

## An Empirical Approach to Investigate the Possibility Of Consumer Driven Sustainability Transformation Of Indian Textile And Apparel Industries

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**Abstract:** Consumers are bestowed with more power than they think. With the rising income level and the consumer base for fast fashions, the per capita consumption has increased significantly in India. Production of cotton, the primary raw material of the cotton textile and apparel industry is very resource intensive, wasteful and polluting. The production and consumption of cotton have very high environmental footprint. Several studies have pointed out the importance of sustainable production and consumption in reducing the environmental footprint of the textile industry. The paper aims in analysing the perception of ‘Sustainability’ of textile products as a purchasing decision making criteria for the end user consumers in India. The study focusses on the end user consumption side as they are a potential driver for sustainability transition in India. The study is based on three axioms that perception generates demand, demand motivates process transformation, and process transformation enables enterprises to navigate through the market challenges. The paper also identifies the challenges and mitigating strategies in the landscape level process transformation required for increasing the environmental sustainability performance of the products.

**Keywords:** Sustainable production, process transformation, sustainable consumption, environmental performance, textile, and apparel industry

### 1. INTRODUCTION

Researches on sustainable production and responsible consumption in the textile and apparel industries are being done since more than forty years. As per the Paris Agreement in 2015, the members agreed to cut down Carbon emission substantially in order to keep the global warming below 2°C. The “United Nations Sustainable Development Goals” in 1997 initiated the transition to *sustainable consumption*. Goal number 12 of UNSDG requires reporting and compliance of member states towards the progress towards promoting sustainable consumption as a national policy. India’s compliance score on UNSDG Goal number 12 is 55 out of 100 in “SDG India Index & Dashboard 2019-20” published by NITI Aayog(Niti Aayog, 2019). This score indicates that we have achieved only 55 indicators out of 100 indicators of the goal.

The Textile industry in India is one of the oldest industries in India and contributes to approximately 7percent of the GDP (CARE Ratings, 2019). It is valued at US\$ 140 billion, and employing 45 million people directly and 60 million indirectly (NIPFA, 2020). In FY-19, the domestic textile and apparel market is estimated valued at US\$100 billion (IBEF, 2020). India is the second-largest producer of raw cotton and fourth-largest exporter in the global textile and apparel exports. India is the 4th largest apparel and textile exporter of the world with exports valuing at US\$35.969 billion or 4percent of the total Global Textile and apparel market (CARE Ratings, 2019; WTO, 2019). Cotton-based textiles and apparel contributes to more than 75percent by volume of the total domestic consumption of country(CARE Ratings, 2019).As per the estimates of the Ministry of Textiles, the net consumption of cotton is projected to be at 5.53 million metric tonnes in 2020, down from 5.75 million metric tonnes in 2015(Ministry of Textiles, 2019).

#### 1.1 Cotton production scenario in India

Cotton is a major globally traded commodity and aKharif crop predominantly cropped between April through September with harvesting season in fall and winter. India is the largest cotton producer and exporter as per United Nations Food and Agriculture Office. As per the “Cotton Association of India”,the central zone states like Maharashtra, Gujarat, and Madhya Pradesh along with the south zone states like Telangana, Andhra Pradesh and Karnataka accounts for more than 80percent of the total cotton production in India (Cotton Association of India, 2018).India is witnessing a constant increase in the net cultivated area and also the total production of cotton. As per data from the “Cotton Corporation of India”, a “Government of India” Miniratna enterprise, the net cultivated area under cotton has increased from 85.76 lakh hectares in 2000-01 to 125.84 lakh hectare in 2019-20 with a compounded annual growth rate of 20.27percent (Refer: Figure 1: Yearly net cultivated area the yearly production of cotton in India)(Cotton Corporation of India, 2018). While, the total cotton production in the country has maintained a CAGR of 4.84percent over similar twenty years period between 2000-01 to 2019-20. The productivity in the similar period has maintained a CAGR of 27.80percent(Cotton Corporation of India, 2018). The total supply of cotton in India is the year 2018-19 was

7302.52 thousand tonnes<sup>1</sup>, while the total demand was 6501.48 thousand tonnes<sup>1</sup>, indicating an *oversupply* of the commodity (Cotton Association of India, 2018).

