanga pattu named after the weaving communities<sup>16</sup>.

By the Gupta period, textile manufacturing was being done at two separate levels, i.e. for domestic consumption and for trading. Fine quality fabric was manufactured for the elite class and coarse fabric was made for the poor. In *Amarkosha*, words connected with cotton cloth (*karpasam*, *phalam*), thread (*tantu*, *sutram*), tools for weaving (*vema*, *vamadanda*) and the weaving of cloth (*vani*, *vyuti*) have been mentioned<sup>22</sup>. The texts *Jambudvipa* and *Prajnapati* mention silk weavers (*pattaila*), napkin sellers (*ganchhi*), calico printers (*chhimpā*) and tailors (*sivaga*)<sup>16</sup>. Hieun Tsiang, a Chinese monk traveller mentions the fine cloth made from silk, cotton, hemp fibre, and goat hair. Banabhatta, author of *Harshacharita* (7<sup>th</sup> CE) refers to tie-and-dye process and dye fabric (*bandhyamana*)<sup>16, 21</sup>.

## 2.2 Handlooms in Medieval India

The medieval period witnessed the arrival of Persian influence in the technique, motif and technology used in making textiles and fabrics in India, especially during the Mughal period<sup>16</sup>. Court patronage led to increased production and trade of textiles<sup>29</sup>. Cotton textile and silk industry flourished under the Delhi Sultanate. Sericulture was introduced on a large scale, thereby India became less dependent on other countries for the import of raw silk<sup>30</sup>. Influence of Persia on spinning wheel is accounted for by many researchers and improved production of textiles in India in medieval times<sup>16, 30</sup>. *Miftah-ul-Fuzala*, a 15th century dictionary, clearly mentions and illustrates the spinning wheel and treadles in horizontal looms<sup>16</sup>. The unique silk and brocade textiles flourished in the courts of the Khaljis (1290–1320) and Tughlaqs (1320–1413)<sup>29</sup>. As mentioned in *Khaza-in-ul-Futuh* (History of Sultan Alauddin

Khalji), Khaljis had market and price control policy for textiles (including silks). In their time, muslin was weaved so finely to pass the eye of a needle, and yet the point of the needle can pierce through it with difficulty and look transparent and light as pure water<sup>31</sup>. During the Mughal regime, textiles were produced in two kinds of *karkhanas* or workshops, viz. (i) independent *karkhanas* run by artisans, and (ii) imperial *karkhanas* patronised by the imperial court<sup>16</sup>. Francois Bernier, a French Traveller wrote about these workshops. Delhi, Lahore, Agra, Patna, Banaras, Ahmedabad, Burchapur and Dacca were the major producers of cotton textile<sup>16</sup>. Under the Mughals, the muslin produced at Dacca (Present day Dhaka, in Bangladesh) reached its pinnacle. During the period, Kashmir and Bengal grew as two important centres of sericulture and silk weaving. Ahmedabad, Surat, Sindh, Delhi, Agra, Assam, and Malda were other important silk textile centres during the Mughal period. Patan in Gujarat emerged as the main centre of patola silk made using Ikat technique. In western India, silk was mostly mixed with cotton. Serbandy, Kapoornoor, gulbadans, nihal, tafsil and mushru were mixed cotton and silk fabrics produced in the Mughal period<sup>16</sup>.

Chinese traveller of 13th century C.E mentioned the fine quality cotton production in Bengal<sup>32,33</sup>. During the Pala regime, Bengal became the centre of excellent quality cotton fabrics, weaving became a source of the economy, consequently making the trade of cotton goods with distant countries, like Arab flourished<sup>34,35</sup>. The silk industry equally flourished in Bengal and owned fair share in the foreign market<sup>34</sup>. It was exported to Afghanistan, Arab, Greece, Iran, as well as Turkey. The flourishing trend of exporting the Bengal silk saree continued till 1830. Murshid Quli Khan developed Murshidabad as a new centre of weaving which was very popular for saree made of silk and cotton. Some popular and premium quality Murshidabad silk sarees were Baluchari silk sarees and Jamdani silk sarees<sup>16</sup>. Tippu Sultan also sent people of his kingdom (Karnataka) to Bengal to learn sericulture and facilitated establishment of silk industry in his Mysore kingdom<sup>18</sup>.

Gujarat became a major production centre for cotton and silk, zari work, brocade and embroidery under the rule of Rashtrakutas. The development and enhancement of advanced weaving techniques took place; these included patola, kinkhab and tanchoi, which were assimilated from China. Later, the

demand for other craft fabrication, like textile printing, also rose well, especially among the Europeans. Muslin cloth was contrived in Paithan and Warangal, whereas the cotton yarn and cloth were exported from Bharoch. White calicos were exported to Persia, Arabia, Poland, Turkey, and Cairo from Burhanpur and Berar<sup>36</sup>.

Vijayanagara Empire saw a time of dramatic increase in the scale of textile production to meet the demands of both external trade and an expanding elite within the empire. By the late 15th century individuals owned as many as 100 looms, according to an inscription from Rayalasima. The textile industry was of major importance to the state and found references in temple inscriptions, other texts of the period, as well as in literary works, and in accounts by Portuguese, Italian, and Persian travellers<sup>29,37</sup>.

Textiles were printed, painted, and embroidered too. A woodblock printer was called *chippa*. References to chippa saree, printed calicoes or chintz which were in great demand in Europe, bandhani cloth makers, painting of fabric with a pen brush or *kalamkari*, forms of embroidery - *Kashida* and *Chikin* are available in various texts and travelogues. Tavernier also informs about bleaching of cotton with lime, soap, sulphur and rice starch<sup>16</sup>.

### 2.3 Handlooms in British Period

In the late 17th century, a large number of factories or centres "Kuthi" were set up by the British, Dutch, Portuguese and French to transport silk to the world. The local communities were employed, and specifically silk weavers gained importance in the society<sup>38,39</sup>. The British East India Company established their factories and centres at Coromandel, Surat and later in Bengal. Indian cotton textiles were highly popular in Britain and imported from India by the British East India Trading Company (EIC) mostly in the form of calico, a dyed or printed textile. In 1700 AD, King William III of England imposed a fine of 200 pounds on wearing of Indian silk and calico to discourage import of Indian handloom fabrics. The Calico Acts (1700, 1721) banned the import of most cotton textiles into Britain to revive the British wool and silk industry, followed by restriction on the use and sale of most cotton items<sup>40</sup>. After the Battle of Plassey in 1757, the scenario changed as the East India Company started supplying raw materials to Britain and they would bring back manufactured silk to India and sell it at high prices in India. Company

started collecting high taxes on the sale of raw silk and controlled its prices. In 1769, the East India Company also introduced a new improved method of silk reeling in Bengal. This led to local people and silk weavers being left in extreme poverty. Furthermore, after 1833, British factories were completely closed due to huge losses and led to complete destruction of the silk industry in Bengal<sup>38,39</sup>.

Britishers looked upon India as the proper destination for procuring cheap raw materials as well as a market for their products in post industrial revolution times. They ensured systematic destruction of Indian local industries by flooding the Indian market with machine-made yarn and British clothes at cheaper rates and depriving Indian textiles from foreign as well as domestic markets<sup>15,24,41</sup>. British authorities persuaded Indian rulers to increase their authority over the Indian market and by the end of 1813 the Indian handloom industry was crippled by fixed prices, high taxation, forced contract selling, violence, innovation of power looms and strategic theft of Indian motifs and designs. Local weavers could barely redeem 80% of the total cost of production, this forced them into extreme poverty over the time<sup>42</sup>. Sudden decline of the handicrafts and textile industry created unemployment for a large community of weavers and resulted in large-scale migration from urban centres to villages<sup>42</sup>. India used to manufacture 25% of the world's textiles in the 17th century which was later reduced to just 2% by the end of colonial rule in 1947 (ref. 42). In 1867, Dadabhai Naoroji "The Grand Old Man of India" put up the economic drain theory in his book "Poverty and Un-British Rule in India. He sought to prove that abysmal poverty in India was not a result of internal factors but was attributed to colonial rule which led to the drain of wealth and prosperity of India<sup>43</sup>.

