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**Research Paper**

# A Study on Emerging Trends in Textile Industry in India

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***ABSTRACT***
*The textile industry is one of the most ancient industries of India. Textile industry enjoys considerable demand in the domestic and global market and earning considerable foreign exchange. The industry is contributing 4 percent to the country's GDP. It has a unique position as a self-reliant industry, from the production of raw materials to the delivery of finished products, with substantial value-addition at each stage of processing; it is a major contribution to the country's economy.*
*Globalization has had a positive impact on textile exports of India. Countries producing and exporting textiles have increased investment in spinning and weaving equipment. Even though Developing countries have comparative cost advantage in domestic and international market still they are implementing bringing structural changes to meet the needs of the global stringent buyer.*
*The supply chain components, different stages involved in Textile industry and identify the reasons for being integration in supply chain in view of emerging trends in textile industry. In This paper deals with the supply chain in textiles, types of textiles, different types of finishes given to textiles, dyeing, new technology and information technology.*

***KEY WORDS***
*Textile exports, Supply Chain, Technology*

## I. IMPORTANCE OF TEXTILE INDUSTRY IN INDIA

The Indian textile industry presently contributes around 14 percent to industrial production, and 4 percent to GDP.17 percent to the country's exports, and 21 percent employment. It is the second largest employer after agriculture, is expected to employ around 50million people in the next five years. India is replete with natural resources like cotton, jute and silk. Indian products were known for fine designing, embellishment and craft. Besides this the ancient Indian fabric designers and weavers were one of the best in the world. The industry presently growing at 9-10 percent with Indian economy. Indian textile industry presently enjoys a share of 4.7% in world market of textiles and clothing.

Export of clothing from India is getting popular world over due to the versatility of different products. The major retailers include J.C.Penney, Nautica, Dockers, Bed, Bath and Beyond, Target, Kohl's Liz, Calvin Klein, Sprit, Marks & Spencer, GAP, United Colors of Benetton, Mango, Zara and Dillard's etc.

**Emerging Trends in Textile Supply Chain**

We find there are so many new techniques coming up in the textile industry with respect to different types of textiles, finishes given to the textiles, dyeing processes, new technologies and the information technology.

1. **Different Types of Textiles** - The different types of textiles includes: Home textiles, Smart textiles, Narrow fabrics, Technical textiles, Acoustic textiles and Eco-friendly textiles etc.

a**) Home Textiles** - Home textiles refer to the textiles used for home furnishing. It comprise of extensive range of functional as well as decorative items or products used mainly for the purpose of decorating our homes. Home furnishing fabrics, Bed spreads, Blankets, Pillows and pillow covers, Cushion and cushion covers, Carpets and rugs, Wall hangings, Different types of towels, Table cloth and mats, Kitchen linen and other kitchen accessories, Bathroom accessories.

b) **Smart Textiles/Modern Textiles** – Smart textiles are materials and structures that are sensitive and react to environmental conditions such as mechanical, electrical, chemical, thermal magnetic or other senses.

Smart textiles have been used in functional sportswear, medical and safety wear and fashion clothing. Smart fabrics have been developed which can create a sense of well being - they have anti-stress or calm-inducing properties.

c**) Narrow Fabrics** – Narrow fabrics can be defined as any textile fabric which is not more than 45cm in width with two selvedges (uncut edge of the fabric on the right and left hand sides). Elastic tapes, lace, ribbon, cording are a few to name.
Examples of narrow fabrics - Labels, braids, elastics and reflective tapes.
d**) Technical Textiles** – Technical textiles include textiles for automotive applications, medical textiles (e.g., implants), geotextiles (reinforcement of embankments), agro textiles (textiles for crop protection), and protective clothing (e.g., heat and radiation protection for fire fighter clothing, molten metal protection for welders, stab protection and bulletproof vests, and spacesuits).
e) **Acoustic Textiles** – Noise has become serious environment pollution in our daily life & is an increasing public health problem. Noise can have the following adverse health effects – hearing loss, sleep disturbances, feel tiredness, cardiovascular & psycho physiologic problems, performance reduction, annoyance responses & adverse social behavior.
Acoustics – The scientific study of sound which includes the effect of reflection, refraction, absorption, diffraction & interference.
f) **Eco friendly Textiles** – Eco friendly clothing for children its demand has increased manifold due to their various benefits. The eco friendly clothes are not only beneficial for a child but are also excellent for the environment. These fabrics include organic cotton, bamboo & linen.
2. **Different Types of Finishes** – In textile and garment world, finishing plays a vital role for quality improvement.
a) **Anti microbial finish** – Microbial infestation poses danger to both living & non living matters. Therefore, in the textile & garment world, finishing plays a vital role for quality & value.
Busier life styles of modern society have prompted the demand for high performance fabrics. Textiles finished with antimicrobial properties are one among such products leading towards better quality of life.
b) **Anti static finish** - Static electricity is created when two non-conducting surfaces, such as synthetic textiles, rub together. The two surfaces become oppositely charged and as the rubbing continues, an electrical charge will build up, increasing in strength (voltage) until it can be discharged by contact or close proximity with a conducting surface such as a metal radiator or door handle. This can be accompanied by a spark, and the wearer can experience the electrical shock, which is unpleasant. Static electricity also causes fabrics to "cling", when two layers of clothing rub together, causing discomfort.

