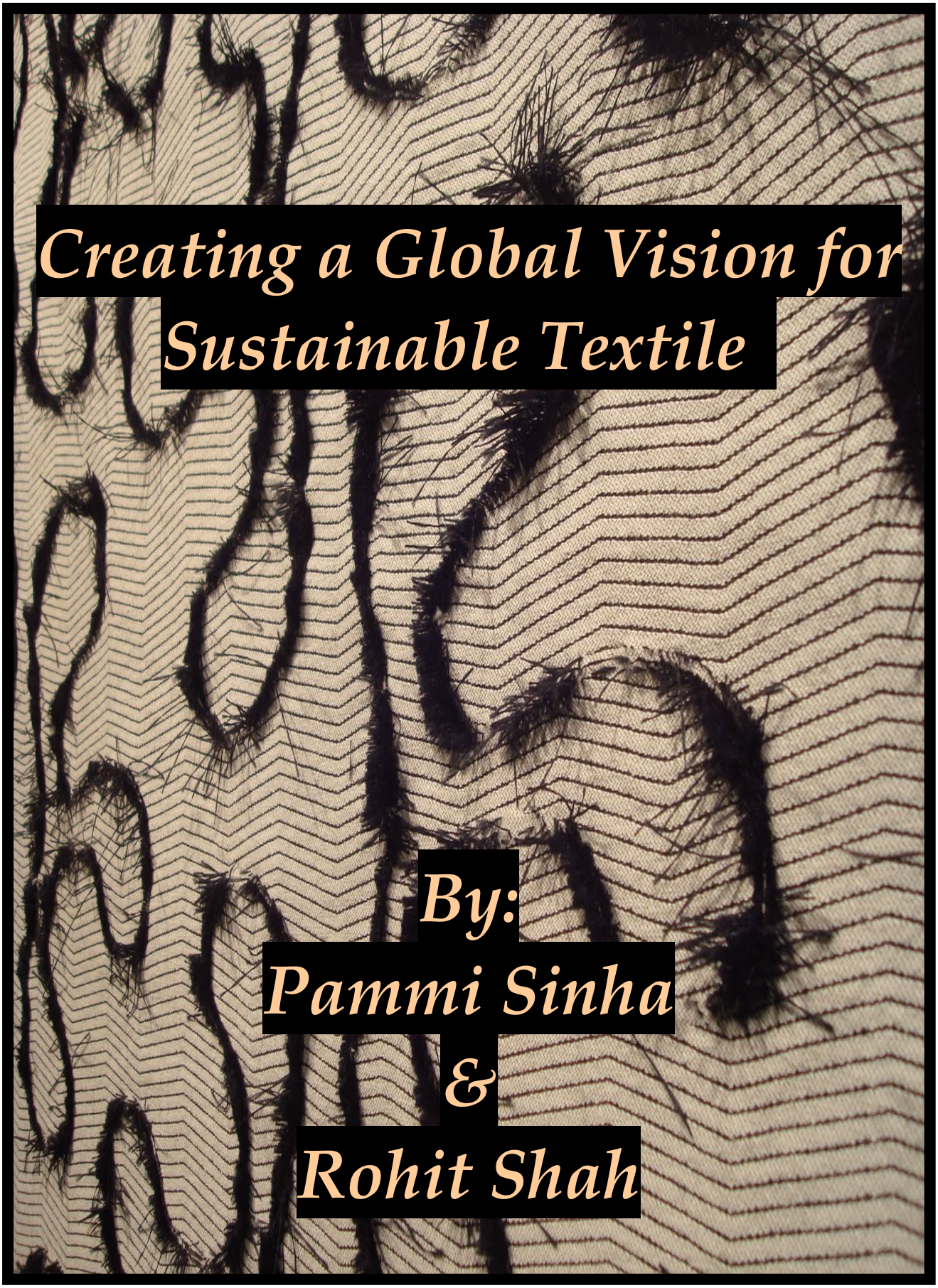

Creating a Global Vision for Sustainable Textile

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Certification, such as eco-labels, plays a major role in giving credible assurance to retailers and end consumers that products comply with standards based on social, ecological & environmental standards. Of the 309 eco-labels identified world wide, 41 cover textiles (Ecolabelling, 2008) and some 9000 textile & clothing manufacturing companies have been certified. Organic Exchange Fibre Report (2008/09) estimated a 54% increase in *cultivation* of organic cotton from the previous year, but *production* of organic cotton only 0.959% of conventional cotton, ie the growth in eco-labelled textiles is not reflected in consumer demand, raising questions about the impact eco-labelled or 'sustainable' textiles. A number of issues may impede the spread of eco-labelled textiles through the supply chain: costs and time required to achieve, use and renew the eco-label, recession and potential loss of competitive advantages. This paper will present the findings from in depth interviews examining the decision making around buying and sourcing of eco-labelled fibre, fabrics or textile products. The seven companies located both in India and the UK, spanned the supply chain, from fibre to product: textile manufacturers, eco-parameter testing labs, Certification Company and retailer. The aim of the research was to understand and investigate the marketing strategies for sustainable textile products. Our goal was to understand how designers, manufacturers and retailers may collaborate to deliver eco-labelled textiles attractive to the end consumer and we conclude by reflecting on potential implications for the supply chain integration

Keywords: eco-label, textiles supply chain, consumer

1. Introduction

1.1 What are Eco-Labels:

Eco-labelling is becoming a differentiating factor on a worldwide scale in retail markets for textile and apparel purchase. Consumers are becoming increasingly concerned with the adverse impacts of industrial pollution on the environment and their health, resulting mounting pressure on textile, fashion industry to adopt more eco-friendly, chemicals and manufacturing processes. Environmental concerns raised by production systems have been recognised since the late 1960's and attempts to move towards more sustainable and environmentally friendly approaches have been through a range of regulatory measures from green taxes to strict bans. One approach acquiring increasing importance is that of 'environmental labelling' or 'eco-labelling', which, according to Piotrowski and Kratz (2005) differ in that e*nvironmental labelling* is broad and covers a range of labels and declarations of environmental performance and focus on consumption rather than the production of a given product; e.g. recyclable material while *eco-labels* are a sub-group of environmental labelling and convey environmental information about a product to the consumer and communicate that the environmental impacts are reduced over the entire life cycle of a product without specifying the production practices.

In brief an ecolabel –