#### 2.4 Khadi - 'A Fabric of Indian Independence'

In 1905, dhotis re-emerged in Bengal as a sign of incompatibility of Indian and British interests. The Indian patriotic leaders like Bipin Chandra Pal, Dadabhai Naoroji, Tilak and Ranade observed the weakening of the Indian textile industry and hence the Indian economy<sup>44</sup>. The Indian National Congress passed a resolution at its 7th Session in 1891 to boycott imported cloth and gave a clarion call for 'Swadeshi'-use of Indian goods. With the partition of Bengal (1905), the movement reached its peak

leading to boycott of the imported goods particularly English cloth. The movement gained momentum with Gandhi's idea of swaraj with his coming back in 1915. He reintroduced hand spinning as Khadi, i.e., hand spun and handwoven fabric, also known as khaddar during the British period<sup>45</sup>. Khadi played an important role as an agent of change and giving birth to unified India. Masses were encouraged to spin the yarn using Charkhas and wear Khadi. People from diverse backgrounds could relate to Khadi and therefore, the movement garnered support from different classes. Many campaigns and exhibitions were organized to demonstrate production and sale of Khadi products, in order to popularize this movement. Khadi for Gandhi in a symbolic manner was the focal point of regeneration and diversification of the rural economy. Britishers tried to curtail the Khadi movement, but the more it was controlled, the more powerful and widespread it became. People burnt imported clothes and chose to wear Khadi. It became a mass movement and for the first-time women came out of their homes to join processions and picketing of shops selling foreign goods<sup>46,47</sup>. The 'All India Khaddar Board' and the 'All India Spinners Association' were respectively established in 1923 and in 1925. For the attainment of self-sufficient India through khadi and to promote the welfare of the spinners, the Association established 110 khadi production centres and 150 sale depots by late 1920s. Ultimately, the Mills in Manchester were closed leading to a huge turning point in the Indian independence movement<sup>48,49</sup>.

#### 2.5 Revival of Handloom Industry in India

Charkha was used by Mahatma Gandhi as a symbol of self-reliant India and national regeneration and integration which brought the handloom weavers to the forefront<sup>16</sup>. The handloom industry witnessed its growth only after independence as it was then considered a priority sector. However, the power looms sector along with its mill counterparts took away most of the yarn production of the country and it produced and sold similar varieties of cloth at much cheaper price than handloom cloth. Initially, the handloom industries had poor quality of raw materials and inefficient market infrastructure. In 1952, the situation deteriorated furthermore, causing immense loss and accumulation of handloom stocks<sup>12,50</sup>. To address the issue, the Khadi and Other Handloom Industries Development Act was passed in 1952 and a national apex body All India Handloom Fabrics Marketing Cooperative Society was established to

promote the marketing of handlooms fabrics in 1955. The Handloom and Handicrafts Export Council was set up in 1958 to promote exports of handloom items<sup>15</sup>. In 1975, Development Commissioner for Handlooms was set up as an attached non participating office under the Ministry of Commerce, now under Ministry of Textiles, for skill upgradation, capacity building and disseminating the technological interventions for reducing the drudgery to the handloom weavers, thereby increasing earning of the weaver's earning<sup>51</sup>. Later, for inclusive and sustainable growth of the handloom sector, the National Handloom Development Corporation Limited was established in February 1983 as a public sector undertaking under the ambit of the Ministry of Textiles<sup>52</sup>. Although handloom/Khadi was given a lot of protection from unfair competition and made affordable, since 1985 and specifically after liberalisation or reforms, the handloom sector saw its decline due to competition from cheap imports and design imitation on power looms. The cost of natural fibre yarn had gone up tremendously making it unaffordable for the common people. This drastically impacted the lives of handloom weavers as their wages had frozen for the past decade or so. Unable to compete with cheaper poly-mixed fabrics, many weavers started to quit weaving and preferred unskilled labour work<sup>11</sup>.

In the past two decades, with government interventions and improved techniques of handlooms, this sector has gained worldwide attention and appreciation once again. With ease of business, credit facilities and marketing opportunities, the sector has again thrived and gained popularity. The major centres of handlooms weaving in present time are Benares, Machilipatnam, Kanchipuram, Nagpur, Salem, Hyderabad, Jaipur, Jodhpur, Kota, Gwalior, Indore, Madurai, Surat, Tanjore, Bhopal, Lucknow, Delhi, Murshidabad, Tiruchirappalli, Aurangabad, Baroda, Mehsana, Sambar, Amritsar, Ahmedabad, etc<sup>12</sup>.

### 3 Evolution of Handlooms

Handlooms have evolved from time to time, it has enriched itself with traditional craft and certainly improved with modernisation. The major processes involved are: raw material selection, spinning, dyeing of yarns, bobbin winding and warping, sizing of warp yarns, dressing and winding of warp yarns, weft yarn winding and weaving fabric in a handloom<sup>53</sup>. The

operations sequence is shown in Fig. 3. The techniques of spinning, bobbin winding, warping, yarn sizing, weaving and dyeing processes for handloom have been discussed hereunder.

#### *Spinning*

The origin of spinning wheel is controversial as some scholar's point out that spindle whorls were used in ancient times while others think that spinning wheel was well-known as uniform thread and tight weave could be made using it. Some scholars suggest the invention of the spinning wheel took place in India between 500 AD and 1000 AD, while other school of thought deny it and believe that it was invented in Islamic era in the early 11th Century. Historians Arnold Pacey and Irfan Habib refer to the prevalence of hand spinning with a spindle in ancient times rather than spinning wheel. According to them, the spinning wheel was brought to India from Iran and the first documented reference of spinning wheel can be traced back to 1350<sup>55,56</sup>.

The Charkha (Fig. 4a), the Great Wheel (Fig. 4b) or the Treadle Wheel (Fig. 4c) were developed with continuous improvement to the design and addition of features. Initially, the spindle was mounted horizontally so as to rotate it using a cord attached to the wheel. The necessary twist was provided by

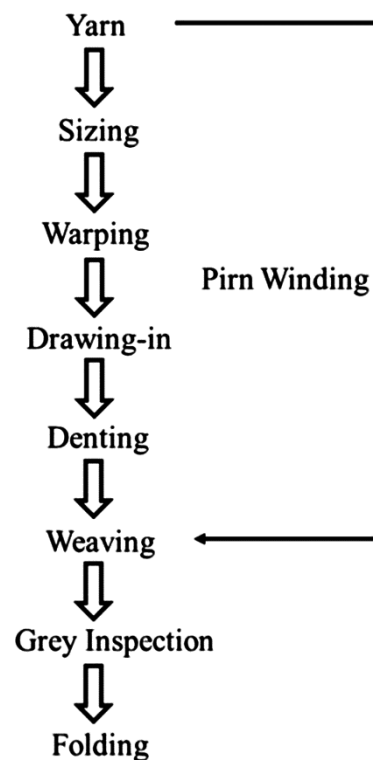


Fig. 3 — Sequence of operations in handloom<sup>54</sup>



holding the fibre at a slight angle to the spindle<sup>56</sup>. To spin short-staple fibres (cotton and wool), great wheel is generally used for fibre preparations which are suitable to long-draw spinning<sup>57</sup>. Later in 1533, treadle was added so that the spinner could rotate the spindle with one foot keeping both hands free to spin which is necessary in the short draw spinning technique. A treadle wheel with flyer helped in speeding up the production and was also known as the Saxony wheel and the flax wheel. Most modern wheels either single or double treadle employ a flyer-and-bobbin system which twists the yarn and winds it onto a spool simultaneously<sup>57,58</sup>. A more compact wheel is an upright wheel (Fig. 4d) with spindle or flyer is positioned above the wheel. Mechanization of spinning wheels in the early 19<sup>th</sup> century had enhanced its potential to spin a variety of yarns. Presently, electric spinning wheels or e-spinners (Fig. 4e) are power-driven by an electric motor rather than via a treadle and are small and portable<sup>56,59</sup>.