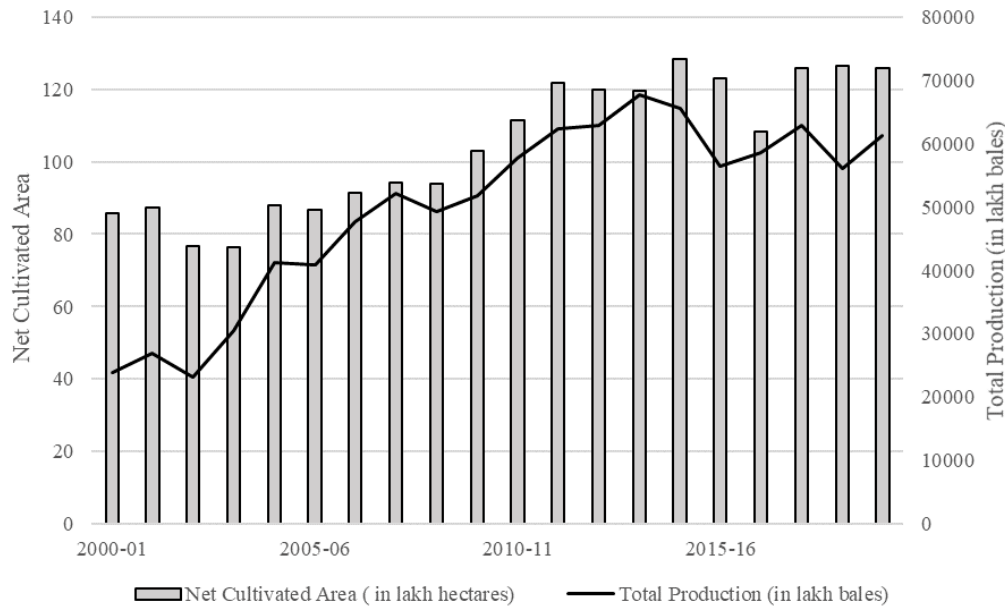


Figure 1: Yearly net cultivated area the yearly production of cotton in India<sup>2</sup>

Source: "Ministry of Agriculture and Farmer Welfare", "Government of India"

## 2. RESEARCH METHODOLOGY

This paper intends to do an empirical research whether consumers can lead a sustainability transition in the Indian textile and apparel industries. This research paper is inspired from the axioms like perception generates demand, demand motivates process transformation, and process transformation enables enterprises to navigate through the market challenges. It is widely believed that "Customers have more power than they think in leading an industrial transformation". This paper tries to investigate what is the perception of customers regarding sustainability transformation of the Indian cotton textile and apparel industries. This paper will also analyse the possible consumer side trade-offs due to transformations and the social benefit in offering. This paper also discusses the rationale behind the need of transformation.

### 2.1 Context of the study

The existing linear model of consumption is wasteful and polluting (Ellen MacArthur Foundation, 2015). Many companies have started noticing that their linear model of consumption is increasing their exposure to risks price volatility and supply chain disruptions (Ellen MacArthur Foundation, 2015). Cotton production is extremely resource intensive both in primary and secondary form. Various stages of the textile production use thousands of chemicals that are extremely polluting and hazardous for the biodiversity. The popularity of fast fashion has increased unequal consumption in the world and a throw away culture (Brooks, 2015). The workers in fashion industry supply chain from the developing countries are subjected to abusive and unsafe work conditions (Barrett, Baumann-Pauly, & Gu, 2018). So, overall the textile and apparel industries need to address the sustainability issues more effectively.

### 2.2 Research design framework

<sup>1</sup>Cotton Association of India, "Articles," 27 November 2018. [Online]. Available: <https://www.caionline.in/articles/cotton-advisory-board-cab-pegs-2018-19-cotton-crop-at-36-1-mln-bales>. [Accessed 06 September 2020]

<sup>2</sup>Data retrieved from Cotton Corporation of India, "Statistics," 2018. [Online]. Available: <https://cotcorp.org.in/statistics.aspx>. [Accessed September 2020].

