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TEXTILE INDUSTRY: MOVING BEYOND THE CONVENTIONAL PARADIGMS

14<sup>TH</sup> MARCH 2018 | HOTEL ITC MARATHA, MUMBAI, INDIA

*Knowledge Paper*

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# POLICY SUPPORT REQUIRED TO ACHIEVE US\$ 300 BILLION MARKET



## Present Scenario of Indian Textile Sector

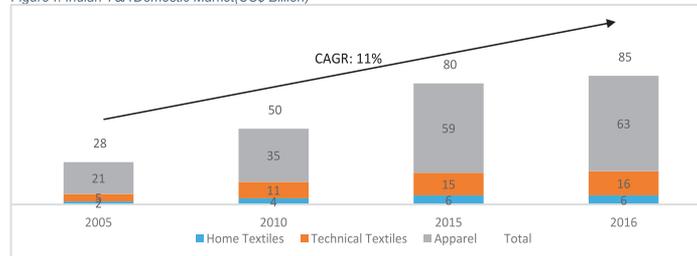
Textile and apparel sector plays a very important role in the Indian economy. India is the second largest exporter of textile and apparel goods with a global share of approx. 5%. This sector accounts for about 12% of the total exports earnings of the country and provides direct employment to 52 million people and indirect employment to an additional 69 million people.

Raw material availability is one of the key strengths of Indian textile sector. India is the largest producer and second largest consumer and exporter of Cotton; largest producer and second largest exporter of Jute; and second largest producer of Silk. India has a large pool of manpower which is advantageous since textile and apparel is a labour intensive sector. Textile and apparel manufacturing set-up in India is second largest in the world that spans the entire value chain – from fibre to finished goods. All these factors have led to India become one of the leading producer and exporter of textile and apparel in the world.

## Domestic Market Scenario

Indian domestic textile and apparel market is estimated at US\$ 85 billion (2016) with apparel constituting approx. 74% share at a market value of US\$ 63 billion. This is followed by technical textiles with a share of 19% and home textiles with a share of 7% respectively.

Figure 1: Indian T&A Domestic Market(US\$ Billion)

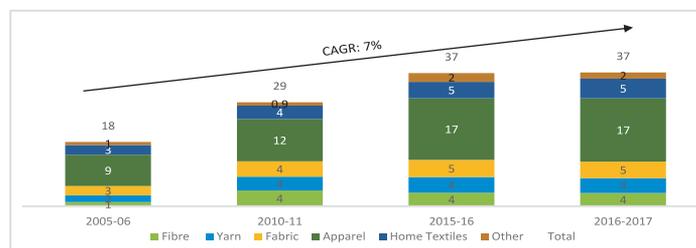


Source: Ministry of Textiles and Wazir Analysis

## Export Market

India's textile and apparel exports were US\$ 37 billion in 2016. India's exports have grown at 7% CAGR since 2005. Category-wise, apparel exports contributes to majority of exports from India with a share of 48%. This is followed by home textiles with a share of 14%, fabric with a share of 12% and yarn with a share of 11% respectively.

Figure 2: Indian T&A Exports (US\$Billion)



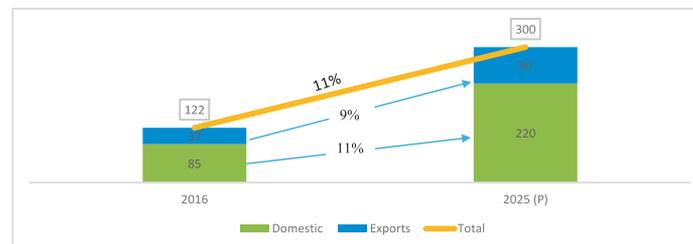
Data Source: DGC&S and Wazir Analysis

### Target for 2025

The Indian textile industry has strength across the entire value chain from natural to man-made fiber to apparel to home furnishings. However, India’s export performance has been below expectations. Its share in the global trade is 5% while share of China is approx. 38%. Countries like Bangladesh and Vietnam are catching up very fast and have shown remarkable success. Over the years, Vietnam could achieve a peak export growth rate of 30% while Bangladesh could achieve a growth rate of 18%.

Through policy measure by the Government in partnership with the industry, India could achieve US\$ 80 billion textile and apparel exports by 2025 at a CAGR of 9%. The domestic market is expected to grow at a CAGR of 11% to reach US\$ 220 bn by 2025.

Figure 3: Indian T&A Market Projections (Values in US\$ Billion)



Source: Wazir Estimates

### Government Support

Various schemes like Technological Up gradation Fund Scheme (TUFS), Scheme for Integrated Textile Parks (SITP), cluster development and others have been launched for promoting investments in the textile industry, upgrading technology and setting up integrated manufacturing set ups. Apart from this, support is provided to the industry through export promotion schemes / incentives like Merchandise Exports from India Scheme (MEIS), Market Development Assistance (MDA), Duty drawback etc.

Table 1: Central Government Schemes for Textile Sector

| Scheme / Policy                                   | Key Features   |
|---|--|
| <b>ATUFS</b>                                      | <ul style="list-style-type: none"> <li>15% capital subsidy on eligible machinery in garmenting and technical textile sector with a cap of Rs. 30 Cr. per individual entity. Additional incentive of 10% for the installation of benchmarked eligible machinery total cap of Rs. 50 crores (Rs. 30 crores for 15% CIS and Rs. 20 crores for additional 10% CIS)</li> <li>10% capital subsidy on eligible machinery in weaving for brand new shuttle less looms (including weaving preparatory and knitting), processing, jute, silk and handloom sector with a cap of Rs. 20 Cr. per individual entity</li> <li>15% capital subsidy on eligible machinery for composite units with a cap of Rs. 30 Cr. per individual entity (*if the eligible capital investment in respect of garmenting and technical textiles is more than 50% of the project cost)</li> <li>10% capital subsidy on eligible machinery for composite units with a cap of Rs. 20 Cr. per individual entity (*if the eligible capital investment in respect of garmenting and technical textiles is less than 50% of the project cost)</li> </ul> |
| <b>Scheme for Integrated Textile Parks (SITP)</b> | <ul style="list-style-type: none"> <li>Grant/Equity up to 40% of the textile park development project cost subject to a ceiling of Rs. 40 Crores.</li> <li>GOI support under the Scheme will be generally in the form of grant to the SPV unless specifically decided by the PAC to be equity. However,</li> </ul>   |

| Scheme / Policy                                   | Key Features  |
|---|---|
|   | <p>the combined equity stake of GOI/State Government/State Industrial Development Corporation, if any, would not exceed 49%.</p> <ul style="list-style-type: none"> <li>Grant at 90% of the project cost subject to a ceiling of Rs. 40 Crores for first two projects in the States of North East Region of India.</li> </ul> |
| <b>Integrated Skill Development Scheme (ISDS)</b> | <ul style="list-style-type: none"> <li>Assistance up to 75% of the cost of the project, within an overall ceiling of Rs. 10,000 per trainee.</li> </ul>   |

| Scheme / Policy  | Key Features   |
|--|--|
| <b>Integrated Processing Development Scheme (IPDS)</b> | <ul style="list-style-type: none"> <li>Grant up to 50% of the project cost (excluding land cost) with a ceiling of Rs. 75 Crores for projects with Zero Liquid Discharge Systems and Rs. 10 Crores for projects with conventional treatment systems. Support for marine discharge projects would be analysed on a case to case basis with a maximum ceiling of Rs. 75 Crores.</li> <li>The project cost shall be borne by the Center, State, Beneficiary, Bank loan in the ratio of 50:25:15:10 respectively.</li> </ul> |
| <b>Merchandize Exports from India Scheme (MEIS)</b>    | <p>Rewards for export of products shall be payable as percentage of realized FOB value:</p> <ul style="list-style-type: none"> <li>For handloom, jute and coir based products - reward rate is 5% for all countries</li> <li>For all other eligible textile categories, the reward rate is 2% and for apparel, it is 4%</li> </ul>   |
| <b>Duty Drawback</b>                                   | <p>Drawback rates for key textile and apparel categories:</p> <ul style="list-style-type: none"> <li>Cotton yarn: 1% to 1.2%</li> <li>Cotton fabric: 1.3% to 1.6%</li> <li>Apparel: 2-2.5%</li> </ul>  |
| <b>Rebate on State Levies (ROSL) Scheme</b>            | <p>Provision of remission of State Levies on export of garments. The amount will be calculated on the F.O.B value The ROSL rate for apparels is- 1.4% to 1.7%</p>  |
| <b>Market Development Assistance (MDA)</b>             | <p>Financial support to exporters for conducting export promotion activities abroad</p>  |
| <b>Market Access Initiative (MAI)</b>                  | <p>Financial assistance for carrying out marketing projects abroad</p>   |

Apart from Central Government schemes, several State Governments have also launched their textile policies under which several incentives are provided for investments in textile sector. The state level support for textiles sector is given in table below:

Table 2: State Textile Policies

|  | Andhra Pradesh   | Gujarat  | Jharkhand  |
|--|--|--|--|
| <b>Capital Subsidy</b>                       | 20% of fixed assets for apparel upto ₹3-6 crores [10%, up to ₹10 crores for mega projects (> ₹125 crore investment)]   |  | 20% of fixed assets (Addn. 5% for SC/ST/Women/Handicapped domicile entrepreneurs) upto ₹50 crores  |
| <b>Interest Subsidy</b>                      | 7.5% for spinning & ginning and 8% for others for 7 years (Including 2 years moratorium)   | 7% for spinning, 6% for technical textiles & 5% for others for 5 years upto ₹7.5 crore/year for apparel  | 7% or 50% of interest rate, whichever is lower for 5 years upto ₹1 crore   |
| <b>Wage Subsidy</b>                          |  | ₹3,200 /month /worker (₹4,000 for women worker) (only apparel) for 5 years   | ₹5,000/month/worker (₹6,000 for women/SC/ST worker) for 7 years  |
| <b>ESI/ EPF Subsidy</b>                      |  |  | ₹1,000/month/worker for 5 years  |
| <b>Training Subsidy</b>                      |  |  | Actual cost up to ₹13,000 per person for domicile workers  |
| <b>Stamp Duty</b>                            |  |  | 100% reimbursement   |
| <b>Dormitory</b>                             |  | 50% of project cost @50 sq. ft. per person Also there is a provision for industry to rent out dormitories which GIDC will develop at select locations upto ₹5 crores                             | 50% of land cost (1 acre for 1000 workers) upto ₹50 lakhs  |
| <b>Power Subsidy</b>                         | ₹1/unit for spinning & ginning and to ₹1.5/unit for others for 5 years   | ₹1/unit for 5 years  | 50% tariff reimbursement for 7 years   |
| <b>Electricity Duty</b>                      |  |  |  |
| <b>Industrial Park / Cluster Development</b> | 50% of expenditure on common infrastructure up to 10% of project cost or ₹15 crores (₹30 crores for composite park)<br><br>For CETP - 50% of project cost up to ₹10 crores (80% up to ₹2 crore for handloom)<br><br>100% exemption for textile and apparel parks | 50% of project cost up to ₹10 crores (₹30 crores for spinning)<br><br>100% exemption for textile and apparel park developers<br><br>100% exemption for first time entrepreneurs in apparel parks | For mega parks (>75 acres) 50% of project cost up to ₹40 crores<br><br>For parks under SITP, addn. 10% of project cost up to ₹10 crores<br><br>50% stamp duty reimbursement<br><br>For cluster development - grant of 15% of grant released by Gol |
| <b>Plug &amp; Play set-up</b>                |  | To be developed by GIDC in key areas and leased out to industry  |  |

|  | Karnataka   |      |  | Madhya Pradesh   |   | Maharashtra  |
|--|---|------|--|--|---|--|
|  | Investment size   | MSME | ₹10-25 crores  | ₹26-50 crores  | ₹51-99 crores   |  |
| <b>Capital Subsidy</b>                       | Zone 1 <sup>1</sup>   | 20%  | 20% upto ₹3 crores (₹4 crores for HK region districts) | 20% upto ₹6 crores (₹8 crores for HK region districts) | 20% upto ₹12 crores for HK region districts)            | 10% of plant and machinery up to ₹1 crore<br><br>Investment incentive of up to 40% of plant and machinery investment (subject to certain minimum level of utilization), payable over a period of 7 years with a net cap of ₹150 crores.<br><br>Additional incentive of up to 80% of the annual incentive can be availed based on exports and employment generated. |
|  | Zone 2 <sup>2</sup>   | 15%  | 15% upto ₹2 crores (₹3 crores for HK region districts) | 15% upto ₹3 crores (₹6 crores for HK region districts) | 15% upto ₹5 crores (₹10 crores for HK region districts) |  |
|  | Mega , ultra mega and super mega projects will be given a basket of incentives in form of capital subsidy/interest subsidy/reimbursement of state taxes/ESI and EPF/stamp duty/ETP and power subsidy  |      |  |  |   |  |
| <b>Interest Subsidy</b>                      |   |      |  |  |   | 2% to 7% for 5 years upto ₹5 crore depending on investment   |
| <b>ESI/ EPF Subsidy</b>                      | 100% reimbursement for first 3 years, 50% for following 2 years for investment up to ₹99 crores with a cap of 10% of fixed assets   |      |  |  |   |  |
| <b>Stamp Duty</b>                            | 100% exemption for zone 1 and 50% exemption for zone 2  |      |  |  |   |  |
| <b>Power Subsidy</b>                         | ₹1 /unit for 5 years  |      |  |  |   |  |
| <b>Industrial Park / Cluster Development</b> | Greenfield parks (approved by central govt.)<br>40% of project cost (up to ₹20 crores in Zone 1) and 20% of project cost (up to ₹15 crores in Zone 2)<br>10% of project cost up to ₹10 crores<br>Brownfield Cluster: 40% of the project cost (up to ₹12 cr.)<br>CETP: 50% of project cost up to ₹5 crore (80% up to ₹1 crore for handloom and 20% up to ₹5 crores for central govt. sponsored projects) |      |  |  |   |  |
|  | 15% of expenditure up to ₹5 crores (minimum 50 acres)   |      |  |  |   |  |

|  | Odisha  | Telangana   | Uttar Pradesh   |  |
|--|---|---|---|--|
| <b>Capital Subsidy</b>                       | 10% of plant and machinery upto ₹10 to 50 crores based on location, investment and employment   | 35% for technical textiles and 25% for others<br>20% for expansion  | 25% of plant and machinery under the cap of ₹2 crores to ₹100 crores depending on investment and no. of workers   |  |
| <b>Interest Subsidy</b>                      | 5.00% for 5 years (7 years for units in industrially backward districts). The upper cap is ₹10 lakhs to ₹1 crore depending on investments in plant and machinery  | 75% of interest rate up to 8% p.a. for 8 years  | 7% for plant and machinery for 7 years upto ₹1.5 crores (₹75 Lakhs for GB Nagar)  | 5% for infrastructure development for 5 years upto ₹1 crore/unit                       |
| <b>Wage Subsidy</b>                          | ₹1,500 /month /worker only for apparel units employing 200 workers (90% domicile) for 3 years   |   | ₹3,200 per person/per month for mega and super mega projects <sup>5</sup> , except in GB Nagar and Ghaziabad (Subsidy limited to first 15,000 machines installed in state) for 5 years  |  |
| <b>ESI/ EPF Subsidy</b>                      | 100% reimbursement for domicile workers for 3 years (5 years for persons with disabilities) Addn. 2 years for units in backward areas   |   | Units employing 100 workers or more (not covered under EPF/PMRPY), 50% EPF for 5 years  | Units employing 200 workers or more (not covered under EPF/PMRPY), 60% EPF for 5 years |
| <b>Training Subsidy</b>                      | ₹2500 - 4000 per person based on location, investment and employment within a period of 3 years   | ₹3,000 per person (₹5,000 for units employing >1000 people) for domicile workers  |   |  |
| <b>Stamp Duty</b>                            | 100% exemption  | 100% exemption  | 100% exemption, 75% exemption for GB Nagar district   |  |
| <b>Dormitory</b>                             | 50% rebate on land cost as per govt. circle rates upto 1-3 acres depending on location, investment and employment   | 60% rebate on land cost and conversion charges upto ₹30 lakhs/acre  | 60% reimbursement of annual payable interest for 7 years and 100% stamp duty exemption (except in GB Nagar)<br>100% stamp duty exemption for land (except in GB Nagar) upto ₹5 cr. p.a. per park/estate/site; cumulative max. ₹30 cr.   |  |
| <b>Power Subsidy</b>                         | ₹0.25-1 per unit based on location, investment and employment for 5 years   | ₹1 for ginning and pressing, ₹1-2 for other units depending on investment & employment Addn. 50 paise/ unit for technical textiles for 5 years  |   |  |
| <b>Electricity Duty</b>                      | 100% exemption for units with contract demand of up to 5 MVA or with CPP (bio fuel or non-conventional fuel based) for 5 yrs  |   | 100% exemption for 10 years   |  |
| <b>Industrial Park / Cluster Development</b> | 50% of infrastructure cost up to ₹10 crore (₹5 crore for up-gradation)<br>25% subsidy on land cost for first anchor tenant<br><br>For apparel park, Capital subsidy of 20% of project cost up to ₹20 crore and interest free loan up to 10% with a cap of ₹10 crore | Land cost rebate of 50% for first units in textile park up to ₹20 lakh/acre<br>Addn. rebate of 25% up to ₹10 lakhs/acre for technical textiles<br>Rental subsidy of 25% for 5 years for MSME units, built by Government<br>50% cost of support infrastructure up to ₹1 crore or 15% of eligible fixed capital investment<br>50% of cost for setting of ETP up to ₹10 crore and O&M charges; @75% for Year 1&2, @50% for year 3&4, @25% for year 5 | 50% of annual payable interest for 7 years on loan taken for land (except in GB Nagar) up to ₹1 crore pa<br>60% of annual payable interest for 7 years on loan taken for internal infrastructure facilities up to ₹10 crore pa, per textile park/estate, with cumulative max limit of ₹50 crores. (Except GB Nagar)<br>100% stamp duty exemption for developers and 50% exemption for first buyer of every plot/unit. (Except GB Nagar) |  |
| <b>Land subsidy</b>                          |   |   | 50% subsidy on land purchased from state govt. agencies (30% for GB Nagar) subject to a limit of 5% of the project cost   |  |
| <b>Plug &amp; Play set up</b>                |   |   | To be developed by state govt. in key areas and leased out to industry  |  |
| <b>State taxes</b>                           |   |   | * Interest free loan equal to SGST deposited<br>* Reimbursement of net SGST rcvd, with a limit of 25% of capex or actual amount, for 10 years:<br>- 90% for MSME units and units in poorvanchal & bundelkhand<br>- 75% in Madhyanchal & Pashchimanchal  |  |

|                           | Odisha | Telangana | Uttar Pradesh  |
|---------------------------|--------|-----------|--|
|                           |        |           | - 60% in GB Nagar<br>- 80% for Mega and S. Mega units<br>* 10% of net SGST will be reimbursed additionally to units employing min. 1,000 workers in Pashchimanchal or 750 elsewhere; if the unit fulfills ANY of these conditions:<br>- 25% workers belong to BPL, UP domicile<br>- 50% workers are women, UP domicile<br>- 25% workers are SC/ST, UP domicile |
| <b>Freight assistance</b> |        |           | Reimbursement of freight from unit to port for new garment units:<br>* 75% for first 2 years<br>* 50% for 3rd & 4th year<br>* 25% for 5th year   |

## Issues faced by the industry

Though Government has taken various initiatives to boost investment in textile and apparel sector in India, the sector has not exploited its full potential. Some of the key challenges faced by the industry today are:

1. **Fragmented Nature of Industry, Lacking Economies of Scale:**World's major textile producing countries like China, Bangladesh etc. work on the principal of large scale production with large manufacturing set-ups. But in India, textile sector is majorly fragmented and dominated by the SSI sector. Due to this, Indian textile manufacturers are unable to offer better prices and cater to large orders. This scenario is mostly visible in segments of fabric production, fabric processing and garment manufacturing. These small scale units have limited resources and lack awareness thus, expansion of capacity and up-gradation of technology becomes a huge challenge. Lenders perceive it as a huge risk and manufacturers are satisfied in the meagre resources.
2. **High Cost of Capital:** In India, rate of interest charged on the finance provided by commercial banks is very high as compared to various global competing countries. In India, the interest rate is 11-12% while in China it ranges from 5-6% and 6-7% in Vietnam.High interest rate affects the cost of production and thus competitiveness of the textile sector.
3. **Lack of FTAs:** India's major competing countries have preferential market access to major global markets. Examples include Bangladesh, Pakistan and Turkey, etc. Vietnam has also signed a trade agreement with EU which will be implemented soon. India till date does not have any trade agreement with a major textile and apparel consumption base which could have helped in exponential growth of India's textile and apparel exports.These differential duty puts India in a weaker competitive position in the world market.
4. **Raw Material Challenges:**Globally India is the largest producer of cotton with a share of 25% of the global cotton production. It also has 43% share of the world's cotton harvested area which is the largest in the world. However, India has the lowest yield amongst the top 10 cotton producing nations i.e. 550 Kg/Hectare which is even lower than the world average of 603 kg/ hectare. Also, the contamination in cotton has remained a big challenge for Indian cotton. This due to the fact that processing facilities at picking and ginning stages are not completely mechanized. According to ITMF's Cotton Contamination Survey 2016 "The most contaminated cotton descriptions originate in India (India-Others, J -34, MCU-5, Shankar, DCH), Pakistan (Pakistan Others) & Ivory Coast (Ivory Coast), etc.
5. **Limited Skill Availability:**In order to achieve global competitiveness, availability of productive and skilled manpower is very important.At present, the education and training infrastructure is not geared up to meet the demand of skilled labour. Investment in improving the skills and productivity of the workforce, by both private industry as well as the Government in genuine partnership is missing.

6. Levy of Anti-dumping duties: Indian MMF textile manufacturers face the challenge of higher fibre prices as against their global counterparts on account of levy of anti-dumping duties on imports of majority of man-made fibres. This in turn affects the availability of fibres to MMF textile manufacturers at competitive prices. Recently, USA has put anti-dumping duty on PSF imports from India. Whereas, India has not put any anti-dumping duty on PSF imports from China which doesn't boost domestic businesses and cheaper imports dominate the market.

### **Policy Support Required to Achieve the Target**

In view of the immense untapped potential in the textile sector, it is important for both industry and Government to work towards the growth of the industry. Policy support required to achieve the desired target is given below:

1. R&D Support: Innovation drives growth and is an important determinant of global competitiveness. While India is known for its traditional products, very limited innovation has taken place so far. There is a need to provide impetus to innovation and R&D which can help in developing products with high commercial acceptability. When compared to other competing countries like China and Bangladesh, the efficiency and productivity levels of Indian textile sector is quite low. To improve this, the sector needs to be supported for deploying state-of-the-art modern technologies and adopting processes which are more efficient than the traditional ones. Also, there is a need to create Centres of Excellence (CoEs) and support them for initial years for industry participation.
2. Scheme to enhance quality and productivity: There is a need to develop a scheme to support companies to work towards improvement in quality and productivity level in the sector. In order to achieve the desired objective, the Government may work with the Quality Council of India and the National Productivity Council.
3. Attracting FDI: In order to get the desired technical know-how, and marketing network required to produce and sell high-end products competitively, special efforts should be made to attract FDI into the textile sector.
4. Training Support: Availability of skilled and productive manpower is very crucial to achieve global competitiveness. The initiatives on skill development through the Textile Skill Sector Council in partnership with Industry may be scaled up. Also, there is need to implement a program for assisting individual firms for providing qualitative training support at all levels in the organization.
5. Attracting Large Scale Investment: The textile and apparel sector of India is highly fragmented and dominated by MSME sector. To be globally competitive, it is required to promote large scale manufacturing set-ups for economies of scale. For attracting investments in the sector, it is required that good incentives should be given to investors. Incentives focused on technology up-gradation, capacity addition and long term development of the sector are crucial at this point of time. The incentives need to be attractive enough for Indian as well as international investors. Improved investment environment will stimulate investments, provide technical know-how and develop state-of-the-art set-ups required for the sustainable development of the sector.
6. Labour law reforms: Labour Laws and regulations should be more liberalized and investor & labour friendly for sustained growth of the industry.

The textile and apparel sector of India is very large and diverse. There are a number of product categories in which India is very competitive and there are several other product categories which have multi-billion dollar trade globally but India's share in them is quite low. It is important that focused policy support is provided to all these product segments. To increase India's share globally, it would be important that requisite policy support is provided to important product categories irrespective of the textile material.



# Innovation and Technological Development Shaping the Future of Textile Manufacturing

## Introduction

Throughout history, manufacturing industry has been upended by technological disruptions. These disruptions date as far back as the 18th century during the first industrial revolution when steam engines, water and steam power, machine tools and factory system took center stage. Entire manufacturing industry transitioned into new manufacturing processes and among them textile industry was the most dominant in terms of modern production methods as well as final output. Mass production of yarn and cloth became a mainstream industry. One of the first inventions in modern textile industry arrived in 1734 in Bury, Lancashire, when John Kay invented the 'flying shuttle'. The flying shuttle increased the width of cotton cloth and speed of production of a single weaver at a loom, thereby increasing the productivity. The second industrial revolution starting from the late 19th century became widely known as the 'Technological Revolution' with mass production lines and invention of electric energy as its main features. It is said that the second revolution was a rough draft of the industry today. By the time, the 'Third Revolution' came into focus; globalization was already on its way catalyzed by the invention of the first computer and subsequent discovery of the World Wide Web. Other major shifts during the third revolution were rapid digitalization and automation in the manufacturing industry with the convergence of new technologies such as intelligent software, novel materials, and a wide range of web-based services.

Taking a big leap forward, industry is going through another paradigm shift, popularly referred to as the "Fourth Industrial Revolution" or "Industry 4.0". The ultimate goal of the fourth revolution is to build a parallel virtual world that will control and run the physical world. Everything that can be digitalized will be digitalized throughout the course of Industry 4.0.

The future of the manufacturing industry lies with big data analytics, robots, automatons, programmable logic controllers and internet of things. Manual labour will be replaced with digital factories containing advanced materials and artificially intelligent machines that run entire factories on its own. Not only that, cognitive manufacturing will enable manufacturers to forecast demand, but also carry out predictive maintenance, estimate problems that might occur and trigger solutions to those problems without any human interference. Manufacturing industry is all set to witness another global renaissance using principles of Industry 4.0.

## Technologies that are transforming textile manufacturing

Innovation can be attributed to scientific and technological progress. Within the broader technological field, five technologies -the internet of things, artificial intelligence, advanced robotics, wearables and 3-D printing- are transforming global production systems and setting new precedents for competition among producers and countries alike. In line with the global manufacturing industry, textile industry is also growing leaps and bounds with regards to technological innovations. Smart fabrics, 3-D printed fashion, interactive fabrics and many other technologies have opened up a whole new array of possibilities that will have an immense influence on the textile industry as we know it. Nanotechnology has made fibers smarter. Conductive yarns mean the fabrics that we wear, sit and sleep on, can simultaneously communicate with our devices. And, 3-D printing could wholly transform the way we think about, produce, wear, and even buy clothes.

### i. Wearables / Smart Textiles

Wearable technology is the focus of innovation in textile space. Predominantly smart textiles, is expanding its footprints in both the consumer and research spaces in recent years. This is due to the increasing demand for wearable electronics from industries such as medical, healthcare, sports, fashion, entertainment, military and protection.

Smart textiles are defined as textiles that can sense and react to environmental conditions or stimuli, from mechanical, thermal, magnetic, chemical, electrical, or other sources. Textile products which can act in a different manner than an average fabric and are mostly able to perform a special function certainly count as ‘smart textiles’. Other examples of smart textiles include fabrics capable of releasing medication or moisturizer in to the skin, fabrics that help control the vibration of muscles during athletic activities and materials that regulate body temperature. There are also simpler, aesthetic applications for smart textiles, including those that can change color, light up in patterns or potentially display pictures and video.

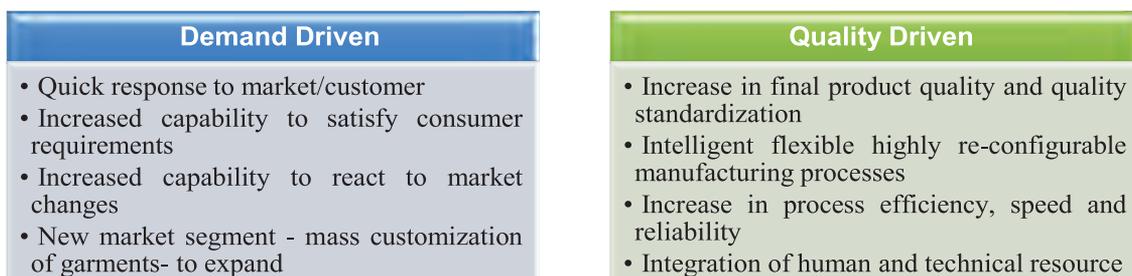
Smart textiles find its application in health, military/ defense, fashion and entertainment, sportswear etc. Recently, Google and Levi’s connected jacket that lets you answer calls, use maps, topping or starting their music, getting directions, or reading incoming text messages just by swiping or tapping on the jacket’s sleeve is an example of this category. This works because the gesture-sensing sensors (“Jacquard Threads”) are woven into the jacket’s cuff, and are then wirelessly connected to the wearer’s mobile phone using tiny electronics embedded inside the sleeve in a flexible snap tag.

**ii. Advanced Robotics**

Over the past few decades, sewn goods manufacturers lowered overheads by relocating operations to the countries paying the lowest wages. However, this business strategy is becoming increasingly difficult to maintain because of rising labor costs in the developing world, a global shortage of skilled seamstresses, and shift in consumer behavior pushed by fast fashion brands and social media platforms. New market conditions have made the sewn goods industry ripe for a new age of automation.