#### **Bobbin Winding**

It is mainly done by women and is carried out on an ordinary or improved charkha. This equipment is cheap, occupies less space, does not require electric

power and is easily available. The winding speed of the traditional model was 90 m/min. and that of the latter models was about 140 m/min. Subsequently, a mechanized bobbin winding was developed which consists of 28 - 56 spindles with average winding speed of 100 m/min average winding speed using 1hp motor. In this, consistent winding tension is ensured and winding charges gets reduced from Rs 6/kg (conventional charkha) to Rs 3/kg for the mechanised version. Although, some of its drawbacks are power consumption and require more space and investment<sup>13,60</sup>.

#### **Warping**

The winding process is followed by warping which involves transferring yarn from a predetermined number of tubes, cones or cheeses positioned on the creel onto a warper's beam. The warping operations are done on both vertical and horizontal sectional warping machines. In a day, a beam of 5600 ends and 500 m length can be made. The warp is organised in the form of ball or beam and the yarn for weft is transformed into pirns. The warping processes are similar in different centres with minor modifications. Horizontal mill warping is adopted for fine varieties

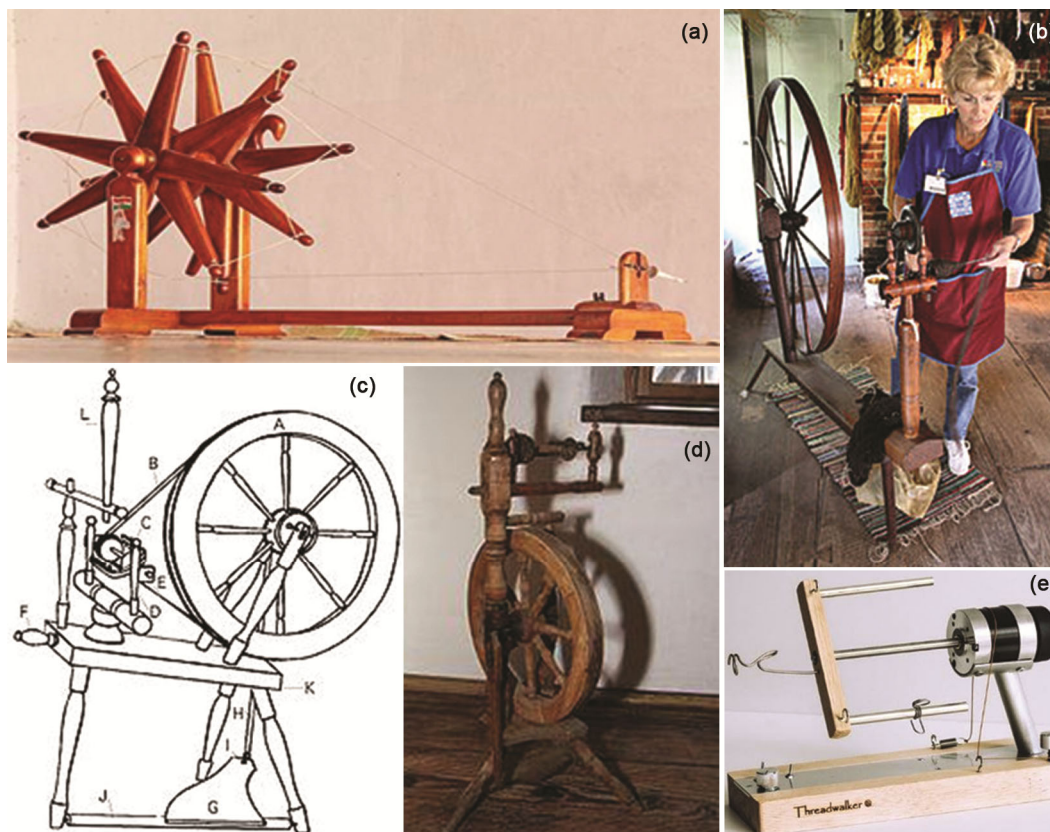


Fig. 4 — (a) Charkha, (b) great wheel, (c) treadle wheel, (d) upright wheel, and (e) electric spinning wheel<sup>56</sup>



and vertical mill warping is adopted for medium and coarse counts<sup>13,61</sup>.

#### *Yarn Sizing*

The traditional method of yarn sizing is performed by warping yarn of full beam length around two poles in a street and applying size paste manually which is known as 'street warping' and 'brush sizing'. Yarns are dried in ambient conditions and the size paste comprising natural adhesives, like wheat flour, maize/ rice/ potato starch, coconut or groundnut oil and rice gruel are commonly used in handloom sector. Ragi or tamarind kernel powder is also used as starch in some handloom centres. In finer counts, hank sized yarns are also used in some centres. Another common feature is slasher sized warp usage in Nagari and other centers. Japanese system based single thread sizing is suggested for sizing of zero twist yarn instead of traditional street sizing. Single thread sizing can be performed on winding machines by installing certain additional attachments<sup>13,62</sup>.

#### *Weaving*

Handloom weaving involves three steps, viz. shedding, picking and beating. The quality of products obtained by handlooms are said to be superior as compared to power looms due to proper sizing, lower speed of weaving and double reeds<sup>63</sup>. The operations of this industry are primarily carried out in households and involve the transfer of skills to the next generations. The tools used are made from wood, sometimes bamboo and does not require power, so it offers an eco-friendly way of fabric production. However, innovations and transformation according to the market needs are necessarily required. The process of weaving constitutes interlacement of two sets of threads, viz. warp and weft usually at right angles. The equipment which assists this is called the Loom<sup>64</sup>. The fabrics characteristics, loom structure and the processes followed to produce these fabrics vary according to geographical variations.

Traditionally, a simple wooden frame with warp was used as shown in Fig. 5a, followed by a body loom consisting of two beams over which the warp is stretched (Fig. 5b). This was followed by the use of a flat board loom in conjunction with a simple shuttle (Fig. 5c). Later, "Box loom" along with 'rigid heddles' (Fig. 5d), made of bone, wood or metal was introduced. This got transformed into a simple loom with heddles (either rigid or string made) along with

reed for keeping the warp equally spaced and for beating-up the work. Subsequently, a home-made frame loom (Fig. 5e) for rug weaving was developed<sup>65</sup>.

In prehistoric times, several types of looms were used at various places during different times such as free warp loom, warping loom, box-frame loom, warp weighted loom, horizontal and vertical warp loom, table loom, card and frame loom, bow loom, crossed stick loom, mat loom, hole-board loom, stand warp loom, back-strap loom etc. The ancient looms are predominantly simple in configuration and the weft being threaded by hand for interlacing the warp ends. These looms are portable and capable of producing a broad range of design and varieties that are really hard to imitate on modern looms. The primitive looms still exist in the Eastern zone as well as in tribal tracts of Madhya Pradesh, Orissa and Bihar<sup>13</sup>. A typical primitive loom called "Loin Loom" (Fig. 5f), also referred as Back Strap Loom, is used in North East India particularly, as it is cheap and portable<sup>64</sup>. Its advantage is that it offers unlimited scope for ingenious designing. It is used for weaving 'dhak bundas' of the Garo tribe, the 'blast' cloth of Tripura, the 'Phenok belt' and 'longham' of the Nagas and Vaishnava ladies of Manipur and the 'dance dresses' of Naga girls<sup>13</sup>.

