

INTELLECTUAL CAPITAL ON SUSTAINABILITY FOR GARMENT INDUSTRY

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Intellectual Capital on Sustainability for Garment Industry: Implications and Challenges

Abstract

In recent years, public concern about climate change and Global warming has increased considerably which has led to the emergence of business practices with low-carbon footprints such as renewable energy to reduce greenhouse gas emissions.

Sustainable business is characterised as an organization that has no negative impact on the environment or economy through its processes, products and manufacturing activities that meets the current demands with due concern to resource availability for future the generations by utilising renewable resources. Creating awareness through a strong knowledge base of sustainable practices to the stake holders involved in order to achieve Green manufacturing and thereby imbibing the waste reduction and recycling practices will contribute to a sustainable business.

This paper focuses on the importance of building Intellectual Capital and Knowledge Management on Sustainable practices to annihilate challenges that contribute to carbon footprint via Manufacturing Infrastructure, Raw materials utilised, Supply Chain, Business Processes et.al of the garment industry which is one of the largest contributing sectors of India's exports worldwide.

1. Introduction:

The Indian Clothing Industry has an overwhelming presence in the economic life of the country and plays a pivotal role through its contribution to industrial output, employment generation, and the export earnings of the country. Currently it contributes about 14 percent to industrial production, 4 percent to the GDP, and 17 percent to the country's export earnings. It provides direct employment to over 35 million people and is the second largest provider of employment after agriculture in India. Thus, the growth and all round development of this industry has a direct bearing on the improvement of the economy of the nation. [6]

The close linkage of the Industry to agriculture and the ancient culture and traditions of the country make the Indian textiles sector unique in comparison with the textiles industry of other countries. This also provides the industry with the capacity to produce a variety of products suitable to the different market segments, both within and outside the country.

The Indian textiles and apparel industry has an unbalanced structure since 95% of the industry is unorganized and only 5% is organized. Globalization of the textile industry was more vibrant due to several factors like cost competitiveness, ability to cope up with new fashion trends, labour intensive production methodologies, and monetary / non-monetary incentives. Textile is one of the major commodities trade among the countries.

Particularly, India is one of the leading exporters of textile goods to many developed countries. Majority of the Indian textile exports is in the form of value added goods like woven and knitted garments, home furnishings and leather garments.

2. Sustainability in Garment Manufacturing: An Overview

Nike's CEO Mark Parker in his letter (pg.4) has stated that "doing the right thing was good for business today – and would be an engine for our growth in the near future. With each new discovery and partnership, we willingly gave up old ideas to shift our thinking toward a better, smarter, faster and ultimately more sustainable future – financially, environmentally and socially" [4] emphasising the need of sustainability in the lucrative fashion industry and producing sustainable fashion products with a concern to protect the planet and its inhabitants.

In recent years, public concern about climate change and Global warming has increased considerably which has led to the emergence of business practices with low-carbon footprints such as renewable energy to reduce greenhouse gas emissions.



Sustainability as a word may appear to be simple, but in reality have many mechanisms that affirm the necessity to build safe, healthy and ethical working environment, usage of recyclable raw materials in product development, following the modern methods of sustainable production, ensuring fair trade and to avoid using harmful chemicals there by providing due compensation to the society for having utilised the resources provide by it.

Sustainable business is characterised as an organization that has no negative impact on the environment or economy through its processes, products and manufacturing activities that meets the current demands with due concern to resource availability for future the generations by utilising renewable resources.

Garment Manufacturing in India accounts for the consumption of 10% of the country's energy and has increasing carbon intensity compared to other sectors on account of increasing mechanization. In addition to energy, water is also consumed in high amounts by apparel mills. Sizing, de-sizing, scouring, bleaching, mercerization, dyeing, printing, finishing and washing are water intensive processes [5]. In addition to this, there are other significant factors not limited to Brand Management, Material

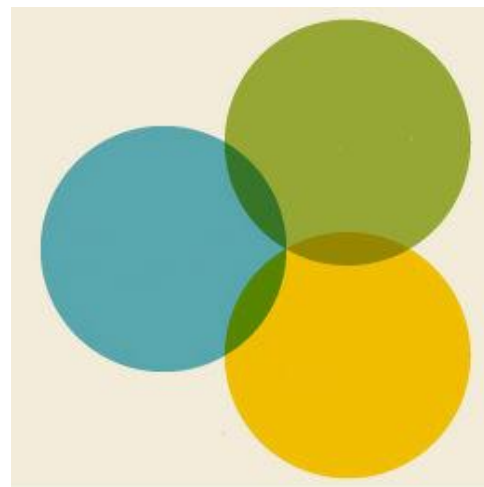
Consumption, Waste, Pollutants, Labour practices, Supply Chain, Stakeholders engagement and Intellectual and Human Capital Development that defines the dimension of sustainability in the garment manufacturing process.