Application of robotic automation in the textile industry provides many benefits such as labour savings, reduced cycle and lead times, improved quality and safety, increased productivity and efficiency. High levels of consistency and precision in work pieces and high levels of accuracy in manufacturing equipment is required.

Figure 4: Impact of Robotics on Textile Industry



**iii. 3-D Printing or Additive Manufacturing**

The process of creating three dimensional objects from a digital or Computer Aided Design (CAD) file is widely known as 3-D printing or additive manufacturing. Additive word refers to the fact that the final object is created by adding sequential layers of material, which are actually horizontal cross-sections of the final output. The benefits of manufacturing using 3-D printing are – less raw material requirement, less wastage, creation of identical complex objects repeatedly, reduction in lead times and costs. Use of 3-D printing will cover industries from education to fashion to aerospace.

Although 3-D printing has been utilized in the fashion industry, it is yet to make substantial progress. Iris van Herpen, considered the forerunner of 3D printed haute couture prints dresses in collaboration with i.Materialize. DanitPeleg is a fashion designer who is implementing 3D printing into fashion on her website. On the website, users can design their own jacket and have it printed, fitted and delivered. Adidas has already ventured into mass customization of their 3-D printed sneakers in collaboration with companies like Carbon to make use of their Speedcell solution.

It is anticipated that over the course of time 3-D manufacturing will change the nature of trade because the consumer will be able to manufacture end products on their own. Although right now, it is in the infancy period, manufacturing firms will need to gear up and be alert and flexible enough to adopt this new technology as and when it gains momentum to remain competitive in the market.

**iv. Artificial Intelligence**

Artificial intelligence or AI can be described as “The science and engineering of making intelligent machines, especially intelligent computer programs.” Definition of AI can be categorized into four dimensions – machines that think humanly, think rationally, act humanly and act rationally. AI derives its principles from computer

science, psychology, neuron science, sociology, biology, linguistics, mathematics and engineering. Applications of AI are wide and varied – from video games to intelligent robots. Such robots will be able to detect physical data from the real world such as light, heat, pressure, temperature, movement, sound etc. In addition, they are capable of learning from their mistakes and acclimatize to any new environment. AI systems can be broken into several different disciplines such as expert systems, artificial neural networks (ANN), fuzzy logic, genetic algorithms and natural language. AI is increasingly becoming a tool for enhancement of product quality, increase production, reduce costs and improve overall processes in the textile industry. It is also making its mark in wet processing industry.

### **Applications of Artificial Intelligence in Textile and Apparel Industry**

- o Fluorescent dyes - Artificial neural networks are being used by THEN, Germany to make recipe prediction for fluorescent dyes and mixture with non-fluorescent dyes.
- o Self-diagnosing system – THEN, Germany is also working on a machine that will be sufficiently artificially intelligent to ‘know’ when it is not at 100% operational performance and forecast when maintenance will be required in the near future. It will then inform its maintenance contractor, so that spares can be furnished in advance, and repair time can be scheduled with the least disruptions.
- o Defect Identification: A research paper published in International Journal of Computer Science uses ANNs to identify defects in textile products by analyzing whether a fabric image contains a defect or not. SUALAB Solutions, Korea also provides “an unmanned automatic detection solution in areas such as textiles, leather and the steel industry, where quality inspection is difficult with existing machine” based on AI analysis technology.
- o Apparel Retail: Apparel retail, specifically, e-commerce, is making use of AI to identify images and recommend products online which the customer is more likely to buy. An AI system collects and analyzes information about the customers, their inclinations, similarities, and differences in the kinds of applications and products they pursue. Therefore, through AI a personalized shopping experience can be delivered to the customers.
- o Reinforcement Learning: Apparel manufacturing is a set of repetitive processes. Teaching computers to take different actions based on situational parameters that are the optimal decisions in those situations is called reinforcement learning. AI can be used in processes like cut-order-planning, line balancing, inspection decisions, etc. Reinforcement learning can also be used to make production floors more energy efficient by automatically finding the best possible cooling and operating configurations needed.

Other applications include big data analysis and predicting consumer trends in merchandising, automation of conversations with buyers, suppliers and other stakeholders via natural language processing and machine learning capabilities for zero error processes.

### **v. Internet of Things**

The most common buzzword in the manufacturing industry is Internet of Things (IoT). IoT refers to a network of interrelated computing devices, mechanical and digital machines, objects, animals or people that contain unique identifiers and have the ability to transfer data over a network without requiring any human-to-human or human-to-computer interaction. According to an online website, “a thing, in the Internet of Things, can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low -- or any other natural or man-made object that can be assigned an IP address and provided with the ability to transfer data over a network.”

### **Application of IoT in Textiles:**

- o E-textiles: E-textiles refer to smart, flexible and wearable technologies that use various types of sensors depending on type of application they work for. For instance, the sensor of an e-fabric designed for automotive and road traffic applications would be able to sense parameters like sound, light and acceleration.
- o Automated monitoring of factory operations: Factors like temperature and humidity affect the quality of fabric. These can be measured by sensors placed in the factory floor and readings can be shared to cloud via internet.

- o Other applications: Some other applications of IoT in textiles are predictive maintenance of equipments, increasing efficiency of weaving and embroidery machines, product development, digital printing to reduce time and costs, virtual reality - garment fit, prevention of textile production losses, guided sales processes, improved post sales experience etc.

#### **Advanced Functional Fabrics of America (AFFOA), USA**

All over the world textile research is primarily focused on technological innovations, fiber production and application, and environment sustainability. Advanced Functional Fabrics of America (AFFOA), MIT, USA (Est. 2016) is a non-profit organization founded by MIT with more than \$300 million in funding from the U.S. Department of Defense, apparel manufacturers and the state of Massachusetts is one of the research institutes which are working towards the progressive textile industry. With a Vision to enable a manufacturing-based revolution by transforming traditional fibers, yarns, and textiles into highly sophisticated integrated and networked devices and systems, it aims to facilitate economic growth through fiber & fabric manufacturing. In 2017, AFFOA opened its first 'National Fabric Innovation Centre' with an investment of US\$ 10 million with state of the art fabric prototyping facility. It has launched two product prototypes till now:

- o A Programmable & Scannable Backpack - A coding system is woven into the plaid stripes on the backpacks and when scanned by a smartphone, the owner's information is displayed by an app called "Looks". The wearer can "program" their pack to include information like favorite song, and many other personal likings, which anyone can scan and get to know.
- o Fabric Lifi - World's first fabric-based communication system that converts LED light into sound. AFFOA developed a cap with earphones which if gets under a designated area, starts receiving audio signals.

#### **Scenario of Indian Textile Industry**

Over the course of time, India has developed significant manufacturing capacities to grow into the 2nd largest manufacturer and exporter of textiles and apparel in the world.

Indian spinning sector is the perfect example where the industry has adopted technological advancements to become the most competitive yarn manufacturing country in the world. Approximately ~75% of the installed machinery is modern (less than 15 years old).

Similar technological advancements can be adopted in rest of the textile value chain. For example, robotics in apparel manufacturing or sewbots, though in nascent stage right now, has enormous potential in increasing efficiency and reducing cost. In India, the sectoral need for technological advancements are:

- o Spinning: Indian spinning is globally competitive. However, for moving to the next orbit, the industry should focus on value added products & technologies, data analytics and integration with Global Value Chain (GVC).
- o Fabric Manufacturing and Processing: Fabric manufacturing and processing are the two segments where India is significantly lagging behind the global competition, especially in synthetic textiles. Since the weaving sector is largely unorganized and modernization levels are very low, manufacturing of innovative products is very difficult. Also quality processing of fabrics has been a continuous issue for the industry. These issues have led to significant loss in export opportunity as India is not able to make the quality of fabric that international buyers demand. There is strong need for product design and development orientation for which international partnerships could be the way ahead.
- o Apparel/Made-ups: Some of the examples of modernization in apparel sector done over the years include up-gradation from manual cutting to automatic cutting; use of modern sewing machines; use of support machines such as pocket setter, belt loop making, fusing machines, CAD systems etc. This has improved productivity, flexibility, precision and overall quality. However, the productivity levels in India are still very low. There is a need for implementation of benchmark systems and processes to improve the factory efficiencies. Robotics can play an important role in future.
- o Skills: In order to meet the industry requirement, training across the ranks is required.

Other focus areas market intelligence, advanced data analytics, supply chain optimization.

## Role of Technology and Innovation for Indian T&A Sector

Globally renowned companies have become successful by continuously evolving their systems & processes to not only meet the ever-changing demands of consumers but also by introducing newer and better products. This evolution is the result of an amalgamation of new technologies and improved methods of manufacturing which are efficient and highly productive. This aspect of manufacturing has been neglected by the Indian textile industry as only a handful of large and organized companies actually follow any type of systematic procedures for manufacturing and focus on incorporating modern technology into the system. This leads to higher waste generation, poor output quality, more defects and faults which in turn results in decreased value of finished products.