A horizontal loom of throw-shuttle type in which the shuttle is thrown across the shed by hand was popular for simple weaving during medieval times. Later, cottage loom or table loom (Fig. 5g) which is heavier and sturdier was used to weave a variety of materials<sup>65</sup>. In 1733, John Kay of Bury, England, discovered a flying shuttle (Fig. 5h) which is a long, narrow canoe-shaped instrument, usually made of wood, which holds the bobbin. It speeded the process of weaving and almost doubled the production. It has all the advantages of the throw shuttle, except for, weaving intricate extra weft patterns<sup>64</sup>. Pit loom (Fig. 5i) is a fly shuttle loom which is set by sinking four posters into the ground and with an overhang slay. It provides better weaving results as the yarn works inside the pit with easy control of moisture<sup>73</sup>. The fabric produced using the pit loom is more breathable. The earliest reference to traditional pit looms was found in *Tuti-Nama* of Zia-al-Din Nakshabi in the 16th century. Fly shuttle pit loom is widely used in the country, except in Assam<sup>74</sup>. Some of the famous hand-woven fabric of India produced on Fly shuttle pit loom are 'brocades' of Varanasi, the 'Jamdanies' of



Fig. 5 — (a) Wooden frame with warp<sup>66</sup>, (b) body loom (“Shed Stick” method)<sup>65</sup>, (c) Home-made frame loom and shuttle<sup>65</sup>, (d) Box Loom (with rigid heddle lowered)<sup>65</sup>, (e) Home-made Frame Loom<sup>65</sup>, (f) loin loom<sup>67</sup>, (g) cottage loom<sup>68</sup>, (h) fly shuttle loom<sup>69</sup>, (i) pit loom<sup>70</sup>, (j) Jacquard loom<sup>71</sup> and (k) dobby loom<sup>72</sup>

Tanda, the 'Patola' sarees of Patan, and the 'Himroos' of Aurangabad. The fly shuttle pit loom is the most popular hand operated loom in the country is 3 or 4 times more productive compared to an ordinary throw shuttle loom. The 'uppada' loom, Venkatagiri loom, Salem loom, Madras handkerchief loom, Mau loom, Sandila loom and Nagpur loom are some of the typical examples of fly shuttle pit looms<sup>13</sup>.

Frame looms are also popular due to certain advantages. They can weave varieties of designs with more than two treadles and large-scale production is possible<sup>8</sup>. The pit looms are being replaced by improvised frame in parts of West Bengal, Assam and elsewhere in Eastern region. These looms are also popular in many parts of Kerala, Haryana, Tamil Nadu, Delhi and Punjab, where beautiful furnishings, bed sheets and made-up items are manufactured on a large scale. Frame looms are employed in Surat, Sholapur, Shantipur and Madurai for weaving fine count fabrics with extra warp and cross border designs, dress materials, striped and check materials, towels, crepe and furnishings<sup>13</sup>.

In the early 1800s, the Jacquard Machine (Fig 5j) was developed which used a punch card mechanism to operate the loom and could weave very complicated patterns. In 1785, Cartwright invented the first power loom which could operate from a

single point<sup>70</sup>. Around 1840, the dobby loom (Fig. 5k) was invented which is a shedding mechanism placed on the top of the loom in order to increase designing capacity and produce figured patterns by using a large number of healds<sup>54</sup>. These accessory mechanisms are used for the production of ornamental fabrics in the handloom industry. Multi-treadles are deployed for weaving twills, sateen, fancy shirting and suiting. The extra wrap design is created in sarees by using different kinds of dobbies. The most commonly used dobbies are barrel dobby, lattice dobby and single-lift single-cylinder dobby. Single-lift single-cylinder dobbies are manufactured in Benares, Mau, Panipat and Bombay. It is most widely used in handloom industry and resembles to jacquard<sup>13</sup>.

With the industrial revolution, the technological innovations in cloth production dramatically changed the role of the weaver, production and consumer preferences. One of the important advancements in looms was semi-automatic Chittaranjan looms. In this type of looms, the two important secondary motions, namely warp let-off and cloth take-up, were automated which resulted in better quality of fabrics, increased production rate and efficiency. Other typical examples of this type of loom are the Madanpura loom, the Hattersley pedal loom, and the Banarasi semi-automatic loom. The productivity of these looms

is considerably higher as compared to traditional looms but their versatility is limited<sup>13</sup>.

The current status of handlooms in India by type as reported by the fourth handloom census is provided in Table 1. The pit looms are exceedingly used for producing textiles followed by frame looms and Loin looms<sup>8</sup>.

The main driver identified in the present century for the growth of handloom industry in India is synthetic fabrics weaving. The handloom industry will have to develop its own suitable technology for weaving of synthetic fabrics. Currently, polyester and its blends are weaved on modified pit and frame loom<sup>13</sup>.

#### **Recommendations to Improve Handloom Technology**

In general, the efficiency of handloom weaving is around 30%, which is due to frequent stoppage of operation for adjusting let-off, take-up, heald shaft and temples. About 15-20% of loom efficiency is lost by warp breaks and change of shuttle<sup>13</sup>. The looms, such as pit, frame and semi-automatic handlooms could be customized by<sup>13</sup>:

(i) Smooth revolving take-up motion

The curl, folded and uneven selvages are generated due to rigid fixing of beam that results in restricted movement of wrap let-off while weaving. Spring, well and check straps are essentially used for restricting the shuttle movement in the box for getting fine selvages. Flanged beams and roller temples can also be used to avoid the mentioned defects. Five wheel or worm wheel type take-up motion is suggested for achieving uniform pick density on handlooms.

(ii) Rubber roller temples and proper healdes

(iii) A smooth sley race board covered with plush fabrics

(iv) Restraining sley movement to get uniform pick density

Wood/ leather restrainers are fixed at front post or

by fixing a stud on flywheel/ crank of semi-automatic, pedal and Chittaranjan looms for providing restricted and precise sley movement in forward direction. This will also require restricted and accurate movement of the sley in the forward direction.

(v) Cycle wheel charkha and winding machine are suggested for winding long and continuous lengths of yarn on bobbins and pirns. Drums warping and sectional warping machine can be introduced for improving the productivity of warping operations.

(vi) For polyester filament yarn warping, horizontal sectional warping machines are recommended for obtaining a compact beam with consistent tension throughout the length and width of beam.

#### **Dyeing**

Dyeing is a process of colouring a fibre or fabric by applying die on its surface. In the process, “scouring” to remove natural oils and dirt present in cotton after which natural or chemical dyes are used for coloring<sup>15</sup>. The dyeing of fibres was initially carried out using natural colours obtained from plants, flowers, cochineal or tree roots or any other organic substances<sup>75</sup>. Various techniques and colours developed in different parts of the world. It is known that the ancient Egyptians used spices, such as cumin, henna and saffron, to dye their fabrics, and Phoenicians were known to produce a purple dye from a sea snail called the spiny dye-murex<sup>76</sup>. In India, dyes such as Madder, Kermes, Alizarin, Tyrian purple, logwood and Indigo were used during ancient times. Apart from these, some commonly used dyes in India were Manjit, Safflower, Sappan wood, Red Saunders, Barberry wood & root (kāśmal), Turmeric, etc. Mineral dyes like *hirmāji* and *ramraj* were obtained by pounding the ochre hued clay and mixing it with water. Animal dyes, like lac, a red dye extract from the scale insect *Laccifer lacca* and Cochineal

Table 1 — Number of looms in weaver households<sup>8</sup>

Type of loom		Rural	Urban	Total
Pit Looms	Pit looms with dobby/ jacquard;	10,07,219	1,33,838	11,41,057
	Other pit looms	41.1.%	53.7%	42.2%
Frame looms	Frame looms with dobby/ jacquard;	7,81,604	70,379	8,51,983
	other frame looms	31.9%	28.2%	31.5%
Loin looms	Loin looms	3,86,514	17,588	4,04,102
		15.8%	7.1%	15.0%
Other	Other looms	2,76,342	27,596	3,03,938
		11.3%	11.1%	11.3%
Total		24,51,679	2,49,401	27,01,080

dye obtained from the insects *Coccus cacti* were also used<sup>76</sup>. The role of mordants in dyeing and production of different shades was familiarized in 18<sup>th</sup> and 19<sup>th</sup> century. Dyes having issue in fixing on fiber are generally fixed with the help of mordant. The commonly used mordants are natural as well as chemical in nature such as alum, myrobalan, iron compounds, common salt, saji, lime, lemon juice, vitriol, saltpetre, etc<sup>76, 77</sup>. Unique and special effects are introduced by tie and dye and Kalamkari processes<sup>13,78</sup>. In 1856 when William Henry Perkin, an English chemist accidentally discovered that the dye mauve could be created from aniline. This led to development of synthetic colours and modern dyeing techniques<sup>77</sup>.

