



## CONTRIBUTION OF SCIENCE AND TECHNOLOGY FOR THE ADVANCEMENT OF TEXTILES AND FASHION INDUSTRY

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### ABSTRACT

The Textile and fashion industry by any measure is significant-it is large by value, employment and cultural influences. The tentacles of fashion and textiles reach almost every aspect of our day to day lives, fulfilling a functional need for clothing, but also enabling personal projections of ourselves to the world. Science and technology has facilitated the globalization of a fashion industry in which a dress can be manufactured far from where it was designed. The stages through which a garment moves from conception to acquisition by a consumer are these-the creation of a design concept, the acquisition of fabric or other material from which to make the garment, the cutting of pieces that will be assembled, putting together the pieces and incorporating any needed finishing. With development of science various new synthetic fibers were manufactured like polyester, rayon, acrylics, spandex etc which gained the popularity among textiles industry. With the availability of diverse kinds of yarns, knits, and developments in fabric structures, the range of materials available to textile designers is enormous now. Information technology has also played an essential role in the manufacturing of dress. Now computer maybe, but is not always, the first tool used by a designer as he or she conceives the designs. Manufacturers use computer aided designs and computer software that can soften the process. The latest softwares not only produces a visual image of the design but also is able to create a pattern in a variety of sizes. Electronic media technologies have made access to information about fashion trends worldwide. All traditional methods and infrastructures are replaced by newly invented equipments, furnitures and softwares. Each phase of industries whether it is spinning of fibers, weaving of fabrics, dyeing of fabrics and designing of blue prints. Each task is completed efficiently with high speed by using modern technologies. Increased communication and standardization methods are quickening the delivery process of products which reduces the overhead costs. By technological development of industries labour content is reducing and product quality is improving day by day. Government should also contribute in the development by industries by providing some facilities and incentives to the industries. For example tax incentives etc. Now the textile and fashion industry is more mature and developing than it was a few years ago.

**KEYWORDS :** 1. Shifting focus of Industries., 2. New manufactured synthetic fibers. , 3. Grading by computers and use of high speed shuttle less looms., 4. Use of Electronic data interchange., 5. Production Modules in advanced industries., 6. Major Developments., 7. Incentives given by Govt.

The textiles and fashion industry is one of the most extensive of all worldwide production networks. International production and distribution networks are central to the functioning of the Industry, and fashion production is dispersed worldwide Asian Countries have grown to become a huge global suppliers. In recent years, the expansion of the fashion Industry's global production network has greatly accelerated. Textile and fashion industry of the 21<sup>st</sup> century is more capital intensive, more horizontally and vertically integrated and more internationally linked than ever before. Area based and labour intensive industry of today is transferring itself into most globalised, technology driven capital intensive entity at a very faster pace. It is shifting its base from the most industrialized and developed countries like United States of America to the developing and under developed nations of Asian and other parts due to lower salaries and overheads in these areas.

With developments in science and technologies the textile and fashion industry is paving way towards:

1. Increased allocation for research and development.
2. Technological advancement and integration.
3. Greater quality consciousness.
4. Fashion friendliness and more style fondness.

It is shifting its focus from:

1. Natural to Synthetic fibers.
2. Woven to Unwoven fabric.
3. Local to Multinational manufacturers
4. Utilitarian's approach to Love for fashion and style

The textile industry is being reshaped by technology, the growth of international trade, changing patterns of demand and a shifting regulatory environment. Now customers enjoy more products tailored to their specific tastes and find a great range of styles and sizes in stock. New textiles are being made not only for apparel use but for other new products including filters, parachutes, book bindings, fire hoses, adhesive tapes, automobile tyres, mail bags. Some textiles are invented which are used in surgeries to replace the worn out body parts, such as blood vessels etc. With the development of Science and technology some major new synthetic fibers were manufactured which are contributing very much in fashion industries, which are:

- a) Viscose Rayon-which is also called as artificial silk. It is less

expensive than silk, stretches and shrinks shapes well.