Indian Textile and Apparel manufacturers as well as retailers must connect global into a digitally connected entity which centralizes and shares information from PLM, ERP and other systems. The supply chain must be able to process real-time data and immediately service the customers accordingly. Indian T&A sector is in need of a technological revamp which can be brought about by adopting the following:

- o Implementation of standard systems & processes: Implementation of standard systems & processes and lean manufacturing systems reduces/eliminates wastage at the source thereby increasing efficiency, better quality of products and resource optimization.
- o Shortening lead times: Shorter lead times is the global trend today which is changing the structure of entire textile value chain. It is important to make Right First Time (RFT) to save cost and time. Lead times can be shortened through digital sampling and continuous monitoring of production processes to reduce/eliminate faults and rework.
- o Focus on Research and Development: Rapidly progressing technological revolution has also created the need for T&A industry to focus on R&D and market intelligence to offer the right product mix to the market. Conducting R&D must be woven into the DNA of the companies as it will be the platform for innovations to flourish.
- o High Performance Training: High Performance Training is the need of the hour. People need to unlearn the traditional / outdated methods and relearn the skills required by the industry today. It is important for our workforce to upgrade their skills so as to be able to operate the advanced technological systems. Apart from technical skills, it is also important to provide operators with soft skills which includes motivation, health & hygiene, group behavior, self-management, time management, etc. These skills instill them with organizational behavior that indirectly affects efficiency and productivity.
- o Environment friendly approach: Right from the growth of fibres i.e. cotton (agriculture) or synthetic (chemical synthesis) to the manufacturing of garments, textile industry consumes a large amount of resources (land, water, coal, other fuels, chemicals etc.). Future development of any industry cannot be based on a model with no regards to its impact on environment. Hence for textile industry too, it becomes much more important to adopt the 'green way' for growth. The first step is to build an Environmental Management System (EMS). EMS is a set of practices & procedures that enable an organization to reduce its impact on environment and also increase operating efficiency. The second step involves using new technologies which consume less energy or using renewable sources of energy. The third step involves creating a green & sustainable value chain wherein every input whether it's fiber, dyes, chemicals, are all derived in an environment friendly methods.

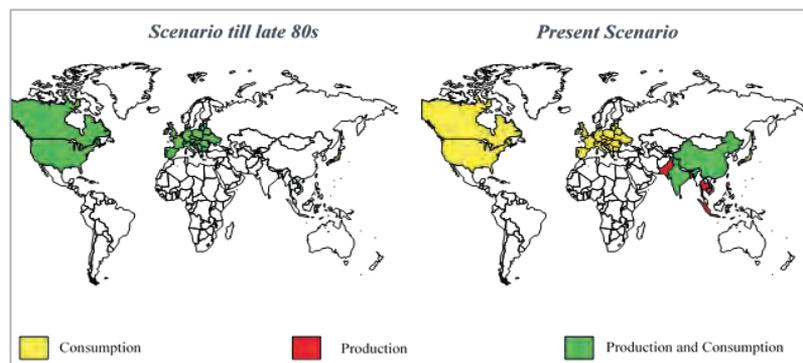
Technological advancements are the most effective instrument for growth and change. Presently, Indian economy is going through a pivotal phase with high economic growth & large investments coupled with government's bold initiatives. Textile industry lies at the core of this development owing to its contribution to the economy as well as high employment generation potential. It is now important for manufacturing units in India to adopt these technological advancements to remain competitive in the global scenario.

# Global Value Chain – Trade and Investment Perspectives

## Status of Global Textile and Apparel Sector

Textile and apparel (T&A) products are leading examples of Global Value Chains (GVC) as fibre, yarn, fabric, and garment manufacturing is scattered across the nations depending on their respective manufacturing competitiveness. The geographical distribution of production as well as consumption in textile and apparel has seen a major shift in the last fifty years. Earlier, production and consumption of textile and apparel was centered in USA and EU but over a period of time production of these commodities shifted to low cost destinations, majorly to Asian countries.

Figure 5: Global Production and Consumption Bases

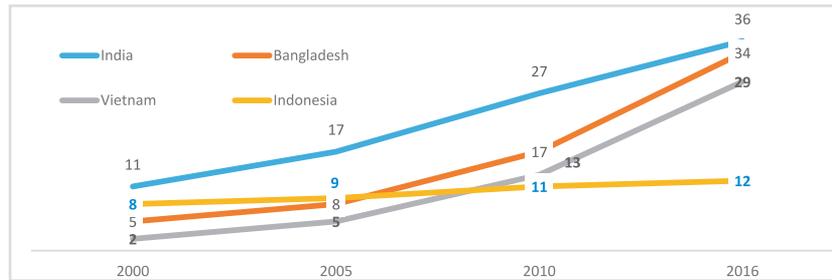


In today's world, USA, Europe & Japan are still the largest consumption bases while manufacturing is concentrated in Asian countries. However, China and India with their large population base and growing economies are now among the largest consumer nations as well.

The primary reason for shift in manufacturing locations was cost competitiveness. As the Western world kept on industrializing, the wages rose to very high levels. As a result, manufacturing basic products such as textile and apparel was not very profitable. Asian countries on the other hand offered lower wages while some had the added advantage of having a strong fibre base as well viz. China and India. Few Asian countries such as Bangladesh and Turkey also had duty free access which added to their cost competitiveness. Realizing the employment and export potential of this sector, Governments in these countries also provided special investment incentives especially to international investors. As a result, there was rapid growth in textile and apparel output of these countries. Presently, more than 60% of the manufacturing of textile and apparel takes place in Asian and other developing countries.

China has gained maximum from this shift. After the liberalization of China's industrial policy in 1980's, China experienced a massive boost in industrialization and as a result China became a hub of manufacturing. The entry of China in WTO and subsequently establishing normal trade relations with the USA in 2001 further fueled growth of China's share in global production and trade. China has used its human resources, infrastructure and manufacturing competitiveness to emerge as the biggest manufacturing base for textile in the world and has remained the largest exporter of textile and apparel in the world maintaining a dominant market share of around 40% since 2000s. Other Asian economies such as India, Bangladesh, Indonesia, Pakistan, Vietnam, Cambodia and Thailand also experienced an upsurge in their textile and apparel exports after 2000.

Table 3: T&A exports of Selected Asian Countries

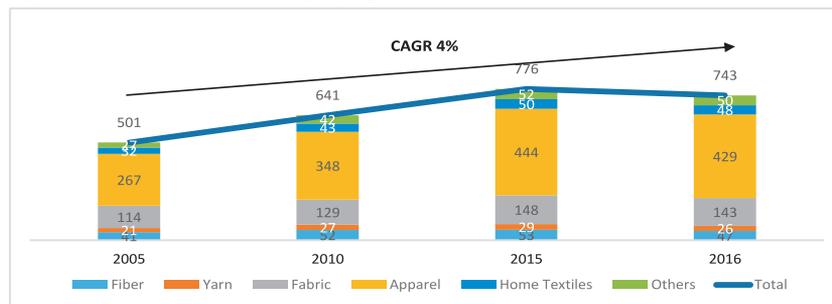


Source: UN Comtrade

## Global Textile and Apparel Trade

In 2016, global textile and apparel trade stood at US\$ 743 billion. Year 2005 is considered a landmark year for textile and apparel sector when the entire 'quota' regime phased out. Since then, the T&A Global Trade has grown at an annual growth rate of 4%. Apparel is the largest category with a share of 58%, followed by fabric with a share of 19%.

Figure 6: Global textile and apparel trade (US\$ bn.)



Data Source: UN Comtrade

## Asia Emerging as a Manufacturing and Consumption Hub

Asia has emerged as the major manufacturer-supplier of textile and apparel products to the world. The shift of manufacturing to this part of the globe has been continuous over last many years. The region is on the verge of entering into a new phase wherein its domestic consumption of textile and apparel products is going to become larger. China and India have the fastest growing domestic apparel market. Apparel market of China and India taken together is expected to surpass that of EU and USA.

Table 4: Global apparel market size (US\$ Bn.)

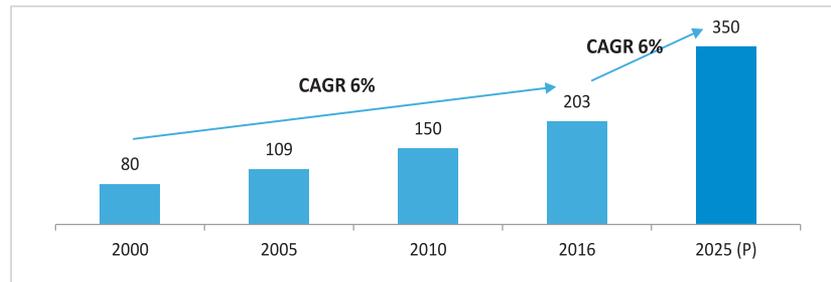
| S. No. | Region       | 2016         | 2025 (P)     | CAGR      |
|--------|--------------|--------------|--------------|-----------|
| 1      | EU-28        | 397          | 435          | 1%        |
| 2      | USA          | 326          | 389          | 2%        |
| 3      | China        | 212          | 500          | 10%       |
| 4      | Japan        | 99           | 109          | 1%        |
| 5      | India        | 63           | 160          | 11%       |
| 6      | Brazil       | 61           | 94           | 5%        |
| 7      | Canada       | 31           | 37           | 2%        |
| 8      | Russia       | 25           | 39           | 5%        |
|        | RoW          | 470          | 794          | 6%        |
|        | <b>Total</b> | <b>1,684</b> | <b>2,556</b> | <b>5%</b> |

Data Source: Published Data & Wazir Analysis

## Intra-Asia Trade- Present Scenario & Emerging Trends

Over last 16 years, there has been a significant rise in the intra-Asia trade of textile and apparel products. In 2000, intra-Asia trade stood at around US\$ 80 bn., accounting for ~20% of the global exports of textile and apparel. Trade has grown at a CAGR of 6% since 2000 to reach US\$ 203 bn. in 2016, accounting for 27% of global T&A trade. The trade is expected to further grow at 6% CAGR and become US\$ 350 Bn. by 2025.

Figure 7: Historic growth of Intra-Asia Trade (US\$ bn.)



Data Source: UN Comtrade

Three of the largest trade partners in Asia will determine the shape of intra-Asia trade by 2025 viz. China, India and Japan. These countries have cumulative exports of US\$ 320 bn. and cumulative domestic market of US\$ 374 bn.