The dyeing of fabrics in the handloom is invariably done using Fast colours. In principle, the fastness properties considered in textile industry are fastness of washing, fastness to light and rubbing. Application of fabric (dress materials, hangings, upholstery) determines the degree of colour fastness. The colour fastness property of handloom fabrics can withstand up to 40°C. Today, chemical or synthetic dyes are used for different fabrics<sup>13</sup>. Acid dyes are applied to fibres such as silk, wool, etc. using neutral to acid dye baths. Basic or Cationic Dyes which are coal-tar derivatives are used to color wool, silk, linen, hemp, etc., without the use of a mordant. Other dyes such as Reactive dyes, Azo-dyes, Nitro-dyes and Vat dyes are also frequently applied for dyeing<sup>79</sup>. However, the use of synthetic dyes has its own environmental impact which needs to be considered for sustainability of the handloom sector.

#### 4 Fabrics of India

Indian handlooms are known for their quality worldwide and play a vital role in the development of the Indian economy<sup>80</sup>. Some of the traditional fabrics from different states/ UTs of India are discussed below:

##### (i) *Andhra Pradesh—Kalamkari*

Born as a means of transcribing Hindu mythology in ancient times which was later patronised by Mughals. The word kalamkari is a Persian words with meaning 'qalam'-pen and 'Kari' - craftsmanship. It involves hand drawing or block printing fabrics with the traditional use of natural dyes. The Srikalahasti and Machilipatnam style are the two characteristics styles of kalamkari art in India.<sup>81</sup>

##### (ii) *Arunachal Pradesh—Apatani*

The Apa Tani or Tanii tribe situated in the Zora valley of the state weave their own textiles inscribed with nature-inspired geometric designs. The weaving technique of this tribe is more advanced than other tribes in the state. It is carried out on a semi-curved bamboo tube set which is indigenous in every household of this tribe<sup>82</sup>.

##### (iii) *Assam—Muga Silk*

Muga silk is prepared by Garo tribe of Assam, from a semi-domesticated multivoltine silkworm, *Antheraea assamensis* and has GI status. It is known for its golden bright hue and lustre which increases with every wash. This durable silk is woven using the jacquard technique to produce mekhela chador and sarees for women. The traditional motifs that are used on the fabric include Jappi (the typical Assamitopi), Miri Gos Butta (a pattern of miniature tree motifs) and kabutar (pigeons)<sup>83</sup>.

##### (iv) *Bihar—Bhagalpuri Silk*

It has superior quality with unique intricate artwork and is known as the 'Queen of all fabrics'. It is made from cocoons of Tussar (*Antheraea paphia*) silkworms. They are weaved into exotic and symbolic designs and motifs or leave it plain weave in its pure texture and feel. This artwork industry is considered to be one of the most ancient and traditional compared to the other fabrics and embroidered artworks<sup>84</sup>.

##### (v) *Chhattisgarh—Kosa Silk*

Preferred over pure silk in the state, it is obtained from wild silkworm *Antheraea mylitta* and is known for its sturdiness, dull golden brownish look and soft texture. Its production is a highly painstaking process and even more difficult due to the unavailability of rare silkworms. Champa and Korba in Chattisgarh are famous for producing high-quality fabrics<sup>85</sup>.

##### (vi) *Goa—Kunbi*

Produced by Kunbi tribe, believed to be the oldest in Goa. Kunbi saree is a cotton chequered fabric dyed in red and black with a length of 4-5 yards. It was originally worn by tribal women who worked in paddy fields, so its drape is quite simple and its length is just below the knee. With modernization, this saree has become almost extinct<sup>86</sup>.

##### (vii) *Gujarat—Bandhani*

Also known as Bandhej, it is a type of tie-dye textile exclusively carried out by the Khatri community of Kutch and Saurashtra. The earliest evidence of Bandhani dates back to Indus Valley

Civilization suggesting that dyeing was known to ancient inhabitants. The art of bandhana is a highly skilled process, generally performed on cotton and silk fabrics. The technique involves dyeing a fabric that is tied tightly at several points. The final products have their own specific meanings in different communities as well as each colour has its own significance. Traditionally, they can be classified into 'Khombhi', 'Ghar Chola', 'Chandrakhani', 'Shikari', 'Chowkidaar', 'Ambadaal' and other categories<sup>87,88</sup>.

(viii) *Haryana—Panja Durries*

Haryana exhibits a hefty handloom tradition, notably, Panipat is a major textile town in India famous for its rugs and upholstery fabric. Weavers use thick cotton threads called sooth in the local language as climatic conditions do not allow the use of fine threads in normal looms. Traditionally women would weave durries (rugs) and khes (thick coverlets) for household use<sup>89</sup>.

(ix) *Himachal Pradesh—Kullu Shawls*

With simple patterns and vibrant colors, wool weaving in Himachal is the result of extreme cold winters. Kullu shawls are mostly made of three types of wool viz merino wool, angora wool and local sheep wool. These shawls are designed for both men and women and are woven by tapestry technique of weaving, in which designs are created using different colored weft yarn of short lengths. These play a significant role in the economy of the valley and are one of the major income sources for the inhabitants<sup>90,91</sup>.

(x) *Jharkhand—Kuchai Silk*

Chiefly produced in the Seraikela-Kharsawan district in Jharkhand, this is obtained from an organic variant of wild silk popularly known as tussar. It has seen a spike in recent times and is now being appreciated in India and abroad<sup>92</sup>.

(xi) *Karnataka—Mysore Silk*

Sericulture was formally introduced in Mysore during the reign of Tipu Sultan. The raw materials are obtained from a single cocoon which goes to the weaving factory. The weaving process involves two kinds of looms - the dobby loom and the Jacquard loom. Since Mysore silk belongs to an era of ancient India, genuine silk and pure gold zari is done on it which gives it a natural sheen and rich texture<sup>93,94</sup>.

(xii) *Kerala—Kasavu*

The term kasavu refers to the zari (gold thread) used in the border of the Kerala saree and when it gets added to a mundu (dhoti), it's called a kasavu mundu. Kasavu sarees are crisp cotton cream or white in colour with golden borders that exude a sense of elegance and richness in its simplicity. The origin of the traditional sari has also been traced to ancient Buddhist literature wherein it is known as 'Sattika'<sup>95</sup>.

(xiii) *Madhya Pradesh—Chanderi*

This centuries old fabric is intricately hand woven producing finely textured silk and cotton fabrics embellished with zari, traditionally with coin, floral and peacock motifs. Different kinds of looms, such as pit, dobby and jacquard, are used for weaving. Due to their unique sheer texture, lightweight and intricate embroidery with gold and silver, they had patronage of the ruling class and even earned the name 'woven air'<sup>96,97</sup>.

