

Sustainability in Apparel & Textile Industry in India: Challenges and practices

Amit Vishwakarma^a, M. L. Meena^a, G. S. Dangayach^a, Sumit Gupta^b

^aDepartment of Mechanical Engineering, Malaviya National Institute of Technology Jaipur (India)

^bDepartment of Mechanical Engineering, ASET, Amity University Noida (India)

Abstract

India is one of the leading countries in clothing export. However, its apparel and textile Industry facing immense problem and challenges. These challenges are related to social, environmental and economic issues. Indian Apparel & Textile Industry are not much conscious about sustainability. Its result is India's apparel export is falling continuously. Consequently, it is losing the worlds market. It is time to implement new plan and approaches towards the sustainability. Purpose of this study to identify the various challenges that Indian apparel industry is facing. To resolve these challenges some sustainability practices is suggested. However, they are not sufficient in future much more sustainability practices significant initiatives required for better environment and sustainability.

Keywords: Sustainability; textile industry; challenges; sustainable manufacturing

1. Introduction

India's clothing industry plays a crucial role in its development. It not only provides the financial earning but also provide huge employment to the people. It contributes about 2.3 % of India's GDP, and 12 % of foreign exchange earnings come from textile exports. Approximate 45 million people directly or indirectly working in this industry. This sector accommodates both skilled as well as an unskilled worker so it provides inclusive growth. All the above figures show the importance of the apparel and textile sector in the country's growth. However, this sector pollutes the environment on a vast level. Emission of greenhouse gases, generation of hazardous waste, discharge of toxic effluent containing dyes in the surrounding, etc. It has been found that 20% of water pollution is caused by the textile industry [1]. The affluent contains various pollutants and dye colors [2].This arises the need for green manufacturing of apparel is the need for present and the implementation of various sustainability practices. This will benefit our environment. Sustainability played a vital role in the development of industry like CSR (Corporate Social Sustainability) provide economic benefits to the employees [3]. Purpose of this study to identify various challenges from raw material till the end of life of the product in Indian apparel industry and suggest the sustainable solution for the challenges.

1. Literature Review

The work on sustainability started in 1980 but initially with different name i.e environment protection. It is very necessary to use natural resources in disciplined manner and prevent pollution. Apparel Industry release various pollutants in the surrounding. Microfibers from apparel and home textiles pollutes the ecosystem and harm the human health [4].

Table 1 Contribution of various Authors in this field

Author	Year	Connotations
[5]	2016	Textile consumption and its effect on environment investigated by using the LCA (life cycle assessment) method. The industry sector approach is used for the assessment of different interventions. It contributes to environmental and social sustainability in the textile sector.
[6]	2016	It utilizes a social constructionist approach to address the gap between sustainable fashion consumption and understanding of sustainable fashion.
[7]	2017	This integrates and implements LP (lean practice) to Environmental sustainability in the apparel sector. Moreover, it also identified various barriers that arise due to this and how to tackle them effectively.
[8]	2018	This paper identifies 14 barriers related to apparel and textile sustainability in India. Further, it identifies critical barriers among them with the use of the DEMATEL method. Lack of effective government policies and poor infrastructure came out to be significant barriers.
[9]	2019	It identifies various challenges for incorporating sustainability in the design process and categorize it as internal and external challenges. Internal challenges include lack of consensus and knowledge regarding sustainable design, lack of design-led approaches implementing sustainability in fashion, and perceived trade-offs with other design criteria, such as aesthetic styles, costs, and fashion trends. External challenges include the complexity of sustainability issues, perceived insufficient consumer demand, attitudes and behaviour gaps in consumer purchasing decisions
[10]	2020	Some eco-friendly approaches followed for sustainable garment manufacturing from raw materials selection to the final stage of garment manufacturing.
[11]	2019	This study using qualitative and quantitative analysis to identify sustainable incremental change in organizations. It found out that small life of apparel and textile products challenges the sustainability
[12]	2015	This study discusses about challenges faced by fashion industry. It particularly focusses on environmental and social challenges. Innovative ideas of sustainability can counter the challenges of fashion industry.

2.1 Research methodology

This study identified some of the challenges in apparel and textile industry. Effect of these challenges in different aspect of sustainability i.e social ,economic and environmental shown below in fig 1.

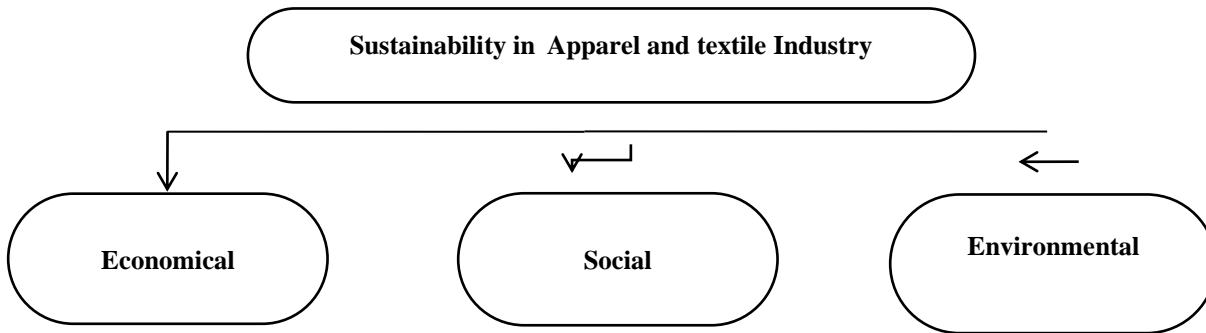


Fig.1 Type of Sustainability

2.2 Classification of challenges

In the below table some of the challenges are identified and their effect on which type of sustainability is shown.