Table 4 : Impact on comparative growth of production, Consumption & Trade of major Asian Nations.

| Country           | Domestic apparel market 2016 (US\$ Bn.) | Total T&A Exports 2016 (US\$ Bn.) | Emerging changes/Trends  | Production  | Consumption | Exports     | Imports     |
|-------------------|---|-----------------------------------|--|-------------|-------------|-------------|-------------|
| China & Hong Kong | 212                                     | 276                               | <ul style="list-style-type: none"> <li>Labor prices increasing</li> <li>Increasing focus on domestic consumption</li> <li>Focus on high tech industries</li> </ul>                                       | High growth | High growth | Slow down   | High growth |
| India             | 63                                      | 36                                | <ul style="list-style-type: none"> <li>Rising income and population levels – fast growth of domestic market</li> <li>Increasing technology adoption</li> <li>High investment in manufacturing</li> </ul> | High growth | High growth | High growth | High growth |
| Japan             | 99                                      | 8                                 | <ul style="list-style-type: none"> <li>Low economy growth</li> <li>Labor prices increasing</li> <li>Ageing</li> </ul>  | Slow down   | High growth | High growth | High growth |
| Country           | Domestic apparel market 2016 (US\$ Bn.) | Total T&A Exports 2016 (US\$ Bn.) | Emerging changes/Trends  | Production  | Consumption | Exports     | Imports     |
|                   |   |                                   | <ul style="list-style-type: none"> <li>population</li> <li>Focus on high end products</li> </ul>   | Slow down   | High growth | High growth | High growth |

High growth ■      Slow growth ■      Slow down ■

Regional Value Chains are developing in Asia wherein apparel manufacturing is shifting towards low cost countries like Myanmar, Bangladesh, Vietnam, Kenya etc. & raw material will be supplied by India & China. Chinese Imports will increase & China will partner with other Asian countries for trade. This will help in increasing Intra-Asia trade (and investment) by creation of a larger regional supply chain and market base. It is estimated that Intra-Asia trade would reach US\$ 350 billion by 2025.

## Importance of Regional Economic Integration

As discussed earlier, in search of low cost manufacturing base, the textile and apparel manufacturing industry has continued to move from one part of the world to the other. Zero duty access from a country to a major market is an important reason for relocation of manufacturing base to that country. Countries such as Bangladesh, Turkey, Cambodia, etc. have successfully developed textile and apparel sectors leveraging their duty free status to EU or USA which are the largest consumption bases. Realizing the potential of 'market access' arrangement, more countries started to sign these agreements. More than 300 PTAs are in force currently and the number is ever increasing.

There are several types of market access arrangements such as Preferential Trade Agreement (PTA), Free Trade Agreement (FTA), Comprehensive Economic Cooperation Agreement (CECA), Comprehensive Economic Partnership Agreement (CEPA), Customs Union, Common Market, etc. each with their own implementation framework and scope. Apart from that, some developed countries extend special status programmes like GSP, GSP+, EBA, etc. to select developing countries and LDCs. Several agreements are under various stages of discussion and negotiation.

Today, there is an increasing trend towards regionalism due to which more and more countries are opting for regional cooperation. The era of isolated national economies has given way to strategic alliances among countries to build a stronger and more secure market. Regional integration has today become the part and parcel of present global economic order. Key features for countries to get into regional integration, includes geographical proximity for shorter lead times, similar ideologies and smoothed economic linkages.

In this era of globalization, countries have a fear of being left out. Countries are looking for more secure ways of accessing major markets. Further, there is also an inclination of the governments to get into such agreements due to its multi-fold benefits.

Table 5 :

| Advantages of Regional Economic Integration           |  |
|---|--|
| <b>Increased Trade</b>                                | Economic integration removes tariff and non-tariff barriers among member countries leading to increased trade among member countries.  |
| <b>Expanded Markets</b>                               | Such arrangements leads to more secure ways to access major markets. This offers an opportunity to countries to overcome disadvantages of domestic economic smallness & helps them cater to a much larger economy.   |
| <b>Attraction of Foreign Direct Investments (FDI)</b> | Removal of trade barriers leads to increased investment as the industry moves in search of low cost manufacturing destinations. Increased FDI further leads to exchange of technical knowhow and exposure in terms of business procedures & practices.   |
| <b>Increased Bargaining Power</b>                     | Economic integration leads to other indirect benefits as well. It is much more difficult for a small economy to negotiate an agreement with a large economy individually. However, if the country is already part of an arrangement, it would be much simpler for it to negotiate with other participating nations and form a larger trade bloc. For example, ASEAN agreements with countries like Vietnam, etc. |
| <b>Shorter Lead times</b>                             | One of the major features of regional integration is geographical proximity among member countries which ultimately leads to shorter lead times. This is one of the most important business components needed in this era of 'fast fashion' <sup>12</sup>  |
| <b>Increased efficiency</b>                           | Sharing and transfer of business procedures and ways leads to better trade practices. This indirectly leads to better efficiency.  |
| <b>Knowledge Transfer</b>                             | Increased investment leads to knowledge and technology transfer among member countries. Free flow of information, technical know-how and technologies leads to general upliftment of the member countries.   |
| <b>Increased Security</b>                             | Economic integration also leads to business and market security.   |

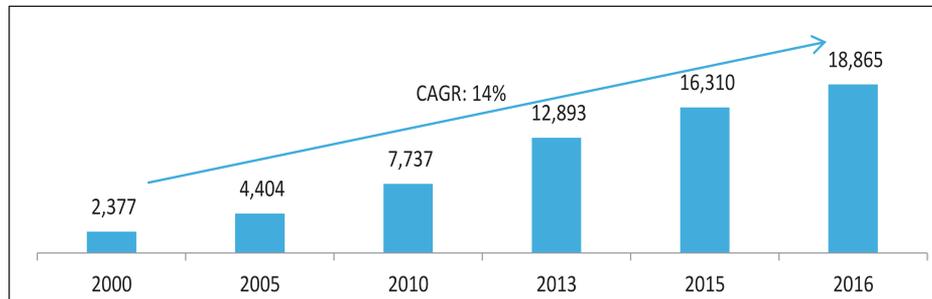
Regional integration offers multifold benefits to member countries. However, success of such arrangements depends on individual member countries as well as the 'trade bloc' as a whole. While many countries have benefitted substantially from such arrangements, there have been instances wherein members have not been able to benefit much from such integration.

## Impact of Market Access Arrangement on Textile Sector- Case Studies

### Bangladesh: Leveraging EBA Status Effectively

Bangladesh has been a WTO member since 1995 and benefits from the EU's "Everything but Arms" arrangement, which grants duty free, quota free access for all exports, except arms and ammunition. The EU works closely with Bangladesh in the framework of the EU-Bangladesh Co-operation Agreement, concluded in 2001. As a result of these arrangements, apparel exports from Bangladesh to EU-28 region significantly increased from US\$ 2.4 billion in 2000 to US\$ 19 billion in 2016 at a CAGR of 14%.

Figure9: Bangladesh's Apparel Exports to EU-28 (In US\$ Million)

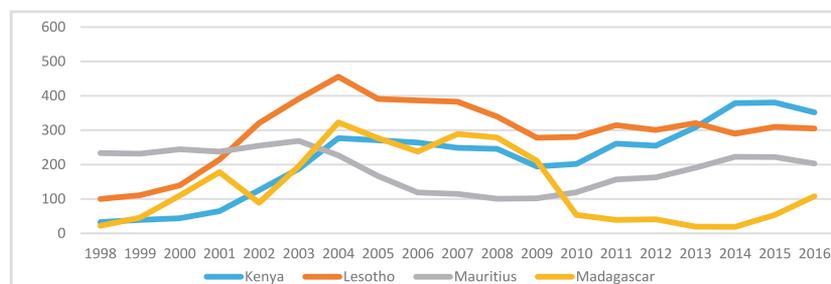


Data Source: UN Comtrade

### Sub Saharan Africa: Yet to Realize AGOA Potential

The Sub-Saharan African countries, despite having preferential market access to major markets of US under African Growth Opportunity Act (AGOA) have not been able to increase their trade share. An analysis of US imports of Apparel under AGOA indicates that the exports rose since AGOA's inception late in 2000 till 2004 but thereafter failed to maintain the growth. Only few Sub Saharan African (SSA) nations viz. Kenya, Lesotho and Mauritius could take advantage offered by AGOA. However, their share of textile and apparel exports to the US market is insignificant. There are several reasons behind this ranging from lack of export infrastructure to political instability to absence of integrated capacities.

Figure10: USA's Textile and Apparel Imports from SSA and Selected Countries (In US\$ Million)



Data Source: UN Comtrade

### Key Challenges Faced by Textile Industry on International Front

- Low productivity – Apparel industry is a labor intensive industry wherein labor wages forms a huge part of operating cost of factories. Though Asia has established itself as a low cost manufacturing destination, productivity and operational losses remain a major concern for almost every textile and apparel manufacturer. There is a lack of skilled labour in the textile processing sector resulting in high rejection and reprocessing percentages as compared to international standards. Though some countries like China and Turkey have achieved high efficiency level, countries like India and Bangladesh are yet to catch up.

Figure11: Apparel Factory Productivity Levels in Selected Countries



Source: Industry Feedback

- Longer lead time– Leadtime is one of the main competing factors in the apparel industry in today's era of fast fashion. In case of countries which do not have presence of value chain, companies spend about 40-60 days in importing raw material from other countries. As a result, these countries take an average time of 90-120 days to make final delivery of products. On the other hand, countries like China and India has presence of entire value chain. This enables China to deliver the same shipments in 50-60 days. Considering the shorter Product Life Cycle (PLC) in apparel industry, longer lead time is appearing to be a potential threat to the future growth of apparel industry.
- Compliance issues – There is a growing pressure on textile companies around the world to become sustainable and green. This pressure comes from the government, from society, environmental campaigners & NGOs, the result of which emerged in the form of various laws & regulations on the right ways of processing textiles & apparel. However, the key issue is that these compliances are not followed properly in the textile sector and the reason again is the fragmented state of the industry. Lack of awareness & training and high cost of compliance makes the implementation of compliances complicated especially for small scale industries. This non-compliance from the industry is not only harmful for the environment but it also adversely impacts the image of Indian textile industry in the global market.
- Product development & Designing – With increasing global competition and fast evolving fashion trends, it is must for textile and apparel manufacturers to be innovative. However, design and product development is a key area, which is yet to receive significant attention from the industry.