c) **Wrinkle free finish** - By applying resins it is possible to improve specific properties of cellulosic fibres. Examples are the improvement in crease recovery, dimensional stability, non-iron, reduced pilling and particularly with knit goods an improved appearance after several washes. For successful resin finishing it is absolutely essential that the goods are well prepared and the recipes and processes are adhered to and monitored exactly.

d) **UV absorbers -** UV radiation is one of the major causes of degradation of textile materials, which is due to excitations in some parts of the polymer molecule and a gradual loss of integrity, and depends on the nature of the fibres.

e) **Cool finish (Snocool) finish** - When temperature rises, we tend to sweat. This is a natural reaction of our body to maintain the temperature around 97°F. The sweat when evaporates, takes along with it heat equivalent to heat of evaporation of water, thereby maintaining the temperature of the body.

f) **Flame retardant finish**– In about 24% of fire accidents, the first item to catch fire is textiles. To avoid this there is a need of creating the textiles which are flame retardant. Flame-retardant finishes provide textiles with an important performance characteristic. Protection of consumers from unsafe apparel is only one area where flame retardancy is needed. Flame retardants are chemicals, which are added to combustible materials to render them more resistant to ignition.

g) **Mosquito repellent finish** – Protective textiles are among one such smart application of smart technology in textiles. Protective textiles refer to those textile products which have a functionality of giving protection from something in some or the other sense.
Apart from the industrial use, Mosquito repellent finish on textiles has become essential in our day today life to live in free diseases and hygienic atmosphere. The finish has excellent potential in various textile uses baby care products and night wears.
h) **Moisture management** - Ever since synthetic fibres became popular for clothing purposes, there has been the desire for a finish to change the hydrophobic character of these fibres. The main reason was to improve the wearing comfort. Hence the necessity to Improve synthetic fibres with regard to their absorbency Areas of

textile finishing where improving the absorbency is still one of the main considerations are sportswear, some of which is also made with functional jersey with hydrophobic synthetic fibres on the inside and hydrophilic cellulosic fibres on the outside.

i) **Water repellent finish** – The fabrics that do not allow absorption or penetration of water for a fixed period of time are said to be water-repellent fabrics. These fabrics are porous for allowing body perspiration to escape and therefore are more comfortable. Some fibers such as nylon and polyester do not readily absorb water where as other fibers such as cotton and rayon can absorb water easily. Therefore, often the fibers of water absorbent fabrics are preferred for making items such as rain coats.

j) **Water pr**oof **& breathable** – Waterproof breathable fabrics are designed for use in garments that provide protection from the environmental factors like wind, rain and loss of body heat. Waterproof fabric completely prevents the penetration and absorption of liquid water. The term breathable implies that the fabric is actively ventilated. Breathable fabrics passively allow water vapour to diffuse through them yet prevent the penetration of liquid water. High functional fabrics support active sportswear with importance placed on high functions as well as comfort.

3. **Technology** –

a) **Microfibre technology**– From past two decades there has been a trend towards finer synthetic filament fibres, and consequently various microfibers have been developed with novel fibre spinning techniques to reduce thickness and alter the cross section shape.

Microfibre fabrics are generally lightweight, resilient or resist wrinkling, have a luxurious drape and body, retain shape, and resist pilling. Microfibre fabrics have enhanced drape-ability, luster, softness, bulkiness, and smoothness, and also high tactile aesthetics and high water absorption and chemical adsorption properties.

Microfibre is easy to care for, strong, durable, wrinkle resistance, shrink resistance, water repellent, and wind resistant.

Examples – towels and typewriter ribbons, wiping clothes, filter clothes etc.

b**) Digital printing technology** – Fast growing, but small sector of textile printing. Digital is replacing flat-screen printing machines due to similar colouration costs and production speeds.

- This is ideal to overcome technical limitations of traditional printing.
- Just-In-Time Printing
- Sustainable Technology

c) **Nano technology** – Nano particles are now being used to create fascinating products offering entirely new functions. These include, for example, textiles from which the dirt simply rolls away, or which have an antibacterial effect.

d) **CAD/CAM** – "Computer Aided Textile Designing" is an Emerging field in the Textile Industry. Create designs in the various qualities for Furnishing, Dress materials, Sarees, Upholstery, Mats, Narrow fabric, Lace, Woven labels etc…

Super fast Weaving: Which makes weaving of designs very easy & quick.

Fabric Simulation: Simulation of woven fabric can be viewed on the screen or a print out can also be taken.

Product Output: The software will produce all the required outputs to convert a design into an end product.