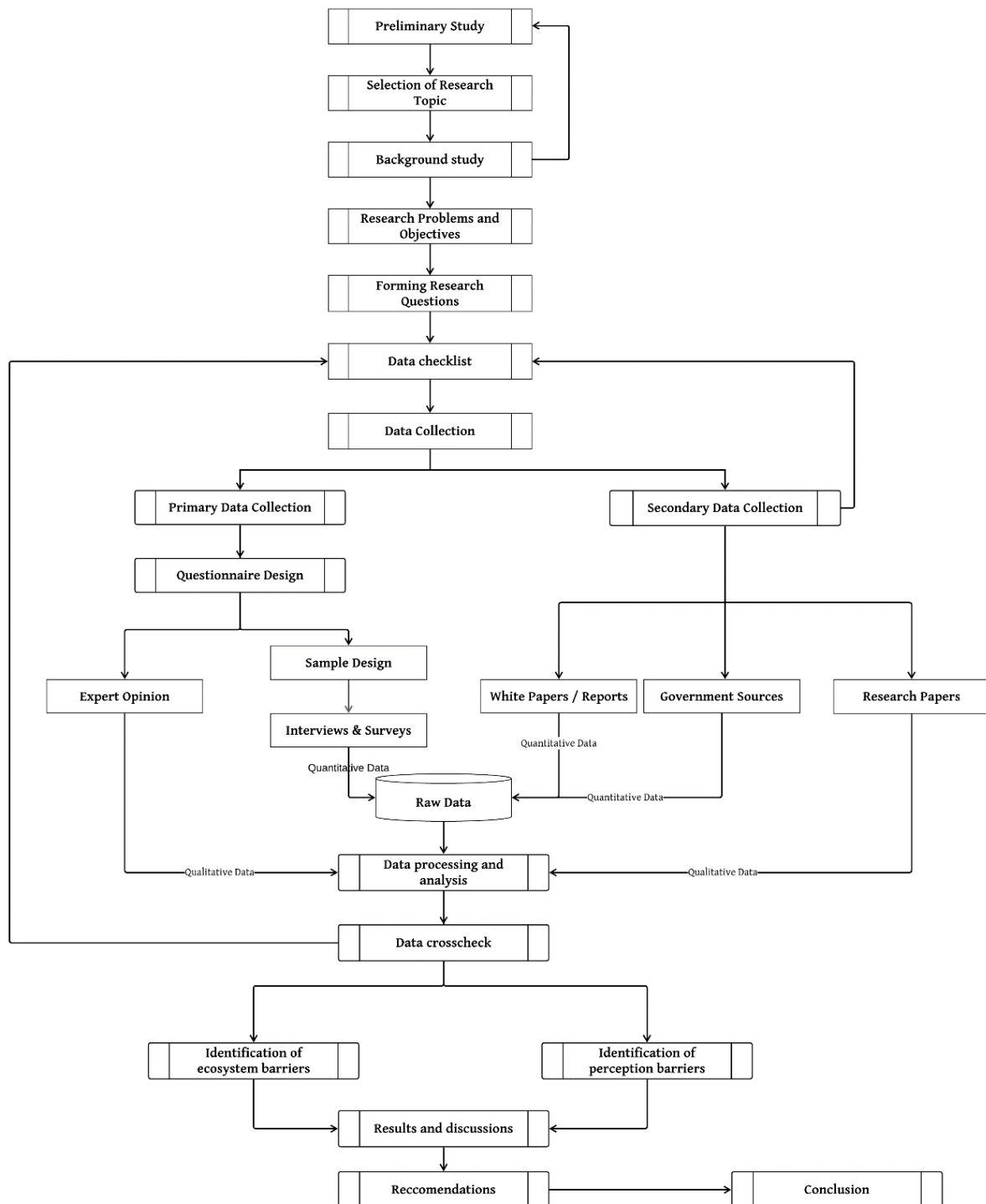


Figure 2: Research Design flowchart

### 2.3 Research problems

1. How consumers perceive sustainability issues?
2. Can consumer perceptions bring process transformation in the Indian cotton textile and apparel industries?
3. How consumers perceive to the possible trade-offs between cost, fashion, and sustainability issues?
4. How can 'sustainable fashion' be made more attractive for the consumers?

### 2.4 Objectives of the study

1. To establish the need for sustainability transformation.
2. To investigate the consumer perception and acceptability for sustainability transformation.

3. To analyse the socio-cultural impacts on the consumer choice of fast fashions.
4. To establish Circular economy as a strategy for sustainable transformation.

### 2.5 Research questions

1. What is the need for the transition and consumer perception about the needs.
2. What may be the possible trade-offs due to transition.
3. What is the consumer perception about the need and acceptability for the transition?
4. What strategies need to adopt to make sustainable fashion more attractive?

### 2.6 Data collection

Data collection technique is both based on primary as well as secondary methods. The production and consumption data of raw cotton is available from various ministries like Ministry of Textiles, Ministry of Agriculture and farmer welfare, “Cotton Corporation of India”, and “Cotton Association of India”. While area under cultivation data is provided by the World Bank open data source, the cropping pattern and productivity data is collected from the “Ministry of Agriculture and farmers welfare”. The global trend data of acceptance of sustainable fashion is taken from reports and researches.