(xiv) *Maharashtra—Paithani*

Named after the town Paithan near Aurangabad. Paithani is a rich fabric that employs pure silk threads and silver dipped zari, it is a brocade saree which is completely handcrafted with traditional tapestry technique. Paithani sarees are also known as 'Queen of Sarees'. Traditionally, motifs included parrots, peacocks and lotuses; later, during the Peshwa period, the Hans motif, the Ashraffi motif and the Asawalli were equally popular<sup>98,99</sup>.

(xv) *Manipur Phanek*

Mostly handwoven in either silk or cotton and made only with stripes or block colours, the Phanek is usually worn by women of the Meitei tribe as a partial sari with a blouse, accompanied by an upper cloth. This fabric is woven on a loin-loom that is a kind of back-strap loom used by natives of the hilly terrain. Phanek is a symbol of pride and power to the tribal women<sup>100</sup>.

(xvi) *Meghalaya—Eri Silk*

Made from cocoons of eri silkworm, it is popular as peace silk or 'Ahimsa', as it is processed without killing the silkworm. The ancient slow method of spinning silk with a spindle is predominantly practiced by weavers throughout the villages of Meghalaya. Eri is the most respected fabric of the local tribal people of Meghalaya<sup>101</sup>.

(xvii) *Mizoram—Puans (Loin Cloth)*

Woven by Mizo women, the traditional way of wearing puan is wrapping it around oneself from the



waist to the ankle. Earlier, cotton was used for weaving, now it has been slowly replaced by acrylic yarn for its durability and attractive finish. It is woven predominantly on a loin loom, but occasionally frame looms, zo looms and fly shuttles are also used. There are many kinds of Puans with each colour, motif and design having its own cultural significance<sup>102</sup>.

(xviii) *Nagaland—Naga Shawls*

Bright red and black in color, all 16 tribes of Nagaland have their unique warrior shawls. One of the common features of a Naga shawl is that three pieces are woven separately and stitched together with central stripe decorated more than the other two. The art of dyeing is noteworthy amongst the tribes and each tribe possesses one or more distinctive dyes<sup>103</sup>.

(xix) *Odisha—Sambalpuri Saree*

Associated with Bandhakala - the customary art of tie-dye- also known as Ikat, Sambalpuri saree is produced in the Bangarh, Sonapur, Sambalpur, Balangir and Boudh districts of Odisha. It has five unique variations viz Sonepuri, Bomkai, Bapta, Barpali and Pasapali sarees. These utilise traditional themes such as Sankha or shell, phula or flower, and chakra or wheel, swans, fish<sup>104</sup>.

(xx) *Punjab—Phulkari*

Phulkari which means 'floral work' was brought to the Indian subcontinent by the migrant Jat people of Central Asia in ancient times. The weaving, dyeing, and embroidery works of 'Phulkari' are done randomly within house premises. Different varieties of Phulkari are Bagh, Chohe, Vari-da-Bagh, Thirma, Darshan Dwar, Sainchi and Bawan Bagh. Interestingly, a heavy phulkari work dupatta can cost almost as much as a Banarasi silk saree<sup>105,106</sup>.

(xxi) *Rajasthan—Kota Doria*

Light woven fabric made of pure cotton and silk with tiny woven squares (*khat*) on it comes under this category. With GI status, this finely weaved light weight fabric has three different styles viz Kota doria-basic, block printing and with zari border. It has the same strength as cotton and the same mesmerising lustre and softness as silk. The Ansari' community of the Hadauti region largely practices this craft apart from several other villages in southern Rajasthan like Bundi and Baran districts<sup>107,108</sup>.

(xxii) *Sikkim—Lepcha*

These are traditionally woven on back-strap loin loom predominantly by women of the Lepcha

community. Earlier the yarn made of nettle plant fibres was used which is replaced by cotton, wool and acrylic nowadays. The traditional Lepcha fabric is characterized by intricate and colourful motifs arranged in a vertical striped pattern<sup>109,110</sup>.

(xxiii) *Tamil Nadu—Kanjeevaram Silk*

These are woven from pure mulberry silk by Korvai method of weaving in which different colored yarn for body and border are interlinked. It was during the reign of Krishna Devaraya (from the Vijayanagara Empire) that the art really took off. Known for its vibrant colours and eye-catching designs of thick zari, weavers weave pallu, saree and border separately and then join them together<sup>111</sup>.

(xxiv) *Telangana—Pochampally Ikat*

Originating from Bhoodan Pochampally in the Nalgona District of Telangana, these have traditional geometric patterns in Ikat style of dyeing. Globally known as double ikat textiles, it has found its place in UNESCO's tentative list of world heritage sites as part of "iconic saree weaving clusters of India". Its kerchiefs have earned international recognition as "Teli Rumals"<sup>112,113</sup>.

(xxv) *Tripura—Pachra*

Woven on loin loom and worn by women as bottom wear which extends just below the knee, it has colorful stripes and intricate embroidery. It is usually worn with risa, a short cloth to cover the upper body<sup>15</sup>.

(xxvi) *Uttar Pradesh—Chikankari*

Traditional embroidery style from Lucknow, Chikankari is believed to be introduced by Nur Jehan, wife of Mughal Emperor Jahangir. It started as white-on-white embroidery on muslin fabric with a simple design and rich look. It had strong influence of Persian aesthetics as this led to floral adornment on fabrics. It is done with coloured threads on other fabrics like silk, chiffon, georgette and art silks as well nowadays<sup>114,115</sup>.

(xxvii) *Uttarakhand—Panchachuli Weave*

Panchachuli Tibetan women weavers use sheep and merino wool, in addition to pashmina and silk. Their source of income depends on the sale of high-quality woolen products like stoles, shawls, wraps, sweaters and other garments; this has provided them economic and social independence. The Panchachuli Women Weavers cooperative has helped them gain visibility worldwide and in promoting this traditional art of weaving and knitting<sup>116</sup>.

(xxviii) *West Bengal—Santipore Saree*

This is famous for its elegant designs inspired from nature and especially known for its superfine dhoti and handloom saree with jacquard design. They generally use 'fly shuttle' frame looms filled with jacquard invariably used in Shantipur. Awarded with GI tag, *Do-Rookha technique* is used to weave a double-sided design, the front and the reverse side of the saree looks exactly the same<sup>117</sup>.

(xxix) *Jammu and Kashmir—Pashmina*

This is made from fine cashmere wool of either a Changthangi goat or a Pashmina goat indigenous to Kashmir in India and some parts of Nepal. The word 'Pashmina' comes from the Persian word 'Pashmineh' which means 'made from Pashm', and Pash means wool in Persian. The Changpa tribe, from the Changthang region are known to be the traditional producers of Pashmina Wool in the Ladakh region. They are known worldwide for their softness and warmth and are one of the costliest fabrics<sup>15,118</sup>.

Some of these fabrics have been accorded with Geographical Indication tags to convey an assurance of quality and distinctiveness which is essentially attributable to its origin. The following table (Table 2) provides various handlooms which have been attributed with GI status in the category 'Handicraft'<sup>80</sup>.

### 5 Indian Handloom Sector-- Challenges and Policy Measures

The handloom industry faces many challenges despite having several advantages. The government has launched numerous schemes for holistic development of the sector, but scrutiny of the needs of the weavers need to be done. The following aspects are stifling the growth of the handloom sector and impacting its sustainability should be dealt with greater attention<sup>119-121</sup>. Some challenges and policy measures are given below:

(a) The handloom industry is largely decentralised or fragmented which hampers the ability to scale up production due to involvement of a number of intermediaries.