Adoption of computer aided designing in the field of textile designing and manufacturing ensures a very high potentiality for the textile manufacturer. This, in turn, enables the powerloom as well as handloom sector to earn more revenue. This "Ultimate Solution" for textile designing and manufacturing has a very vast application areas from dobby, jacquard and screen printing industries to blanket and carpet industries and many more.

4. **Dyeing** –

a) **Natural/ Eco-friendly Dyes** - Natural dyes are dyes or colorants derived from plants, invertebrates, or minerals. The majority of natural dyes are vegetable dyes from plant sources –roots, berries, bark, leaves, and wood — and other organic sources such as fungi and lichens.

b**) Electrochemical Dyeing** – Electrochemical dyeing process results in product saving, less chemicals with special safety requirements, unsurpassed environmental compatibility and better fastness properties.

Low concentration of chemicals and non-toxic chemicals. Economic technique for recycling of chemicals and water used for washing.

c) **Thermo sensitive Dyes** – Used on Denims. The denim effectively pales a few shades once worn, exposed to sunlight or when in touch with a hot object.

5. **Information Technology** -

a) **ERP** - ERP system enhances information flow through various business processes like production sales, inventory planning and finance - helping companies to gain competitive advantage. Simply to understand - ERP system organizes all of the companies information into one centralizes system, which is always available.

An Enterprise Resource Planning (ERP) system is a package of corporate wide software application that drives manufacturing, planning, costing, finance, marketing, human resources and other business functions in real time.

The significant advantage of an ERP system is that it integrates all the functions to create a single unified system rather than a group of independent application, thus creating a synergy between the vital resources of an organization namely men, material, money and machine. ERP is basically a software suit that integrates the whole enterprise, covering the entire internal supply chain from vendors & suppliers to customers.

b) **CPFR** - CPFR helps trading partners to forecast and replenish more effectively by identifying any discrepancies that may occur between forecasts devised by the retailer, and those developed by a supplier. If one company's forecast varies significantly from that of its trading partner, a software application will trigger an alert and identify it as an 'exception', so that the matter can be resolved by forecast analysts on both the retailer and supplier sides.

c) **RFID** - In the Textile & Apparel supply chain Radio Frequency Identification (RFID) technology promises to offer significant benefits both in terms of operational efficiency and more accurate tracking and tracing of goods. However many companies are still biding time, mainly because of a lack of confidence in the investment profitability.

Companies operating in the Textile & Apparel industry can benefit from RFID in several ways: better production management (e.g. work-in-progress monitoring), more precise inventory management (e.g. product availability, running capital productivity), higher visibility, brand protection and anti-counterfeiting, and eventually reduced thefts.

The main key variable here is the information. If the information is not communicated then the entire process will get delayed. The other variables are lead time, transportation time and the storage facilities for yarn, fabric and garments.

**Issues**

India has low competitive position with regards to availability and price of cotton (good quality), low level of technology, poor automation, raw material vagaries and lack of scale economies in weaving and processing sector, and low brand image in textile garment sector. The other issues include rigid labour laws, man power and skill issues, marketing problems for the finished products, inadequate capacity of the domestic textile machinery manufacturing sector, inadequate training facilities in textile sector, and infrastructural bottlenecks in terms of power, utility, road transport etc.

**Challenges in Textile Industry-**

The Indian textile industry is facing challenges in terms of govt. policies, fragmented structure with the dominance of the small scale sector, rising interest rates and transaction costs, foreign investments are not coming in as the overall factors influencing the industry are not investment friendly, logistical disadvantages in terms of shipping costs and time pose serious threats to its growth and supply chain integration.

## II. CONCLUSION

The textile industry is the major industry in India which provides the second largest employment after agriculture. The industry should start taking care of the new technologies that are preferred by the consumers. In the highly competitive regime quality, productivity, price advantage and trouble-free performance will determine the consumer preference.

The Indian textile industry has a significant presence in the Indian economy as well as in the international textile economy. Its contribution to the Indian economy is manifested in terms of its contribution to the industrial production, employment generation and foreign exchange earnings. The industry also contributes significantly to the world production of textile fibres and yarns including jute.

The supply chain integration is a strategic initiative companies may perform to reduce risks and interdependencies with external business partners in the supply chain. Fundamentally, companies may increase their control over a wider scope of the supply chain by performing backward and/or forward integration, and increase their own decision-making power over key resources and competencies important to the competitiveness of the organization.

Virtual integration, whereby supply chain partners exchange information in real time, is the answer to the problem of uncertainty in supply chains. But along with its numerous advantages, virtual integration of supply chains also poses the challenge of managing information risks.

Information technology is very useful in tracking textile and apparel products at every stage of their existence. It is very useful in tracking the product system, labour movement, fabric lot storage and retrieval, easy product accessibility in retail stores, exchange of goods inventory control, re-stocking alerts and replenishment and customer- specific shopping reminders and promotions.

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