Table 2 Categorization of sustainability into its dimension

S.N.	Challenges	Social Sustainability	Environmental Sustainability	Economical Sustainability
1	Poor quality of raw materials	Yes	Yes	Yes
2	Negative impact on the environment and society	Yes	Yes	No
3	Low productivity	Yes	No	Yes
4	Skill shortage	Yes	Yes	Yes
5	Poor infrastructure	Yes	Yes	Yes
6	Lack of sufficient governmental policies	Yes	Yes	Yes
7	Fast Fashion	No	Yes	Yes

1. **Poor quality of raw materials-** There is need to improve the quality of cotton. Poor quality of raw materials leads to low productivity. New and modern technology should be included to improve the quality of the raw material. Ginning and pressing technique help to reduce the contamination and improve the quality of cotton [13].
2. **Negative impact on the environment and society-** Textile and apparel Industry pollute the environment. It pollutes water, soil, air. Due to the lack of environmental awareness and small enterprises discharge the polluted water directly into the water source. Polluted water of industry contains the hazardous chemical these are harmful for aquatic life as well as human health [14].
3. **Low productivity-** There are so many reasons behind the low productivity. Limited use of modern technology, Power cuts, use of unskilled labour and the inadequate infrastructure are some of the possible reasons [15].

4. **Skill shortage**-Labour working in this industry does not go any kind of training. Very few firm invest in training of manpower. Result of skill shortage leads to low productivity and it degrade the quality of the product. To overcome this problem workshop and training should be provided for the entire workforce [16].
5. **Poor Infrastructure**-Indian apparel and textile industry lack automation very much. Most of the industries using conventional way for manufacturing of apparel. Moreover, power cut is also frequent problem. To remain competitive in global market these problem need to be addressed. Further research and development and finance are also required to resolve this problem [17].
6. **Lack of sufficient governmental policies**-For proper controlling of this sector good government policy required. Which can rectify its lacking like significant amount of unskilled labour working in this sector. Moreover, the government policy should address the following issues tough environment protect, waste reduction, recycle, handling of waste etc [18].
7. **Fast Fashion**-This is originated because of lack of awareness of the consumer towards environment [19]. Consumer find cloths in low price so he purchases too many cloths because as per recent fashion and irrespective of the need. This cause consumer thrown away the older cloth without completing their product life. This created the problem of waste generation and disposal of clothing [20].

2.3 Practices to be adopted for sustainability

1. **Application of Life cycle assessment method (LCA)**-Generally consumer compare product value in terms of money but LCA method provide the information about consumption of resources for manufacturing of product [21]. It becomes very essential for apparel and textile industry because it this industry directly affect the environment and natural resources like amount of water usage, carbon emission, eutrophication process. This should to design and develop the product which will not harm the environment after completing it life.
2. **Eco-labelling of the Apparel**- Life cycle assessment of product should be accompanied by eco labelling of garment. Purpose of ecolabel to provide information to consumers about the apparels [22, 23]. This information consists of eco-friendly manufacturing process, safe disposal etc. This information help consumer to prefer eco-friendly and sustainable apparel. Ecolabelling has an important role in the development of sustainable fashion products globally.
3. **Environment friendly practices**-This sector requires environment friendly practices at vast level. However, carbon dioxide gas emission and water pollution cannot be eliminated but can be minimized. Some of the environment friendly practices [24, 25] are use of energy efficient process, use of renewable energy etc. and some more practices are shown below.
 - Use of low impact dies.
 - Reduction in the use of toxic chemical.
 - Optimized use of land and water.
 - Reduction in the use of emission of gases.

4. **Eco-friendly textile fibers-** Cotton crop production consume high amount pesticide. About 55% of whole pesticide usage in India goes to cotton crop production [26, 27]. So there is need to use organic fibers. Cultivation of organic fiber do not use pesticide, fertilizers, synthetic agro –chemicals. So production of organic fibers do not harm the soil in any manner hence it is environmentally friendly although it is costlier than normal cotton.
5. **Recycled Clothing-** Solid waste in the environment is goes on increasing and clothing industry plays major role in it. It has been found that approximately two third of manufacturing of clothing goes into the landfills after completion of product life. It is the fastest growing household waste [29, 30]. Further young consumers have lack of awareness towards environment and they pay little attention towards it. They early thrown away the apparel. Recycling of cloths [31] present in this sector but it is not up to the mark. Much more work is required for the reduce, reuse and recycle technique.

3 Conclusion

This Study identified some of the challenges that Indian textile and apparel industry is facing. Further effect of these challenges on which dimension of sustainability is also mentioned i.e., economic, social and environmental sustainability. The challenges included in this research are poor quality of raw materials, negative impact on the environment and society, low productivity, skill shortage, poor infrastructure, Lack of sufficient governmental policies and fast fashion. Reduction or elimination of these challenges are essential for the growth of this sector. This will also increase the overall sustainability in this sector. This study also suggested some practices for the sustainability. These practices support and improve the sustainability. The included practices are application of life cycle assessment method, eco-labelling of the apparel, environment friendly practices, eco-friendly textile fibers, recycled clothing. All these practices have various benefits like environmental protection, bring consumer awareness etc.

4 Future Work

This work can be extended by including more barriers from different domain. These barriers can be from manufacturing process of apparel, supply chain or transportation, customer purchase for sustainable apparel etc. Criticality of barriers and its effect is also area of research. More sustainability practices should be included in future to make this sector environmental economic and social efficient.

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