To enforce sustainable practices, Indian garment industry has started consuming energy generated through natural sources that includes biomass, wind, hydroelectric, geothermal heat, solar etc. Also, water consumption has been considerably reduced by following modern wash care practices, determining optimal washing load, usage of appropriate detergent and other chemicals and considering energy star rating in washing processes. However, sustainable practices among the garment manufacturers in India are at an infancy level.

Apart from these initiatives, sustainability in other significant processes involved in Garment manufacturing including Product Design and Development, Raw materials, Production Processes, Retailing and Product Pricing should be enthralled in order to achieve Green Manufacturing thereby encouraging the waste reduction and recycling practices that contributes to a sustainable business.

3. Intellectual Capital in Sustainability:

Intellectual Capital involves a company's employee expertise, unique organizational systems and intellectual property. Once a company identifies its intellectual capital, the next step is to maintain it [2]. Traditionally, companies have relied mainly on tangible assets to determine their value. More recently, in the emerging knowledge economy, company's value can be seen to reside in intellectual capital such as knowledge and information, assets that are generally embodied in people [7]. Intellectual Capital includes Knowledge and skills, Work-related experience, Competencies, Vocational qualification, Employee engagement, Emotional intelligence, Entrepreneurial spirit, Flexibility, Employee loyalty, Employee satisfaction, Education and Creativity. Sustainable intellectual capital is a promising starting-point for the incorporation of social and environmental aspects into the general management system of a company [1].



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This paper focuses on the importance of building Intellectual Capital and Knowledge Management on Sustainable practices to annihilate challenges that contribute to carbon footprint via Manufacturing Infrastructure, Raw materials utilised, Business Processes et.al of the garment industry which is one of the largest contributing sectors of India's exports worldwide.

4. Building Intellectual Capital in Sustainability: Challenges & Implications

Building Intellectual Capital on sustainability focuses on the creation of Knowledge assets pertaining to sustainable practices in Design, Product Development, Raw materials, Supply Chain and Production Practices. In this context, the following

knowledge based sustainability model may be taken to consideration in order to evenly achieve sustainability in garment manufacturing.