- Identifies the overall environmental preferences of a product;
- Provides information on environment related product qualities;
- Are tools for consumers to identify environmentally safe product;
- Enables manufacturers to use ecofriendly raw material and ingredients;
- Is an additional product quality which can be used as a marketing tool;
- Can be issued by private or public body;
- Causes less stress on the environment
- Enables to earn premium on products.

1.2 The significance of Eco-Labels

The eco-label has a role in the Integrated Product Policy (IPP) which aims to minimise the environmental degradation caused by any of the phases of a product's life cycle (tangible or intangible, such as service), eg manufacture, development, use or disposal (European Commission, 2008). All phases of a product life cycle are examined with the objective of improving their environmental performance. This approach requires all participants in this process to be engaged: eg, designers, industry, marketers, retailers and consumers. The US EPA (1994) defined the following five factors for measuring effectiveness of an eco-label, the first four of which serve to support the last:

1) Consumer awareness of labels
2) Consumer acceptance of labels (credibility and understanding)
3) Changes in consumer behaviour
4) Changes in manufacturer behaviour
5) Net environmental gains

1.3 Types of Eco-Labels

Eco-labels may be voluntary or mandatory. Mandatory labelling is always third party labelling (i.e. an independent body is required to attest to required standards having been achieved), voluntary programmes may be established by firms or business associations as well as third party. Currently, there are no eco-labels in textiles and clothing enforced by mandatory rules. Eco-labels are normally issued either by government supported or private enterprises once it has been proved that the product of the applicant has met the criteria, (Hyvarinen, 1999):

- Government: Blue Angel (Germany), Eco Mark (Japan), Environmental Choice (Canada), White Swan (Nordic Countries), EU, Eco-Mark (India), Green Label (Singapore)
- Private: Eco-tex, Oeko-Tex (textiles and clothing) (Germany). Green Seal (United States),

The criteria for granting eco-labels are mostly based on the "cradle-to-grave" approach, i.e. the life-cycle analysis of the product and assessment of its impact on the environment from processing of raw materials, production, distribution, consumption and maintenance, (i.e. washing, ironing, dry-cleaning) and finally disposal of the

product. A 'Cradle to Cradle' certification programme assesses the sustainability of product ingredients for human and environmental health, as well as their recyclability or compostability making it easier at the design stage to create ecologically-intelligent products through choosing materials that meet key sustainability criteria for material health and material reutilisation (Braungart and McDonough, 2008). Differences between various eco-labelling schemes confuse public understanding of eco-labels: some are based on detailed analysis of the environmental impacts while others analyse only certain stages of the life-cycle.