(b) Unreliability of availability of cotton or other raw materials causes sharp fluctuation in prices of yarn. Also inaccessibility to raw materials such as yarn, dyes and dyestuffs in rural and semi-rural areas causes trouble to the weavers. The industry is highly

Table 2 — Handlooms attributed with GI

State/UT	GI (Handicrafts)
Andhra Pradesh	<ul style="list-style-type: none"> <li>● Srikalahasthi kalamkari</li> <li>● Machilipatnam kalamkari</li> <li>● Uppada jamdani sarees</li> <li>● Venkatagiri sarees</li> <li>● Mangalagiri sarees and fabrics</li> <li>● Dharmavaram handloom pattu sarees and paavadas</li> </ul>
Arunachal Pradesh	Idu mishmi textiles
Assam	Muga silk
Bihar	Bhagalpuri silk
Chattisgarh	Kosa silk (champa silk saree and fabrics )
Gujarat:	<ul style="list-style-type: none"> <li>● Jamnagar bandhani</li> <li>● Rajkot patola</li> <li>● Tangaliya shawl</li> <li>● Kachchh shawls</li> <li>● Patan patola</li> </ul>
Himachal Pradesh	<ul style="list-style-type: none"> <li>● Kullu shawl</li> <li>● Kinnauri Shawl</li> </ul>
Karnataka:	<ul style="list-style-type: none"> <li>● Guledgudd khana</li> <li>● Navalgund durries</li> <li>● Ilkal sarees</li> <li>● Molakalmuru sarees</li> <li>● Mysore silk</li> <li>● Udupi sarees</li> </ul>
Kerala	<ul style="list-style-type: none"> <li>● Cannanore home furnishings</li> <li>● Balaramapuram sarees and fine cotton fabrics</li> <li>● Kasaragod sarees</li> <li>● Kuthampully sarees</li> <li>● Chendamangalam dhoties &amp; set mundu</li> <li>● Kuthampully dhoties &amp; set mundu</li> </ul>
Madhya Pradesh	<ul style="list-style-type: none"> <li>● Chanderi sarees</li> <li>● Maheshwar sarees &amp; fabrics</li> </ul>
Maharashtra	<ul style="list-style-type: none"> <li>● Solapur chaddar</li> <li>● Paithani sarees and fabrics</li> <li>● Solapur terry towel</li> <li>● Karvath kati tussar sarees and fabrics</li> </ul>
Manipur:	<ul style="list-style-type: none"> <li>● Shaphee lanphee</li> <li>● Wangkhei phee</li> <li>● Moirang phee</li> </ul>
Nagaland	Chakhesang shawls
Odisha	<ul style="list-style-type: none"> <li>● Kotpad handloom fabric</li> <li>● Orissaikat</li> <li>● Khandua saree and fabrics</li> <li>● Gopalpur tussar fabrics</li> <li>● Dhalapathar parda &amp; fabrics</li> <li>● Sambalpur bandha saree &amp; fabrics</li> <li>● Bomkai saree &amp; fabrics</li> <li>● Habaspuri saree &amp; fabrics</li> <li>● Berhampur patta (phoda kumbha) saree &amp; joda</li> </ul>

(Contd.)

Table 2 — Handlooms attributed with GI (*Contd.*)

State/UT	GI (Handicrafts)
Rajasthan	Kota doria
Tamil Nadu	<ul style="list-style-type: none"> <li>● Kancheepuram silk</li> <li>● Bhavani jamakkalam</li> <li>● Madurai sungudi</li> <li>● Arani silk</li> <li>● Kovai kora cotton sarees</li> <li>● Salem silk known as salem venpattu</li> <li>● Salem fabric</li> </ul>
Telangana	<ul style="list-style-type: none"> <li>● Pochampally ikat</li> <li>● Gadwal sarees</li> <li>● Siddipet gollabama</li> <li>● Narayanpet handloom sarees</li> <li>● Warangal durries</li> </ul>
Uttar Pradesh	<ul style="list-style-type: none"> <li>● Agra durrie</li> <li>● Banaras brocades and sarees</li> <li>● Mirzapur handmade dari</li> </ul>
West Bengal	<ul style="list-style-type: none"> <li>● Santipore saree</li> <li>● Baluchari saree</li> <li>● Dhaniakhali saree</li> </ul>
Jammu and Kashmir	<ul style="list-style-type: none"> <li>● Kashmir pashmina</li> <li>● Kani shawl</li> </ul>

dependent on cotton which sometimes undergoes shortage domestically, leading to fluctuation in prices. The volatility in cotton price creates complicated situation and directly impact weaver's profit.

(c) Use of traditional methods of weaving leads to lower production, and labour intensive methods result in higher prices of the product. With adoption of technology, the sector has shown considerable growth. However, most of the technology is outdated rendering manufacturers less competitive than their counterparts in China, Korea and Taiwan.

(d) Investment in the handloom sector so far has been limited to the input requirements. Infrastructure and logistics required for export industries is poor, resulting in delays and higher costs. Lower investment in sectoral growth has led to stagnation of the sector.

(e) Lack of sufficient skilled labor and younger generations refraining from working in the handloom industry is another point of concern. Low wages, inconvenient working conditions, and scanty and irregular sales have resulted in reduction in the number of weavers.

(f) There is increased competition between powerloom and mill sector, as it provides a high volume of production of a variety of quality synthetic

and cotton textile products in less time and cheaper rates. A very limited section of society can afford to buy these, as they are highly priced. As a result, fabrics woven in power looms enjoy a competitive advantage over handlooms.

(g) Problem of working capital and lack of credit availability puts a burden on small producers. Low penetration of banking services in rural areas leads weavers to debt trap, as they have to pay high interest rates to money lenders.

(h) Limited endeavour to promote handlooms has been a major setback. Marketing issues such as lack of awareness on customer preferences resulted in little innovation so far. The designs made by the weavers are outdated, unappealing and sometimes fail to satisfy the customer. There is utmost need to market handlooms for their artistry and exclusiveness and critically understand the market needs and innovate accordingly.

(i) Weavers are unaware about various schemes implemented by the government for holistic development of the handloom sector. Information dissemination, accurate database collection and effective implementation of the policies are of utmost importance for betterment of the weavers and development of the sector.

(j) The handloom sector has been largely ignored by research institutes which can help in creating innovative patterns and creative designs. Moreover, weavers are incompetent in marketing, computer literacy, market information and exports, so need of the hour is providing them proper training for upgradation of skills and successful outcome.

According to the fourth handloom census, the most concerning aspects for the weavers are unavailability of raw materials and credit, followed by design support and technical training (Fig. 6)<sup>8</sup>.

In its endeavour to save and develop the handloom sector and India's vision of Atma Nirbhar Bharat, Government of India has strengthened the schemes for the welfare of the weavers associated with handloom sector<sup>12,122,123</sup>. Some of the schemes have been remodelled based on the brainstorming on the challenges of the sector. Financial assistance under these schemes is provided for all the diverse needs of weavers, encompassing procurement of raw materials, infrastructure development, product diversification, design innovation, purchase of looms and accessories, marketing of handloom products, skill upgradation, lighting units, and loan at concessional rates. These schemes are briefly discussed below:

**National Handloom Development Programme (NHDP)**

The program is to provide logistical support, design inputs, technology upgradation, marketing support, etc. The key components of the program are:

**(i) Block Level Cluster (BLC) programme**

Started in 2015-16, this programme will give a monetary aid for an amount of upto Rs. 2 crore per BLC programme for many key mediations, such as design development, skill and product enhancement, Hathkargha Samvardhan, project management, setting up of common facility centre (CFC), construction of workshed, etc. Besides, monetary aid for an amount of upto Rs. 50 lakh also is given to set up one dye house at the district level. The state governments are required to recommend all these proposals.

**(ii) Handloom Marketing Assistance**

It provides a platform to market and sell the products made by the weavers/handloom agencies directly to the consumers. Monetary aid is given to eligible weavers/handloom agencies and States to organize marketing events worldwide.

**(iii) Weaver MUDRA Scheme**

In this, credit at a subsidized rate of interest of 6% is given to the handloom weavers and margin money has also been increased from Rs. 4500 to an extent of 10,000 per weaver with a guarantee for 3 years. This entire MUDRA Portal has been developed in consumption with Punjab National Bank (PNB), so as to avoid any delay in documentation or disbursement of funds.