- b) Nylon- It is very much in demand because of its excellent strength, stretch ability, durability and it is easy to care. It is used for women's hosiery, wide variety of products range from sheer fabrics to durable luggage.
- c) Acrylic- It is also called as Orlon. It can resemble wool in appearance and feel and used in hosiery, knitted sweaters. It costs less than wool.
- d) Polyester- It is also called as Dacron. It is relatively strong, launders well. It is often blended with natural fibers to make easy care products.
- e) Cellulose Acetate- It has very attractive appearance so it is used for formal and bridal gowns.
- f) Spandex- It is called as Lycra. Initially it was used for sports and underwear garments but later it was used in combination with other fibers in dress such as swimwear and other garments. It is stronger than rubber, high elongated and excellent recovery from stretching.

Acknowledging the increased consumer awareness of global environmental and ethical issues and the new demand for eco-friendly products, the industry is not only developing 'green' textiles but new method of operation that are non-polluting and resource-efficient. Now fabrics are dyed using natural dyes wherever possible to minimize water consumption and water used is then purified to minimize the risks of residue discharged into the environment.

In production houses, before sewing, fabric and apparel pattern makers create the "blueprint" or pattern pieces for a particular apparel design. This involves 'grading' or adjusting the pieces of different sized garments. Grading once was a very time consuming job, but now it is quickly completed with the aid of a computer. Traditionally, markers judged the best arrangements of pieces by eye, today, computers quickly help to determine the best layout.

With the technological advancements, speed and product quality are improving. These have largely been the result of significantly increased machines speeds and versatility and energy efficiency. If we talk about weaving of fabrics, conventional shuttle looms are now being replaced by high speed shuttle-less looms, some of them 10 times more productive than the old ones. Slower manual cleaning of equipment is replaced by faster automated cleaning equipments.

Energy savings have also been a benefit of new machinery. The new air-jet loom is especially energy efficient. Another productivity improvement has been the reduction in needed floor space, as the production process has been consolidated and some steps have been eliminated. Some new machines are more compact. Such space saving translates into reduced costs when building new facilities, as well as less costly expansion in older mills.

These industries now use computerized equipment and material transport system. Computers and computer-controlled equipment aid in many functions such as design, marking and cutting. Through electronic data interchange, information is instantaneously communicated to and received from trading partners and this has made it possible for businesses to automate other processes.

The fashion industry traditionally had consisted of production workers who performed a specific function in an assembly line but during past years that organizational philosophy is replaced by a team work in which garments are made by a group of sewing machine operators organized into production "modules". Each operator in module is trained to perform nearly all of the functions required to assemble a garment. After economic growth, the most of the industries has made a shift to keep expensive machinery and more clean, well lit and ventilated workplace.

Increased communication and standardization between different sectors within the apparel industries complex has quicken the process by which the final product is brought to the consumer, leading to further reduction in overhead costs and bringing production even closer to the marketplace.

Newly designed chairs and machines that allow workers to stand comfortably during operation are some of the means that firms use to minimize discomfort for production workers. The economic reforms brought implementation of modular units and specially designed equipments which reduces potential health problems by lessening the stress of repetitive motions.

Technological advancements has brought three major changes in textiles and fashion industries:

- a) Reduction of labor content in the manufacturing process.
- b) Increase in the quality of products.
- c) Flexibility in production.

To cope with a competitive market our industries sometimes faces many problems which can be solved by our Government by lifting of export restriction in textiles and clothing, by providing efficiency in the areas of transport, telecommunications and electricity infrastructure, minimizing transit time for shipment, fostering a dynamic macroeconomic environment. Govt. should provide various subsidies and tax incentives to encourage training and skill enhancement. It should introduce new policies and regulatory framework that will strengthen the private sector's capacity to deal with rapid change and growing competition, and to capture the trend opportunities.

### Conclusion

The developments during last decades have shown that the whole structure of textile and fashion industries has changed. Industries are moving from manufacturing-oriented to marketing oriented responding to market or customer needs, with an emphasis on the ultimate consumer. This is also sometimes called as changing from a "Push system" (where limited products are pushed on to customers) to a "Pull system" (where information about customers and their preferences are pulled by market research and then things are made). The developments undertaken by industries has transformed then from a highly fragmented, highly specialized operation into an industry dominated by international giants. This situation contrasts with precious decades. So it is clear that through innovations, economic growth and technological growth, textiles and fashion industries has successfully transformed the CINDRELLA of the fiber world into a fashionable PRINCESS.

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