Voluntary labels are classified according to International Standards Organisation (ISO) (Baumann, 2007). ISO is the world's largest non-governmental organization that develops and publishes International Standards and is a network of the national standards institutes of 163 countries. There are now eco-labelling schemes both in developed and developing countries and the ISO has classified the existing environmental labels into three typologies –*Type I, II and III*, specifying preferential principles and procedures for each one of them (beyond the remit of this paper to detail). Many other prominent international trade and environmental organisations deal with issues related to eco-labelling, eg: the United Nations, the World Trade Organisation through its International Trade Centre and Committee on Trade and Environment, the US Environmental Protection Agency, as well as the Organisation for Economic Co-operation and Development (Naumann, 2001).

1.4 Developing an eco-label

This is complex and complicated but can be generalised into four broad phases:

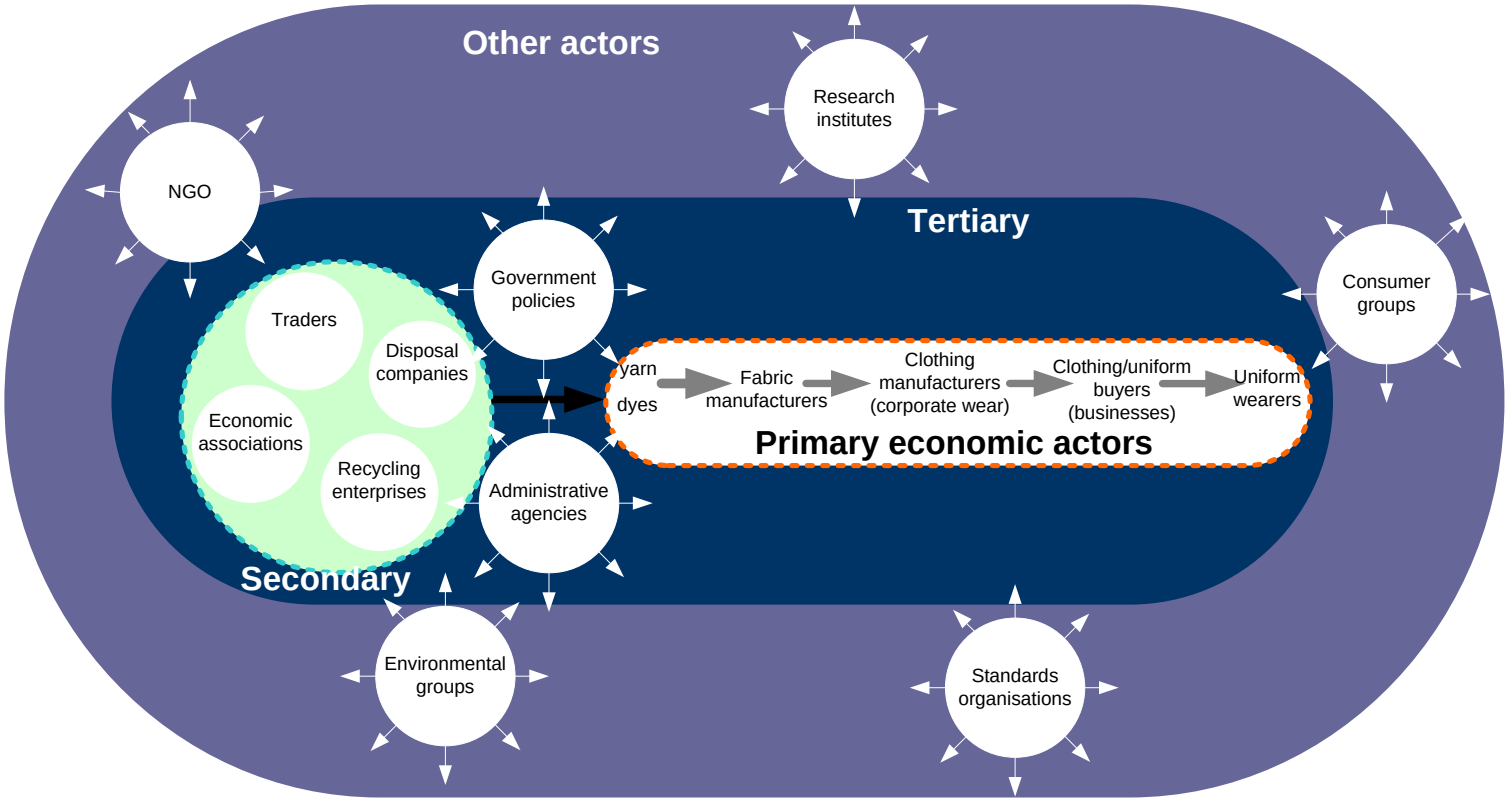
1. Selection of a product category by a labelling board through suggestions from industry, environmentalist, consumers, and other interested parties, illustrated in figure 1. De Man et al (1997) proposed that four levels of actors function throughout the industry:
    - Primary economic ~ production /consumption decision-makers (producers, importers, consumers).
    - Secondary economic ~ influence the decision making of primary actors.
    - Governmental and administrative ~ set the framework for the actors.
    - Others ~ try to influence the behaviour of all actors to improve status quo.