The individual consumer level data is collected from primary surveys and interviews. Expert opinion was sought for data verification with the trend.

### 2.7 Sample design

Samples were designed in accordance to the principle of “Stratified Random Sampling”. Where the population is divided into strata. The target sample for the purpose of this research is the sizable impact potential consumers. So, I collected data from the youth population between 20 to 40 years of age. This age group has the maximum purchasing habit and they are typically the largest customers of brands. Data was collected from a sample size of 200 people divided across the country.

### 2.8 Questionnaire design

Questionnaire is designed to collect consumer data in four categories based on the objectives of the study. The first category collects the awareness related data where respondents were asked about sustainability issues and their challenges. Questions were framed based on “Triple Bottom Line” of businesses. The purpose of this category is to gauge the reliability of the dataset and also the overall awareness among the consumers.

Awareness based data

- Consumer awareness about sustainability issues.
- Consumer awareness about ‘threat to food security in India’
- Consumer awareness about fair trade practices.

Perception based data

- Consumer perception about ‘sustainable fashion’
- Consumer perception about ‘fast fashion’
- Consumer perception about fair trade practices.

Consumer behaviour data

- Main decision-making criteria for purchase
- Socio-cultural anchoring in personal usage pattern of consumers
- Personal level of textile wastage
- Personal level of circularity
- Challenges faced in enhancing personal level circularity.

Acceptance related data

- Acceptance of ‘sustainable fashion’ and readiness to shift to it.
- Readiness to pay premium price for the switching.

## 3. BACKGROUND STUDY

### 3.1 Impact on food security of India

Ministry of Agriculture & Farmers' Welfare data suggests the minimum support prices of long staple cotton have increased from Rs. 3000 per quintal to Rs. 5825 per quintal, i.e. 121.36percent between the period of 2010-11 to 2020-21 (Ministry of Agriculture & Farmers' Welfare, 2020), making it the costliest cotton in the world. This sharp rise in the minimum support prices resulted in more farmers migrating to the cultivation of cotton. As per the data from the World Bank from 2000, the net cultivated area as percentage to the total land area in India is almost constant at 60percent of the total land area (The World Bank Group, 2016). This indicates a shift in the cropping pattern in India. Many studies have indicated that rise in minimum support prices is the main driver of change in cropping pattern in India (Aditya, 2017). It is also said that MSP also favour crop specialization as researched by Mittal & Hariharan in 2016(Aditya, 2017). P.S Brahmanand.al, concluded in their paper “Challenges to food security in India” the way changes in crop diversification and cultivation pattern is challenging the food security in India(Brahmanand, 2016). Food security is a key risk which many nations like India is facing today. Climate Change, extreme weather events along with change in cropping pattern is

contributing towards lesser food security. This results in a key sustainability challenge for the cotton textile and apparel industry in India.

The primary data collected for the research purpose shows that 62 percent of the respondents believe that sustainability is a matter of concern for us, but only 4 percent of the respondents believe that the shift in cropping pattern is a potential threat to our food security. While the data from the “Ministry of Agriculture and farmer welfare” reveals that there is a reduction in the cultivation area as well as productivity per hectare of essential crops and grains in the cotton producing districts of India. So, it is beyond any doubt that over cultivation of cotton is also responsible for becoming a potential threat to our food security.

### **3.2 Water footprint of cotton textiles**

Water sustainability is a key concern in sustainability. Both the upstream and downstream activities of cotton are water intensive. While the upstream activities of cotton include its production and the downstream activities consist of value addition by form conversion of raw cotton. Recent satellite imagery from National Aeronautics and Space Administration and data from India Water Tool Version 2.0 (IWT V2.0) developed by World Resources Institute indicate that the most cotton producing areas are also the most water stressed areas in India. In a research by the Water Footprint Network, the production of cotton textiles uses 1000 litres of water per kilogram of cotton textiles (Water Footprint Network, 2017). Cotton production in India is mostly dependent on the fresh water source. While 75 percent of this fresh water is sourced from ground water, and the balance from irrigation systems (Water Footprint Network, 2017). The annual water availability in India reduced to 1545 m<sup>3</sup>/capita in 2011 from 1816 m<sup>3</sup>/capita in 2001 (Bhat, 2014). 18 percent of the world’s population resides in India in only 2.5 percent of the total land area of the globe depending on a meagre 4 percent of the world’s fresh water resources (Bhat, 2014). While the population is expanding, the fresh water resources are shrinking. So, to achieve sustainability in the cotton textiles industry the dependence on fresh raw material input must be reduced.