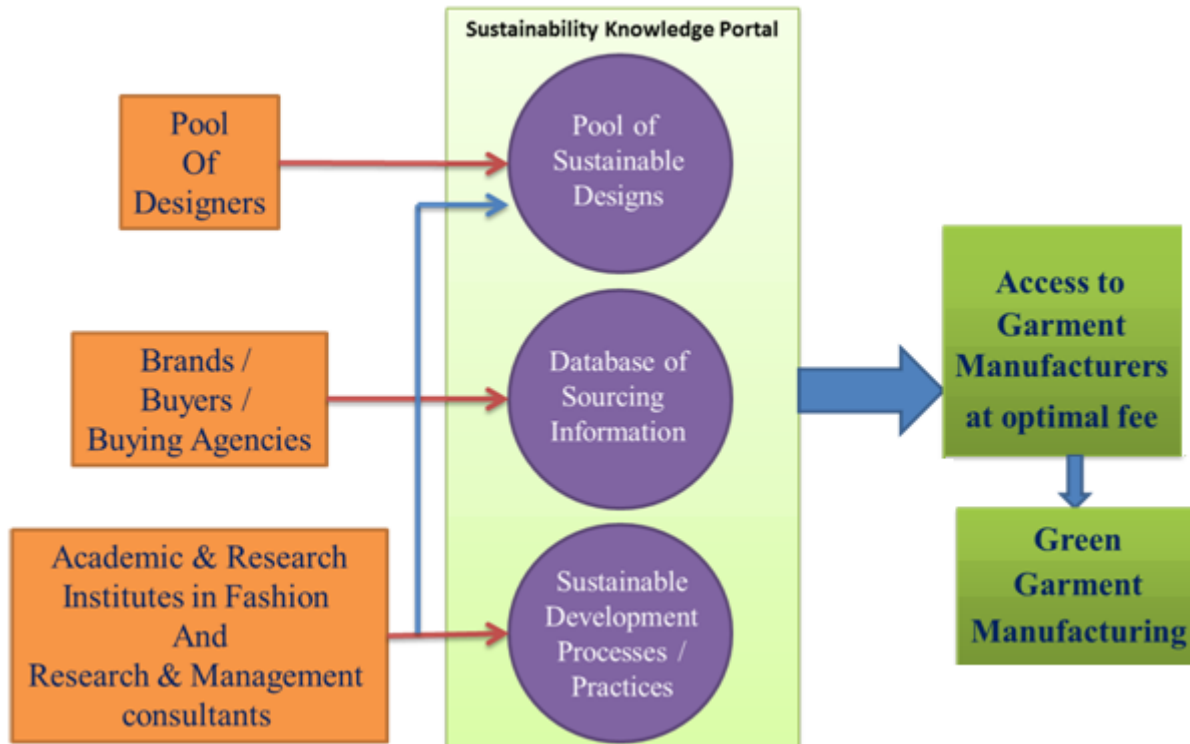


Fig. 1: Model for building Intellectual Capital in Sustainability for Garment Manufacturing

Source: author's elaboration.

4.1 Sustainable Product Design

Sustainable Product Design in garment manufacturing pertains to the development of clothing that enforces sustainability in the systems that operates in the making of such products. This requires designers to have a thorough understanding and inclination to create sustainable fashion products thereby creating a pool of sustainable designs. Such repositories of indigenous knowledge developed will aid in manufacturing of sustainable clothes with social and environmental concerns.

The real challenge lies in designing garment prototypes that eliminate waste and limit the manufacturing processes to enforce sustainable manufacturing. Designs should be generated to reduce the number of cutting and sewing operations which will simplify the production process and will focus more on producing a strong design aesthetic through strategic fabric, process and pattern engineering. This inevitable Intellectual asset can be created through a “Pool of Designers” who will produce garment prototypes which will help creating a “Pool of Sustainable Design” that paves way for introducing new sustainable garment range in the market. Designers should focus developing Intellectual Capital to create sustainable designs that will encourage the use of sustainable raw materials and production processes thereby providing a sustainable product range.

4.2 Sustainable Raw Material:

Raw materials in garment production include Fabrics, Trims and Accessories in which fabric constitutes about 60% of the total garment cost indicating the significant role of fabric in making a garment. This indicates the importance of fabric in garment manufacturing which has led to the increased attention in producing sustainable raw materials for fabric development. In today's scenario there are varieties of sustainable fabrics viz. organic cotton, organic linen, banana fibre, bamboo fibre, TENCEL, Recycled Polyester and Recycled Wool Blend etc.

Alternative fibres such as bamboo, nettle and hemp are not grown and processed in significant quantities within India so it was decided to focus on promoting organic and Fair trade certified cotton, which are important within the India context [3]. This has led to the development of products using organic cotton fabric by garment manufacturers. The growth of organic cotton is encouraged through a detailed research initiative by various institutes of organic culture that has resulted in a comprehensive knowledge base that provides in depth guidance in respect of producing organic cotton, usage of manure and natural pesticides. This clearly indicates the necessity for development of such knowledge bases for alternative fabrics and creation of Intellectual Capital in terms of creating new blended fabrics which will encourage the development of innovative products and increase the number of organic garments in the market.

It is also pertinent to note that the value addition to garments is primarily contributed by the functional and decorative Trims such as Sewing Thread, Buttons, Labels, Zipper and Inter lining etc. that are being used in the making. Using sustainable materials should be equally applied in trims as well in order to make a garment completely sustainable. This invites attention to innovative development of Organic Trims with defined usage.

Packing of finished garments requires Hangers, Polybags, Tags, Cartons, etc. where recycled or partially recycled materials are used. Interestingly, the packaging design is given umpteen importances by garment manufacturers and the innovation in terms of materials used, printing methods and quality of these packing materials used is enormous.