2. Life-cycle analysis to assess environmental impact of products in chosen category and examine the material and energy inputs for manufacture and use of a product and the solid, liquid, and gaseous waste generated at each stage of life-cycle, eg raw material, production, distribution, packing use and disposal.

3. Criteria and thresholds for the award of an eco-label set taking into consideration technical feasibility and environmental impacts in different media like air, water and soil against one another. Different eco-labels have differing methodologies, eg, Oeko-tex 100 examines harmful residues on the product, while GOTS tends to look environmental as well as residual parameters.

4. The product category and criteria is reviewed and refined. Interested parties including industry and environmental and consumer groups are asked for their inputs, although they are often already included much earlier on in the process.

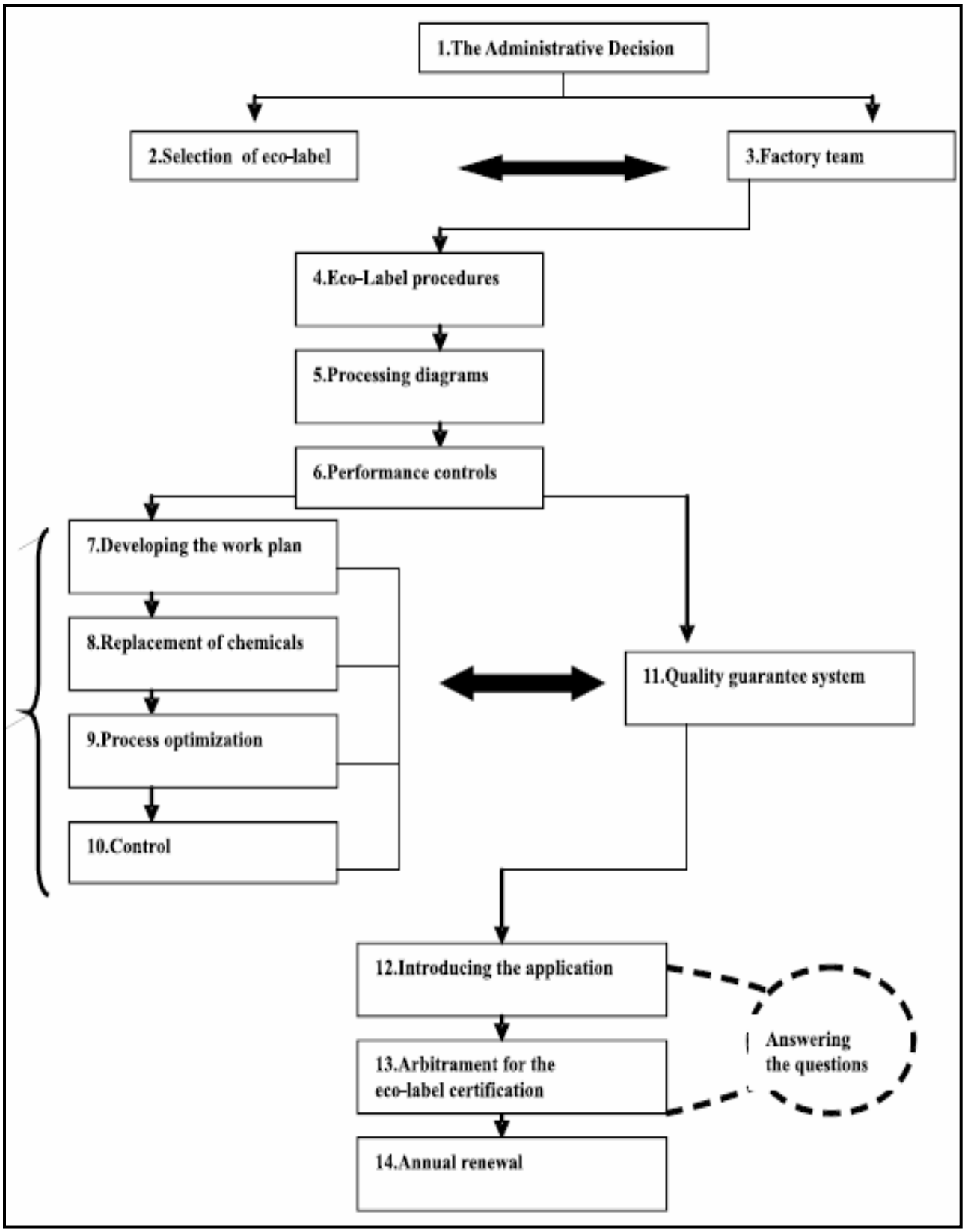
Figure 1 (Sinha and Hussey 2009):