In order to overcome the challenges faced by the textile industry, it is important to focus on promoting foreign direct investment or joint ventures to develop vertical capabilities. Countries without domestic textile production should promote FDI in countries that do not have vertical capabilities. This is a good strategy for countries that are still dominated by assembly or CMT production models, such as Africa, Southeast Asia, and the Caribbean. Also, investing on training and education to overcome the skill deficit would be important. Education should include technical skills as well as soft skills in areas such as management, product development, design, and market research. Another important thing would be to focus on marketing and networking.

# RETAIL IN TEXTILES & APPAREL: EMERGING SCENARIO

Indian consumers and their apparel preferences are gradually changing, which in turn is altering the shape and size of apparel business. Indian apparel which was deeply rooted to immensity and richness of Indian culture is now aligning itself to more refined and globally on-trend fashion. Contemporary Indian apparel has more variations and segments today, than ever before. From a limited wardrobe a decade back, it is now classified into formal, semi-formal, casual, active, sports, ethnic, seasonal, leisure, party wears and more. This shift is due to the changing demographic and psychographic profile of the Indian consumers and supported by the apparel market which is increasingly shifting away from tailor made to ready made clothing and growing catalysed by the entry of global retailers and brands.

The Indian consumer which comprises of the largest Gen Y population of the world with a median age of 27 years is also evolving in its shopping habits and buying behaviour. The new Indian consumer prefers branded apparel over unbranded due to his/her inclination towards better lifestyle and willingness to try out new on-trend fashion. With growth of disposable income, favorable demographics and changing lifestyle, consumption of products and services is expected to grow continuously in the foreseeable future, including textiles and apparel. The domestic apparel market is expected to grow at 12% CAGR to reach USD 180 Billion by 2025 from US\$ 63 billion in 2017.

Indian consumers' affinity towards brands and organized retailing is increasing, which is helping the consumption growth of all products, including textile and apparel. Organized retailing in India currently stands at only 8% of the overall retail market of US\$ 550 Bn. Within this, apparel has a share of approximately 8%. With growth of disposable income, favorable demographics, changing lifestyles and a high potential for penetrating non-urban metro markets; the share of organized markets in India is expected to reach 31% by 2025. Five key consumption trends in India that are shaping the apparel industry and present significant opportunities for new as well as existing businesses are delineated below:

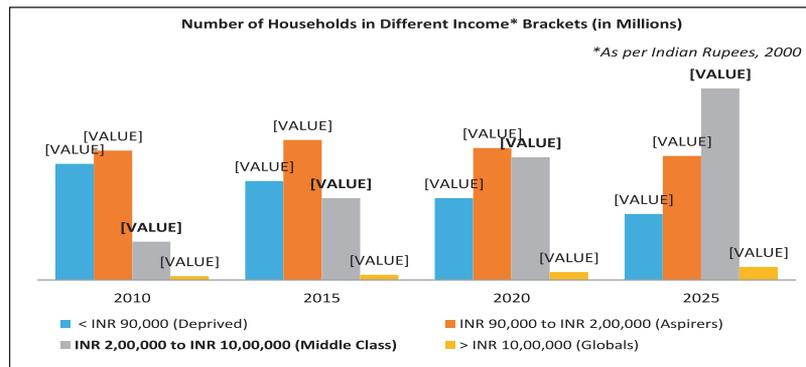
## **New Middle Class and Its Soaring Aspirations**

In India, people are shifting from rural to urban areas in search of jobs and better education at a continually increasing rate. In 2015, 33% of India's population was living in urban areas, rising from 31% in 2010. By 2025, 37.5% of India's population is expected to be living in urban areas. Along with urbanisation, cities are also expanding by immersing the villages near them, as 32% of urban population growth between 2001 and 2011 was because of re-classification of towns and expansion of urban areas. Due to urbanisation, the size of working population is increasing and the type of occupations they indulge in is changing. The working population has increasing income with an attitudinal change to look better.

Furthermore, urban lifestyles and services are also spilling over to rural areas. A decade ago, the agriculture contributed to about half of rural GDP, but it is now only about one-fourth and decreasing further each year. The rural economy, which was dominated by agriculture has already diversified to manufacturing and service based jobs over the last decade.

Together Urbanisation and Rurbanisation are adding new consumers to middle class whose soaring aspirations are changing the dynamics of the apparel market. By 2025, the middle class consumers which will form 48.5% of total targetable customer base will contribute about 55-60% share of total apparel market size. The top tier cities will continue to remain dominant locations in terms of apparel market because of the presence of both middle class and affluent consumers. However, two third of this middle class will dwell in the middle tiers and smaller cities as well as large district towns which are and will continue emerging as increasingly attractive apparel markets.

Figure12:



Source – Wazir Analysis Based On Published Data

The middle class consumers spend relatively higher amounts than aspirers on discretionary apparel consumption. However, there are only very few apparel retailers and brands in India who have rightly understood the middle class consumers. The Indian middle class consumers are value conscious and at the same time want fashionable clothes too. They seek quality and design at the best price. Therefore, the Indian middle class consumers are creating an opportunity which needs to be captured with “value fashion”.

### Functionality and Fashion Expanding Wardrobes

There is a new game in town- the game of freedom of choice, of ‘shoptainment’ and of open brand-flirting. The Indian urban consumer’s way of living has dramatically changed. With this, the occasions and reasons prompting apparel consumption have also increased. Today, urban consumers are buying apparel which serves a specific occasion/ usage e.g. they prefer plain shirts for meetings, checked or striped shirts for casual interactions, and shirts with funky patterns for night parties. Similarly, specific reasons can also trigger apparel consumption. There exist urban consumers who buy apparel because of functional/performance benefits and hence brands introduced clothing lines on the concept of shape retention, anti-stain, anti-odour, anti-perspiration, quick dry etc. Another set of consumers has moved beyond functional to higher needs and prefers sustainable clothing that is good for the skin, clothing made under fair trade certifications etc. This prompted many apparel retailers and brands to launch the organic clothing line made of organic cotton, bamboo fabrics and natural dyes etc. All the aforementioned developments are driving apparel retailers and brands to look beyond the predictable needs of urban consumers. For driving the sales growth, brands and retailers are on one side, creating and serving the new occasions in the lives of consumers and on the other are innovating performance features that will prompt apparel consumption. Some examples of traditional apparel advancing to the next level are as follows:

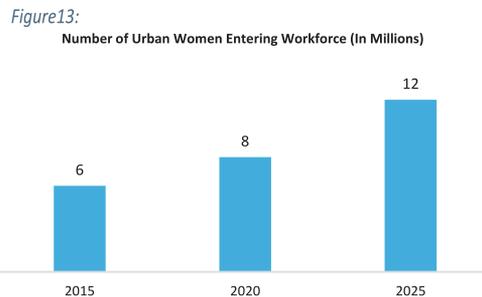
- **Biker Denims:** Denims, specially crafted for bikers, that offer excellent full-length abrasion resistance and feature integrated armour pockets at both the knees and hips unlike normal commuter denims. Further, they have differential stretch and sweat absorption features across various zones, to offer an unmatched comfort to the biker.
- **Abyl Apparel:** An eco-friendly brand which introduced apparel made up of 100% cotton activated with Filium™, a technology that makes natural fabrics repel liquids, stains and odours. This means if water is poured or coffee is spilled on an Abyl shirt, it just beads up and rolls off like it’s on glass. Abyl clothing also does not absorb sweat. The perspiration just evaporates from breathable fabric, keeping the garment fresh for a much longer time.
- **BioCouture Garments:** A London based design consultancy, BioCouture created a range of jackets made from bio-materials produced by bacteria in a vat of liquid to produce bacterial cellulose - a material that has similar properties to leather. These materials are not just biodegradable but compostable. Presently, living organisms are used to make the materials but then organism is killed and material just exists like any other. In future, such clothing materials could be living organisms that could work symbiotically with the human body to nourish it and even monitor it for signs of disease.

While functionality continue to increase consumption, the urban consumers desire to be more fashionable overrides all other factors boosting sales for apparel retailers and brands. While, considering apparel as a functional purchase, the urban consumers also see apparel as a form of self-expression. They consider it as a reflection of their personality and status.

## Emergence of New Age Women

The role of women in Indian families is changing and with women contributing more to household income, their influence in family decision making is also increasing. Even women who do not work are also stepping beyond their homes like working women and taking up male roles and responsibilities, as family work gets redefined, driven by pressures of urban living. While this may be more visible in metros and larger towns, the change is also happening across smaller towns and rural areas, where the girl child is slowly being encouraged to do more and achieve higher. This whole transition in the lives of the new age women has increased their awareness about themselves and how they look, which in turn is driving growth in the women’s apparel market.

On the semi-urban and small town side, this means more spend on apparel, increasing adoption of ready to wear rather than home-stitched apparel and increasing acceptance of western casuals (denims, T- Shirts/ Tops etc.)



Source – Wazir Analysis Based On Published Data

On the urban side, with the rapid expansion of professional sectors in India where working conditions are more women friendly and hiring policy is inclined towards greater gender diversity, the number of women entering in workforce is constantly increasing. At the same time, the dropout ratio of women professional is decreasing and average tenure is increasing. Hence, the need of dressing smart and willingness to look better is driving urban women to increasingly accept western wear, leading to women western wear market showing more traction and wider acceptance in urban areas.

Recognising this changing scenario in urban areas, the women western wear is also evolving beyond denims and western casuals with innovative fabrics and stylised silhouettes. In an attempt to capture the growing transition towards western wear, increasing number of retailers and brands are introducing fashionably smart clothes for women, including office wear and party wear. Even the Indian ethnic wear is getting a twist with silhouettes becoming more westernised and moving towards “contemporary clothing.” The growth of domestic brands like “W” and international brands like Zara are witness to this trend.

Furthermore, the way urban women perceive inner wear has also transformed. They no longer shop innerwear as a need based product or a functional purchase. For urban women, contemporary inner wear is more associated with their aspirations and desires rather than functionality or need. Therefore, women western wear and inner wear market are big opportunities for growth and investment.