### **3.3 Advancement of organic cotton as raw material**

Organic cotton production is a result of traditional knowledge along with modern technological advancements. Inherent to organic cotton production lies in ecosystem management and use of locally sourced materials (Mageshwaran, Satankar, Shukla, & Kairon, 2019). A range of farming systems including those known as biological, low-input, regenerative, use of organic manures, and low ecological footprint encompasses the organic cotton production in India (Mageshwaran, Satankar, Shukla, & Kairon, 2019). India is a world leader in the production of organic cotton with a market share of 56 percent of the total production (Chester, 2018). Still the contribution of organic cotton as the total demand of cotton used as raw materials is only 1 percent (Mageshwaran, Satankar, Shukla, & Kairon, 2019). Expert opinions as a part of data collection for this study suggests that a strong surge in demand for organic cotton is bringing transformation in the backward linkages of the textile and apparel value chains. Established enterprises like Arvind mills are now focussing on sustainability in their entire value chain. Though, there is no sufficient evidence to conclude that there is a paradigm shift in the demand for sustainable raw material sourcing as the present status of the sustainable sourcing is just 1 percent of the total cotton demand.

### **3.4 Fair-trade practices**

Most of the global brands in the textile and apparel industries have their suppliers in the developing countries like China, India, Bangladesh, Pakistan, Vietnam, Thailand, Philippines etc. For instance, Inditex the parent company of the Global brand Zara sources a major portion from their suppliers outside Europe, and typically the developing countries (WTO, 2019). This is a strategic decision of the enterprises as a cost cutting measure. They can procure from the developing countries at a cheaper rate and thus able to increase their profitability (Shelton & Wachter, 2005). There is a huge pay difference between the European and developing countries pay standards. Workers in countries like Bangladesh and India are grossly under paid. It is often a subject of controversy regarding the sustainability issues in their backward linkages of their value chains. Garment workers in the countries like Bangladesh are often subjected to very poor payment standards and work in unhygienic and dangerous conditions as compared to their European peers (Fitch, et al., 2017). Engagement of child labours and abusive conditions is also very prevalent in these factories (Barrett, Baumann-Pauly, & Gu, 2018). These brands had indifferent approach and often refer them as the ‘supplier’s responsibility’ until the Rana Plaza disaster happened. Due to the public outrage following the disaster, brands started restructuring their responsibility and started including supplierside sustainability as well. Various business sustainability reporting standards like Global Reporting Initiative also included reporting on supplier side sustainability in the core business model. Though many initiatives are being taken on the corporate level, there is very little difference on the supplier’s side as a research from NYU Stern Center for Human Rights revealed in 2018 (Barrett, Baumann-Pauly, & Gu, 2018).

In India, the general awareness regarding fair trade practices is low (Balasubramanian & Soman, 2019). Nearly 58 percent of the respondents of the primary survey conducted for this research paper show eagerness to learn about fair trade practices. Nearly 22 percent of the respondents are aware of the fair-trade practices prevalent in other industries like agro-processing and food industries. 38 percent of the respondents are ready to shift to

apparels with fair-trade practice tag but 78 percent of them cited unavailability of the products as the main hurdle for this shifting.

#### **4. DRIVERS FOR SUSTAINABILITY TRANSFORMATION**

##### **4.1 Consumer demand as a driver of sustainable fashion**

Innovations in products and processes are mostly driven by consumer demand. So, it is important to create a demand for sustainable products to boost the status of overall industry wide sustainability. Whereas, the other important drivers for sustainability are government regulations and technological innovation. Wu et al. in their research paper “Exploring Driving Forces of Sustainable Development of China’s New Energy Vehicle Industry: An Analysis from the Perspective of an Innovation Ecosystem” identified Technological Innovation, market demand, and Government Policy as the main driving force for “innovation-demand-policy” in sustainable development(Wu, Yang, Hu, Wang, & Huang, 2018). Innovation ecosystem can be shaped by the demand preferences of the consumers (Yin, Davis, & Muzyrya, 2014). Companies are innovating their business models to navigate through the challenges of sustainability (Franceschelli, Santoro, & Candelo, 2018). A study by Nordea stated that 34 percent of the companies rank consumer demand as their main driver for transformation towards sustainability. While the same study revealed that almost 50 percent of the companies made a transformation towards sustainability to enhance their brand value (Nordea, 2019). To cater the change in market demand, enterprises navigate through process innovation. A higher sustainability is always linked to higher process innovation and lean manufacturing(Yin, Davis, & Muzyrya, 2014; M.P., P.R., A., & P., 2017).