1.5 Acquiring an Eco-label

Atilgan, (2007) identified fourteen steps to obtaining the EU Flower eco-label for a Turkish textile manufacturing firm (fig 2). In brief, the factory administration decides to apply for eco-label and use it. At the performance control stage, the selected eco-labelling organisation's prohibited chemicals are identified. Detailed monitoring of the chemicals and quality control system is necessary at each stage of production to prove that the products introduced to the certificating institute are appropriate. At this stage, honesty is necessary because the institute is authorised to make tests any time it likes. Failing in these tests results is cancellation of the eco-label certificate (Atilgan, 2007).

Fig. 2: The stages of obtaining an eco-label (Atilgan, 2007, p.16).



As well as the time and complexity of obtaining the eco-label, the most significant issue is that of cost, which, for the EU eco-label is set at 0.15% of the annual turnover of the eco-labelled product, costing up to €1,300 for registration (i.e. to apply for the label), €25,000 per year for the use of the label, with a reduction of 25% for SMEs (buyusa.gov 2009, Rubik and Frankl, 2005). Atilgan (2007) indicated that the costs of using eco-labelled production made the finished product between 12-15% more expensive to make, depressing interest in their use by manufacturers and retailers. The costs become even greater down the chain. A UK corporate wear supplier estimated the costs of using eco-labelled fabrics (such as Teijin fabrics, from EcoCircle closed loop system of fibre processing) as placing a 57% premium on their final product (Sinha and Hussey, 2009).

2 Eco-labels and Certification

Regardless of the costs / benefits, Atilgan (2007) urged the Turkish government and industry to become engaged with eco-labelling as he felt that the next area of purchase and trading selection appeared to be based on the criteria set by the eco-labelling bodies. Furthermore he suggested that these costs may be mitigated through the use of smaller amounts of high quality products, optimising the production techniques e.g. by controlling all recipes and procedures, and identifying problem areas.