Table 6: Women’s wear market size in India (INR in Crores)

| Total Market Size (in INR Crores) | 2015   | 2020     | 2025     | CAGR |
|-----------------------------------|--------|----------|----------|------|
| Women Western Wear                | 14,800 | 31,975   | 98,500   | 21%  |
| Women Inner Wear                  | 7,250  | 16,830   | 38,500   | 18%  |
| Women Traditional Wear            | 64,100 | 1,20,000 | 2,25,700 | 13%  |

Source: Wazir Analysis

## Return of Custom-Fit Clothing

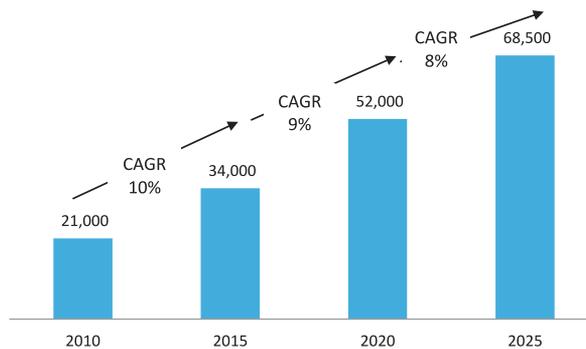
The Menswear market in India transitioned from tailor-made to ready-made clothing due to the popularity of ready-made clothing among young and working Indian men. But now, the trend of custom-fit clothing in India is reviving as more and more men who have been buying premium or luxury readymade clothing brands want to wear a shirt or a trouser that fits them perfectly.

Custom-fit clothing is a term that is used to represent any garment that has been transformed to fit a customer on the basis of his/her measurements and styles. Custom-Fit Clothing is of two types – Made-to-Measure and Bespoke Tailoring. In case of made to measure, standard patterns of clothing are fitted to the measurements of the customers. Although, made to measure clothing fits better than readymade clothing but it is still not made 100% according to the customer’s measurements. On the other hand, bespoke tailoring in terms of fit is incomparable. In this, customers have to choose from different options of body types, fabrics, cuffs, collars, pockets and buttons along with usual size measurements. After finalisation of all the details, a pattern is made for the garment on the basis of which it is designed and constructed. Therefore, bespoke tailoring offers higher exclusivity than Made-to-Measure.

In India, the premium brands like Raymond and Louis Philippe as well as luxury brands like Armani, Versace, Zegna, Cadini and Canali are offering made-to-measure service. Moreover, the premium brands like Van Heusen’s MY FIT and Creyate by Arvind Group have also introduced bespoke tailoring in an attempt to capture the growing trend of ‘custom-fit clothing’ among Indian men.

The menswear ready-to-stitch market in India is expected to grow to INR 52,000 Crores by 2020. Although, the share of ready-to-stitch in men’s wear market is decreasing because more and more customers of local tailors who largely exist in small towns and villages are shifting towards readymade clothing. But there is high growth potential for premium and luxury brands offering custom fit clothing as this gives Indian men personalised clothes with perfect fit combined with a new experience, freshness and exclusivity which contribute positively to sales and consumer acceptance of brands.

Figure 14: Menswear Ready-To-Stitch Market Size (in INR Crores)

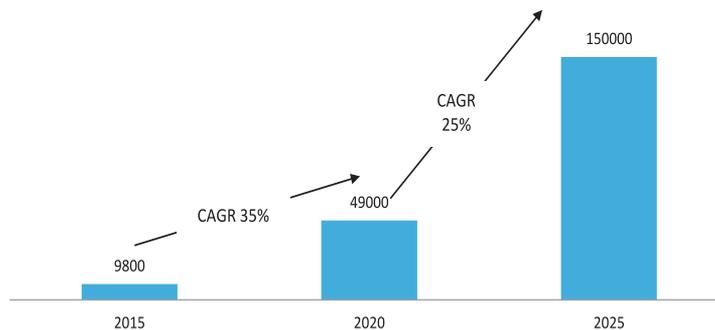


Source - Wazir Analysis

### Integration of Fashion and Technology

The increasing access to digital devices and internet is enabling masses to have online shopping experience irrespective of whether they are living in urban or rural areas. The online shopping experience today gives rich, immersive and personalised shopping experience to a customer and this is the major reason which is driving growth.

Figure 15: Projected Online Apparel Sales (in INR Crores)



Source - Wazir Analysis

While the online apparel sales are growing, the opportunity to build digitally driven fashion brands is also emerging. The success of digitally driven fashion brands will be driven by vast young population with access to technology and desire to be fashionable. These brands will have to master the “content” as it is the only thing that runs the internet. These brands will utilise the power of curated content to build their brand identity. They will

present new fashion ideas and inspirations to people and effectively leverage proliferating social media as a marketing and distribution channel. Through collaboration with existing e-commerce websites, a digitally driven fashion brand will be able to access large customer base at very low costs. Moreover, the interaction of customers with database of brand's product range will reveal which products have the highest selling potential. This customer interaction data will be used to address all the inventory related issues. Therefore, profitable businesses strategies developed through the smart use of data mining techniques and sharp strategic analysis of data gathered through these techniques, will effectively fuel the success of digitally driven fashion brands. This success can be further utilised for sales channel integration as well as expansion.

### **Collaboration is the key to build an effective and successful supply chain**

Collaboration between retailers, brands and the manufactures is a very important to build a successful and cost-effective supply chain. In today's complex fashion environment, which is driven by consumers who have the mentality of "See Now, Buy Now", retailers need to ensure that the products are available at the right time, through the right channel and at the right place. Given the complexity of the supply chain, retailers and brands working in close collaboration with the suppliers is still a major challenge. Many retailers and suppliers find it difficult to share the requisite information because of trust issues. The fast fashion retailers are focussing on digitising the consumer experience from the point of receiving the product in their warehouses. However, there is need to work on digitising the complete supply chain right from the raw material manufacturer to the supplier. In order to be more responsive to the consumer demand, the business requires to change their cultural working processes so they have more flexible management structure to speed up the decision making process. This will also require investment in technology as that will help in providing the details about the consumer preferences as well as lead to development the desired products.

Retail scenario is changing constantly and retailers and suppliers both are expected to keep the pace. Businesses can be truly successful if they focus on collaborating throughout the consumer journey.

## About **wazir** ADVISORS

Wazir Advisors is a management consulting firm with a special focus on textile value chain assisting clients in strategy formulation and implementation, forming alliances and joint ventures, investments, market understanding, sector analysis and due diligence – thereby providing end to end solution spanning the complete business cycle in textile sector.

Having worked with leading national and international companies, public sector organizations, Government departments, development agencies, trade bodies etc., Wazir has a deep understanding of business dynamics and right connect with people in the sector.

Wazir's team of sector experts possess experience across functions – projects, operations, sourcing and marketing. The team members have worked on strategy and implementation assignments in all major textile and apparel manufacturing and consumption bases across the globe.

Wazir leverages its body of knowledge, contacts and combined expertise of its team to deliver value to the clients. Wazir offer services in following areas:

### **Strategic Advisory Services**

- Corporate strategy
- Business performance enhancement strategy
- Market entry strategy
- Marketing and distribution strategy

### **Market research**

- Consumer surveys
- Trade research
- Market intelligence
- Customer feedback & relationship management

### **Services for Govt. and Development Agencies**

- Sector growth strategy
- Export and trade promotion
- Policy formulation
- Policy evaluation
- Establishment of industry support centers Implementation Assistance
- Apparel factory re-engineering
- Productivity improvement for apparel factories
- Supply chain optimization
- Training for operators, supervisors and middle management

### **Support for investments**

- Cross border investments
- Company due-diligence
- Location analysis
- Partner search - M&A and JV, other forms of business partnerships
- Feasibility studies and bankable Detailed Project Report (DPR) preparation

### **Thought leadership**

- Conference Knowledge partner
- Sector whitepapers

## About

Confederation of Indian Textile Industry (CITI) is the apex industry chamber of the textile & clothing sector of India. It represents all the sub sectors of the textiles sector through its Member Associations, Associate Members and Corporate members including all the major export promotion councils and 17 corporate members covering entire textile value chain from fibre to garment and made-ups sectors and the textile machinery industry of India. Besides this, Chairmen of Cotton Textiles Export Promotion Council (Texprocil), Synthetic and Rayon Textiles Export Promotion Council (SRTEPC) and Apparel Export Promotion Council (AEPC) are members of the Committee of CITI on reciprocal basis. The estimated cumulative annual turnover of our members is around US\$ 30 billion plus!

Earlier, CITI was known as The Indian Cotton Mills' Federation (ICMF) which had been established in March 1958. In May 2005, it was broad based to represent the entire textile sector with the formation of Confederation of Indian Textile Industry (CITI), a Company registered under Section 25 of the Companies Act 1956.

CITI works as an interface between the Government of India and Industry. It helps government in providing policy inputs to the government and simultaneously support the textile and clothing sector by protecting their interests by bringing amendments in government policies.

Under the auspices of CITI, the Textile Sector Skill Council (TSC) has started its operations and trying to build up a pool of skilled workforce for the various sub sectors of the textile and clothing industry.

Recently, TSC got an Award "Champion Sector Skill Council" from Shri Arun Jaitley, for its outstanding work in establishing skill-training ecosystem for Textile & Handloom industry. Shri Sanjay Kumar Jain, Chairman and Dr J V Rao, CEO of TSC received the award. The same was awarded in a function to commemorate the 3rd Foundation Day of Ministry of Skill Development and Entrepreneurship (MSDE), GoI, on 9th Nov 2017. The award was constituted by MSDE for the best performing skill council among the 40 sector skill councils jointly established by GoI and various industries to meet the ambitious mission of empowering Indian youth with skill training and employability.

CITI has a subsidiary body called CITI – Cotton Development and Research Association (CITI-CDRA), Through CDRA, CITI has been supporting cotton extension and seed development activities since 1964 in different parts of the country. Currently, CITI-CDRA is working with cotton farmers in the districts of Rajasthan, Madhya Pradesh and Maharashtra for improving the quality and quantity of their cotton production and reducing cost of production.

The Confederation has established a Young Entrepreneurs Group (YEG) functioning since March 2003, comprising young entrepreneurs in the industry holding executive positions.



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