With the fall of brands like Forever21, it is believed that the trend of fast fashion has reached the tipping point and the quest for sustainability will bring down the growth of fast fashions(Gasparini, 2020; Moon, Lai, Lam, & Chang, 2014). Practices of global brands like H&M, Zara were started to be scrutinised by the people and experts(Gasparini, 2020). Zara, H&M could respond promptly to the changing trend and embraced sustainability in their entire value chain, while forever 21 could not do it efficiently. The business models and target markets also played important role as an enabler for embracing change. While Zara & H&M targets the premium segment of the market, forever 21 targets fast moving, low priced fast fashion. People are now understanding the negative impacts of over consumption and need for sustainability in their fashion. In 2019, in a study conducted by McKinsey and company, the trend analysis showed that the search for ‘Sustainable Fashion’ increased by almost 300 percent between 2016 to 2019.

A study conducted by McKinsey & company on 2000 UK and German consumers the sentiment analysis reveals that two third of the sample size acknowledge the importance of limiting the negative impacts of climate change. While, an additional of 88 percent of the respondents believe in paying attention to reduce the pollution level (Granskog, Lee, Magnus, & Sawers, 2020). Clearly, we can see there is a change in demand for sustainable fashion but only 1 percent of the products are sustainable tagged(Granskog, Lee, Magnus, & Sawers, 2020). So, there is clearly a demand and supply mismatch and this mismatch is primarily due to the Sustainable Sourcing at Scale as discussed previously.

The primary data collected for this research suggests that though 62 percent of the respondents are aware of climate change and sustainability concerns, only 8 percent of the respondents are ready to pay a premium price for a sustainable product. 18 percent of the respondents admitted of owning clothes that they have never used. While 74 percent of the respondents agree of owning clothes more than their requirement. 38% of the respondents revealed that they have clothes which they have worn very occasionally.

#### **5. RESULTS AND DISCUSSION**

Although, people are more aware of the sustainability concerns but the transition to purchasing ‘sustainable fashion’ is still limited. Presence of a large number of stakeholders is making the transition process slow. Inadequate training on modern cotton cultivation, lack of awareness among the farmers to switch to organic cotton, and the poor demand scenario of sustainable fashions in India is not encouraging brands and retailers to switch to sustainable fashion. Moreover, the rising disposable income in India and a socio-cultural change to materialism is increasing per capita consumption in the middle and upper middle classes population in India. Primary survey data clearly showed 78 percent of the respondents have purchased more garments than previous year. This is a clear indication of fast fashion gaining popularity. Various global retailers like H&M, Zara etc. are also expanding rapidly in India.

Though, 62 percent of the respondents acknowledge that sustainability is a matter of concern and 32 percent of them identify climate risk as the biggest threat for our well-being and survival, but only 8 percent of the respondents are ready to pay the premium price for sustainable sourcing. The knowledge of sustainability is limited to environmental sustainability for 82 percent of the respondents. Only 12 percent of the respondents are aware that “fair pay” system to the farmers are also a part of sustainability. 46 percent respondents feel owning more than the required is a result of their personal likings, while an astonishing 32 percent of the respondents are just following the *fashion trend*. 42 percent of the respondents feel premium price tags are a

hurdle for making a purchasing decision transition in India. Lack of availability and limited product lines are making this transition less worthy for 78 percent of the respondents.

## 6. CONCLUSION

Though a majority of the respondents feel that sustainability and climate change is a major concern for our society, but still they are not ready to switch to sustainable fashions immediately. To promote sustainable fashion the cost of products needs to be comparable with that to the fast fashion. Brands have to work on increasing the penetration of sustainable fashion to achieve economies of scale. Circular economic transition can also help in lowering the requirement of fresh raw material inputs, thus lowering per unit costs as well as reducing the environmental footprint of cotton. Lastly, the Government should play a more pro-active by providing policy support and incentivise the transition. Enterprises and government should invest in promoting innovations leading to sustainable fashions. Hence the paper concludes that in the present scenario it is not possible for a consumer driven sustainability transformation of the cotton textile and apparel industries of India.

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