Given the premiums on using eco-labelled textiles, commercial buyers of such products require assurances that goods comply with standards set by the eco-label organisation. This is particularly relevant for organic fibres where the market has flooded by products described in vague terms such as ‘Green’ and ‘Eco’ (Rundgren, 1999). To differentiate between sustainable and traditional textiles, third party standards are desirable. The unverified, market-based self-labelling (without outside monitoring) approach for textile ecolabelling, invites fraud due to lack of third-party verification (Moore et al., 2009). Retailers and consumers are starting to demand labels backed by solid third-party certifications to give confidence to all the marketing claims. Commercial buyers therefore may require certification of the product. Like ISO Type I labels, certification schemes are voluntary and provide information on the environmental impacts of a company’s production methods and processes (PPMs), ie, impacts of the *entire* activity not just a particular *product* (Rotherham, 1999). Certification provides a comprehensive system for ensuring that certain standards of organic production and processing are met.

The system includes-

- Developing rules or standards (standard setting).
- Verifying and evaluating performance against those standards (inspection).
- Recognizing procedures which successfully meet the standards (certification).

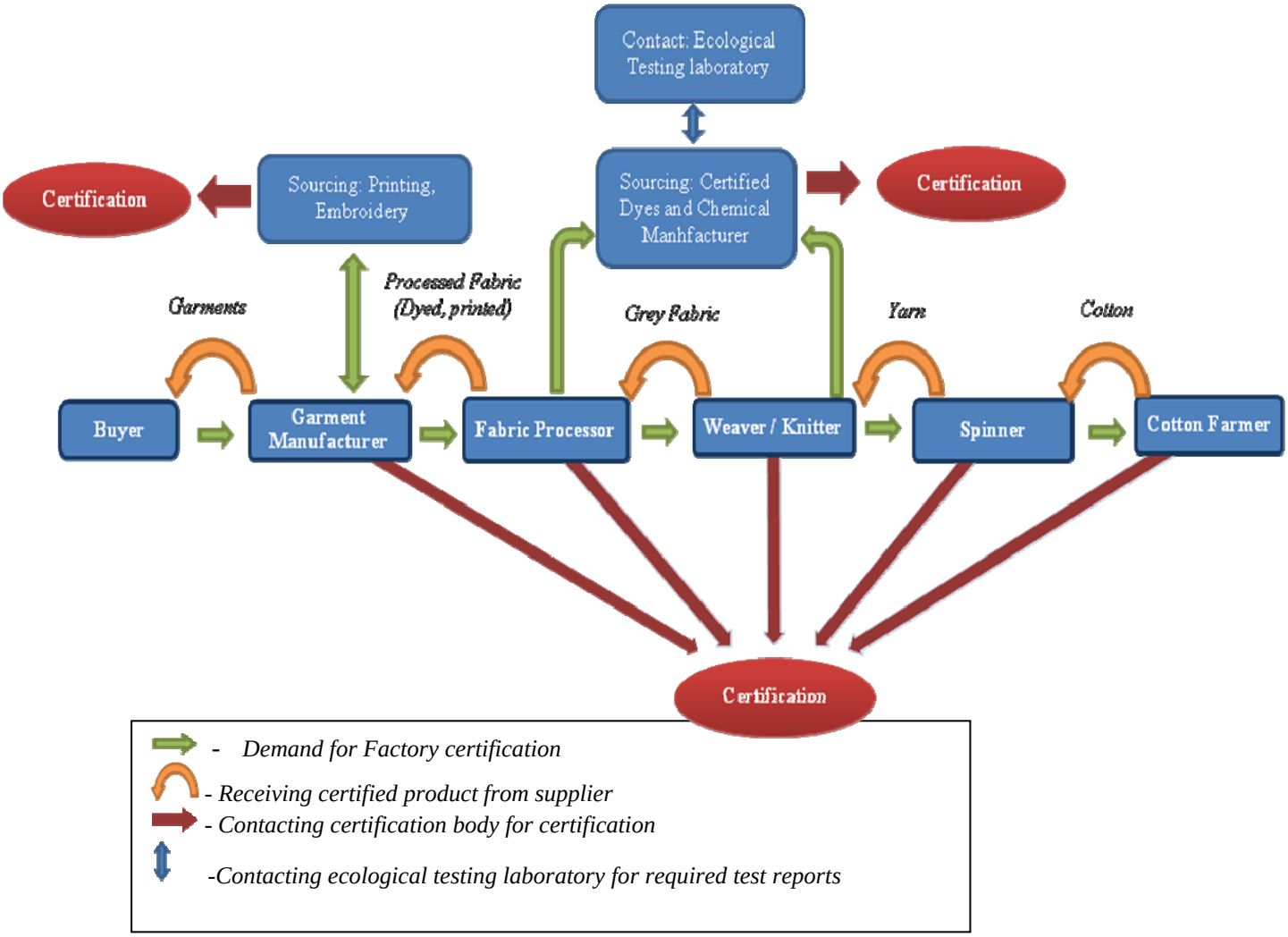
2.1 Scope and Transaction Certificates

Most companies only look apply for certification if it is required by the customer. From the literature reviewed to date, Fig. 3 shows the flow of the certification across the supply chain. There are two kinds of certificates:

Scope - issued to the selling company and stating its name, the products and production facility inspected and certified in accordance with standards.
Transaction: only issued (to the seller) for the sale of products if the applicant has the scope certificate.

For example, a retail buyer may require a scope certificate from chosen garment manufacturer to prove that their manufacturing facility is certified and products are being produced in accordance with standards. If the manufacturer is not certified, they contact the certification body for the certification. If the garment manufacturer does not manufacture textiles, then the retail buyer would need to source the required certified raw material to process into fabric. Then they will contact the factories from where they wish to buy the fabric, however that facility must also be certified and to prove it, processor need to provide scope certificate to garment manufacturer, if there is no certificate then they need to contact the certification body to certify their facility. If the ordered garment has embroidery and printing, then either the garment manufacturer should acquire certification for those facilities under their scope, or suggest to the embroiderer or printer to acquire certification themselves through using certified threads, dyes or chemicals. To obtain a certificate can take between 30-45 days, depending on the standards, factory condition, number of factories under one application understanding of standards by applicant, and changes within the factory with respect to compliance with standards. This process continues ‘backwards’ along the supply chain till supplying of certified (in this case organic) cotton to spinner.

Fig 3 Certification Flow



If all the points are certified as in figure 3, the process would take around a minimum of 30-45 working days to issue a certificate from certification body. If during inspection any non-compliance occurs the process would be lengthened as each certification takes about 30-45 days. A further complication is that the entire chain requires consistency in certification bodies used: i.e., if the garment manufacturer is required to produce to GOTS standards, the processors must also have GOTS certification-a different certification will not suffice as they each have their own analysis processes for certification.

In brief, certification is a complex, time consuming and costly process however it creates the transparency within supply chain. For each step in the supply of a product for the chain, the transaction certificate provides transparency within the supply chain and it gives assurance to buyer about the compliance of products with standards. The certification body issues the transaction certificate for each application made by their certified clients and is delivered to the buyer to give assurance and to confirm the product is manufactured accordance with standards.

2.2 Cost and benefits of certification

An important factor in the success of any eco-labels is its ability to cover its certification costs and therefore stay in business. According to EPA (1998), the ease with which programs will be able to cover costs varies depending on two questions:

- Can the program charge enough in application, testing, audit and other fees to cover its costs; and
- Can the program subsidize its environmental labelling activities from other program activities?

Cost of certification can be high in relation to the value of the product and thus can become prohibitive. This is especially true for textiles because of the number of process are involved from production to consumer. It may be more expensive for companies in developing countries to obtain labels and certifications, "due to factors such as the lack of existing management structures (EMS), the novelty of EMS, insufficient infrastructure, and high auditing costs if companies have to rely on international consultants and certification companies" (Rotherham, 1999). In addition to capital costs, the absence of necessary knowledge and skills and a lack of mutual recognition between different national programs can further disadvantage some countries (UNCTAD 1997).

2.3 Eco-Labelled Sustainable Textile Products:

'Sustainability' is the ability to maintain an activity indefinitely over time. A sustainable activity is therefore one that does not exhaust the resources on which it depends. The concept of sustainability gained worldwide recognition following a report in 1987 by the World Commission on Environment and Development (WCED). This report entitled *Our Common Future*, defined sustainability development as (Performance Apparel Market, 2009) –

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
Based on above definition, it's possible to define the term 'sustainable textile product' (STP) as –

"a product which is manufactured with the help of services and related products in responds to basic need and bring a better quality of the life with use of minimum amount of natural resources and toxic chemicals during the production, minimum waste emission to the environment over the life cycle of product keeping environmental and social factors in mind throughout the supply chain".