The issue is sourcing and availability of such sustainable raw materials for developing sustainable garments. Leading Sustainable brands in India viz, Prathiba Syntex, White House, Arvind Mills et. al. are vertical integrators of garment manufacturing whose vision and mission contribute to increased sustainability by reducing the supply chain, logistics and redundancy in business processes. This vertical integration may not be possible by many players in the garment manufacturing business. It is pertinent to note that the sourcing activity consumes major time involved in the garment manufacturing supply chain. This is due to the knowledge gap prevailing in the raw material sourcing being carried out by garment manufacturers. Though information is available in unorganised manner with a few major players, it is not disseminated and is considered to be trade secret which creates a difference amongst their competitors.

When significant advantage in garment business can be created by other means including fast to market, wider product lines, quick response etc. the design pool and a

comprehensive knowledge base in sourcing shall be made a common service that can be availed on payment by any garment manufacturer.

4.3 Sustainable Production Process

Sustainable Production focuses on the processes that identify and eliminates waste in various operations involved, through continuous improvement. It also concentrates in increasing the efficiency by reducing the operating cost with due concerns to the value addition being provided to the consumers at fair prices.

Lean Manufacturing tools such as Value Stream Mapping (VSM), Process Standardization, Takt Time Management, Just In Time (JIT), 5S, Six Sigma, Team Building, Kaizen, Statistical Process Control (SPC), Visual Control, Single Minute Exchange of Dies (SMED) / Quick Changeover etc. are deployed to achieve sustainable production. In order to achieve sustainability, it is not enough to practice one of the lean tools but it is necessary to concentrate and facilitate sustainable Working environment, Energy Conservation, Water Harvesting, Machine optimization and Waste Management thereby catalyzing the development of a Green factory.

Academic & Research Institutes in Fashion and Research & Management consultants in the area of sustainability play a key role in developing the sustainable production environment. National Institute of Fashion Technology (NIFT), Chennai is a premier Institute of Design, Management and Technology has inculcated inputs of Sustainable Design, Manufacturing and Retailing in its academic curriculum to develop professionals for taking up sustainability initiatives in fashion business. As part of several innovation and research initiatives to be mentioned, NIFT had undertaken a project on 'Design and Development of an Energy Recovery System (ERS) for a Sewing Machine' [8]. The main of emphasis of this research work was to highlight the importance of energy conservations and recovery of energy from a sewing machine. Garment Manufacturing is one of the industries where a large number of motors are used. During production, even when no work is carried out or the machine is waiting for work allocation (machine idle time) the motor of the sewing machine remains functional. The research work developed an energy recovery system which captures this energy generated during idle time by sewing machines and creates reusable energy by storing the same which can be further used to run other equipment and handle power shortages.

Such initiatives from Academic & Research Institutions, Research and Management Consultants help creating a pool of sustainable production practices and processes similar to that of sustainable designs and sourcing information.

5. Conclusion:

In the field of fashion, value addition and innovation are inevitable to satisfy customer demands which enforce manufacturers to be innovative not only in terms of products but also in selection of raw materials, supply chain and production processes. Achieving sustainability should be the Vision and Mission of Garment Manufacturers which brings out their social responsibility concerns by not only adapting to Manufacturing

processes, but also contribute in building a knowledge base for sustainable manufacturing.

Public concern about climate change and Global warming has increased considerably which has led to the emergence of sustainable business practices at all stages of garment manufacturing. Brands, Buyers and Buying houses are looking forward to promote biodegradable and sustainable garments as an effective way of reducing the impact textiles and apparel manufacturing sectors on the environment.

The customer along with value addition in fashion product, expects the garment manufacturers to follow sustainable practices by which they reduce or optimally use energy and water and also keep low carbon footprint.

Initially it was perceived that consumers in developed countries were aware of sustainability issues, but one should not forget that India was the land that introduced hand weaving thereby creating a niche market for handloom products around the world. Since customers are aware of the importance of sustainability, it is a social obligation of the manufacturers to adhere to it. We are moving from industrial economy to the sustainable economy and hence manufacturers have to build sustainability in their business.

The building of Intellectual Capital on sustainability for Garment Manufacturing would facilitate companies to galvanise the GO GREEN initiatives by introducing sustainable practices in every aspects of the garment manufacturing process.

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