**(iv) Hathkargha Samvardhan Sahayata**

Under Hathkargha Samvardhan Sahayata (HSS), monetary aid is given to weavers for purchasing loom/accessories to increase their potential earnings

by improving the productivity and quality of products. The Indian Government will contribute 90% of the cost of loom/accessory and only 10% has to be borne by the beneficiary.

**(v) Education of Handloom Weavers and their Families**

The Textile Ministry, IGNOU (Indira Gandhi National Open University) and NIOS (National Institute of Open Schooling) have signed a MoU to safeguard educational facilities for weavers and their families. NIOS provides secondary and senior secondary education with specialization in design, marketing, business development, etc. through distance learning mode. IGNOU will offer continuous education programme in sync with the future aspirations of weavers and their families. The admission fees of 75% towards these courses will be reimbursed to SC, ST, BPL, and women learners.

**(vi) "India Handloom" Brand**

First National Handloom Day was celebrated on 7th August 2015 and a Brand - 'India Handloom' was launched with a motive to brand a superior quality of handloom products with no defect or any effect to the environment. This initiative will also help to build trust of customers by endorsing the quality, like raw materials, embellishments, weaving designs, processing and other stringent checks along with environmental compliance.

**(vii) E-Commerce**

In order to promote online marketing of handloom product, a policy has been framed wherein any willing online platform having an impeccable track record can promote these handloom products. 23 e-commerce companies have engaged to market the handloom products online with a cumulative sale of Rs. 110.46 crore reported.

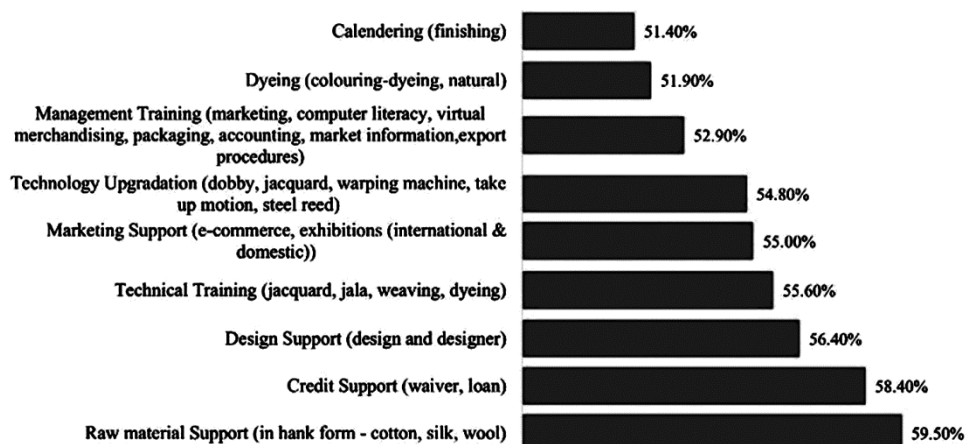


Fig. 6 — Nature of support needed by weaver households (in %; base = 25,45,312)<sup>8</sup>

*(viii) Elimination of Middlemen/Agencies*

Urban Haats (39 sanctioned as of now) have been set up in big towns/ cities for direct marketing of these handloom products made by the craftsmen/weavers.

***Comprehensive Handloom Cluster Development Scheme (CHCDS)***

The scheme has targeted development of Mega Handloom Clusters, thereby identifying prominent geographical location and will cover a minimum of 15,000 handlooms; the Government of India will contribute upto Rs. 40 crore per cluster in a period of 05 years. The contribution will include funds for raw materials; diagnostic study, etc. As fully funded by the Indian Government and lighting units, any upgradation of technology of looms/accessories will get 90% funding from Indian Government. Some other components like infrastructure (design studio/marketing complex/garment units), export assistance, publicity, etc will get 80% funding from the Government of India (GoI).

***Handloom Weavers' Comprehensive Welfare Scheme (HWCWS)***

This scheme will provide an insurance coverage towards any life, accidental and disability under the Pradhan Mantri Jivan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY) and Converged Mahatma Gandhi Bunkar Bima Yojana (MGBBY). The main features of the schemes are:

- Weavers in the age group of 18 -50 will be covered under PMJJBY and PMSBY
- Weavers in the age group of 51-59, who enrolled into MGBBY, will be covered under converged MGBBY.
- A scholarship will be paid to the maximum of two children of the weavers for those enrolled between 9th and 12th standard. The amount of scholarship is Rs.100 per month per child and will be paid through the National Scholarship Portal (NSP)

***Yarn Supply Scheme (YSS)***

This scheme has been implemented across the country to ensure that all types of yarn are available at Mill Gate Price. The scheme has been implemented in association with National Handloom Development Corporation. The freight is reimbursed and depot handling/operating charges @2% are provided to depot operating agencies under this scheme. A 10%

price subsidy is also available on hank yarn, i.e. cotton, domestic silk, wool and linen yarn with a cap on quantity. The three components are: (i) supply of yarn at mill gate price (ii) 10% price subsidy on cotton hank yarn, domestic silk and wool and (iii) investment in National Handloom Development Corporation.

**6 Conclusion**

From time immemorial it has been seen that civilization and handloom have progressed together. There is enough archeological evidence and textual references in ancient scripture and travelogues showing that in India, this sector transformed steadily and developed to reach high aesthetic and cultural values. Moreover, it was a major contributor to the Indian economy since ancient times, flourishing foreign trade, industrialization of economy (at the time, when majority of habitat was still pastoral and not even settled), and growth of innumerable wealthy cities from north to south and east to west owe it all to the growth of textile (handloom) sector. Vivid mention of handloom equipment, special groups involved in specific activities, and India's unparalleled quality of textiles, cotton, silk, linen and muslin fabric all are testimony to continuous technological development in the Indian handloom sector. Despite the loot and plunder of invaders, one of the reasons for the continued flourishing of the Indian economy during the medieval time may be the unhindered growth and development of the textile sector. Fusion of technology of India and Central Asia took the Indian handloom sector to new heights. Britishers also realised that the handloom sector was the backbone of Indian Industries & economy and they attacked on handloom to destroy India's industrial economy. Therefore, the downfall of Indian industry and economy in the 18th and 19<sup>th</sup> century matches with the decline of the handloom sector. However, the social and cultural significance of the handloom was such that Indian leaders adopted Khadi as a tool for India's freedom struggle and spinning and weaving were considered as symbols of self-reliance. For a long time "Charkha" remained on the flag of Indian National Congress. Mahatma Gandhi himself improvised the design and techniques of existing Charkhas and symbolised this development with technological and economic progress of the country. Post-independence, all the governments recognised the importance of the handloom sector for the Indian economy and provided consistent support



and assistance for the growth, development and sustenance of the sector. However, the sector which employs the largest manpower is still plagued with several challenges. Most of the organized interventions from the Government is on the side of input availability, credit, and marketing, while the majority of technological issues remain unaddressed. Technological issues of all stages of manufacturing starting from ginning and carding to dyeing need to be identified and addressed upon. Though there has been some technological development in techniques of spinning, weaving and dyeing, pre-processing operations are mostly ignored and need improvement. Some of the technical challenges like environmental pollution are very new and aggravated further due to the decentralised nature of the sector. In India, the uniqueness of the variety of handloom fabric is due to the difference in raw materials, environmental factors, cultural aspects, and speciality of manufacturing process. Therefore, many times technological solutions also have to be unique. The major workforce in the sector (mostly unorganised) are women, so understanding their needs and development of tools suitable to their physiology and psychology is also of utmost importance. This sector is vital in terms of employment generation, the clarion call of Atmanirbhar Bharat can be accomplished by revamping the handloom sector with concerted efforts towards proper implementation of schemes, skill development, technology development, better marketing opportunities, capacity building and innovation. The future of India's power and economy will be determined by the success of its handlooms.

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