Sustainable textile or apparel are, therefore:

- Safe for human and physical environment;
- Made from renewable materials;
- Produced while making the most efficient use of resources such as water and energy;
- Manufactured by people employed in decent working environment;
- Capable of being washed at low temperature using environmentally friendly laundering agents; and

- Capable of being returned safely to the environment at the end of their useful life (Performance Apparel Market, 2009).

2.4 Challenges for eco-labelling

There are many challenges for the eco-labelling, the most serious of which are: misleading or fraudulent to uninformative claims, unfair competition and protectionism and lack of stringency or standardisation in the process or mechanisms of eco-labelling.

The objective of certification is to gain access to the market for environmentally sustainable products (Rundgren, 1999), and the certification process should help as data collected in the process of certification can be very useful for market planning as well as for extension and research , moreover, improves the 'image of product and increases its credibility and visibility (Rundgren, 1999), Auriol and Schilizzi's (2003) studies have shown that the costlier the certification process, the fewer firms able to afford certification, ie, cost becomes a major factor in deciding market structure, potentially leading to monopoly and ultimately to no certification at all.

Influencing factors on consumers' willingness to buy environmentally friendly products have been identified and categorised as: demographics, knowledge, values, attitudes and behaviour (Laroche et al., 2001). However, price has been found to be one of the most decisive factors in determining when consumers actually purchase apparel products. Consumers' willingness to pay and purchase cloths made from sustainable raw material like organic cotton is a complex issue (Gam et al., 2010). Empirical testing has shown, however, that many consumers are willing to pay a premium for eco-labeled products (Imkamp, 2000; Loureiro et al., 2002; Makatouni, 2002; Moon et al., 2002) and that they do purchase such products (Lathrop and Centner, 1998; Teisl et al., 2002). According to Gam et al., (2010) study in one of US, only 35% (27 out of 84) were willing to pay more for OCC and only 10.7% (9 out of 84) were willing to accept more than a 10% increase in price for OCC. In contrast, they found that 52% of survey participants would pay a 50% price premium and 25% of the participants would pay 100% more for an OCC over conventional cotton clothing. From above results it's clear that, willingness to pay for STP like product made from organic cotton varies place to place, country to country.

Differences in testing and certification methods have created difficulties in the application of an eco-label to a particular product category. For example, should the label represent an overall assessment of a product's environmental burden over its entire life cycle, or some subset of it? What techniques can be used to measure environmental impact? Who determines what specific environmental impacts are the most important? And what criteria are appropriate in rating impacts? Moreover, the consumer is unable to verify the claims made by the eco-label. An analysis of ecological labelling process by Lavallee and Plouffe (2004) concluded that 'cradle-to-grave' analysis for ecolabeled products and services is not always, in fact, respected, and that at the present time ecolabel delivery criteria are not sufficiently stringent or standardised leading to confusion in the marketplace, making it difficult for companies to identify stakeholder preferences and for justified environmental claims to be considered credible (Rotherham, 1999; EPA 1998).

3.0 The Research Question and Methodology:

The research undertook to understand the issues within and across the textile supply chain that come to bear upon the growth of eco-labelled sustainable textiles products. While the fear of losing market share is a motivating factor, it should be stressed that market impact of eco-labelled textiles products are only one indication of an eco-labelling programme's success. The effectiveness of an eco-label ultimately depends on the extent to which consumers perceive, recognise and act on the information it conveys. The next section describes the research methodology adopted and presents some of the most pertinent results.

Multiple in-depth interviews were conducted using semi-structured interview schedules designed as open ended questions. The decision was made to focus the study on organic cotton (one of a range of sustainable fibres) as this (and its products) is produced in large quantity, consumers are much more aware of it, retailers as well as consumers have accepted it and year by year demand is growing throughout world.

9 in-depth interviews were conducted with company employees who ranged from director of development, director of Marketing, Company Owner/ Director, etc. As indicated in figure 4, the companies were selected on the basis that they had at least one following production facility in order to complete as much as possible the supply chain: spinning, weaving, knitting, wet processing, stitching/garmenting, retailing, testing, authorization of certification and authorization to issue eco-label. Companies interviewed are listed in table 1; the majority of the companies were in India as this is a centre of organics cotton production.

Figure 4: the textile supply chain

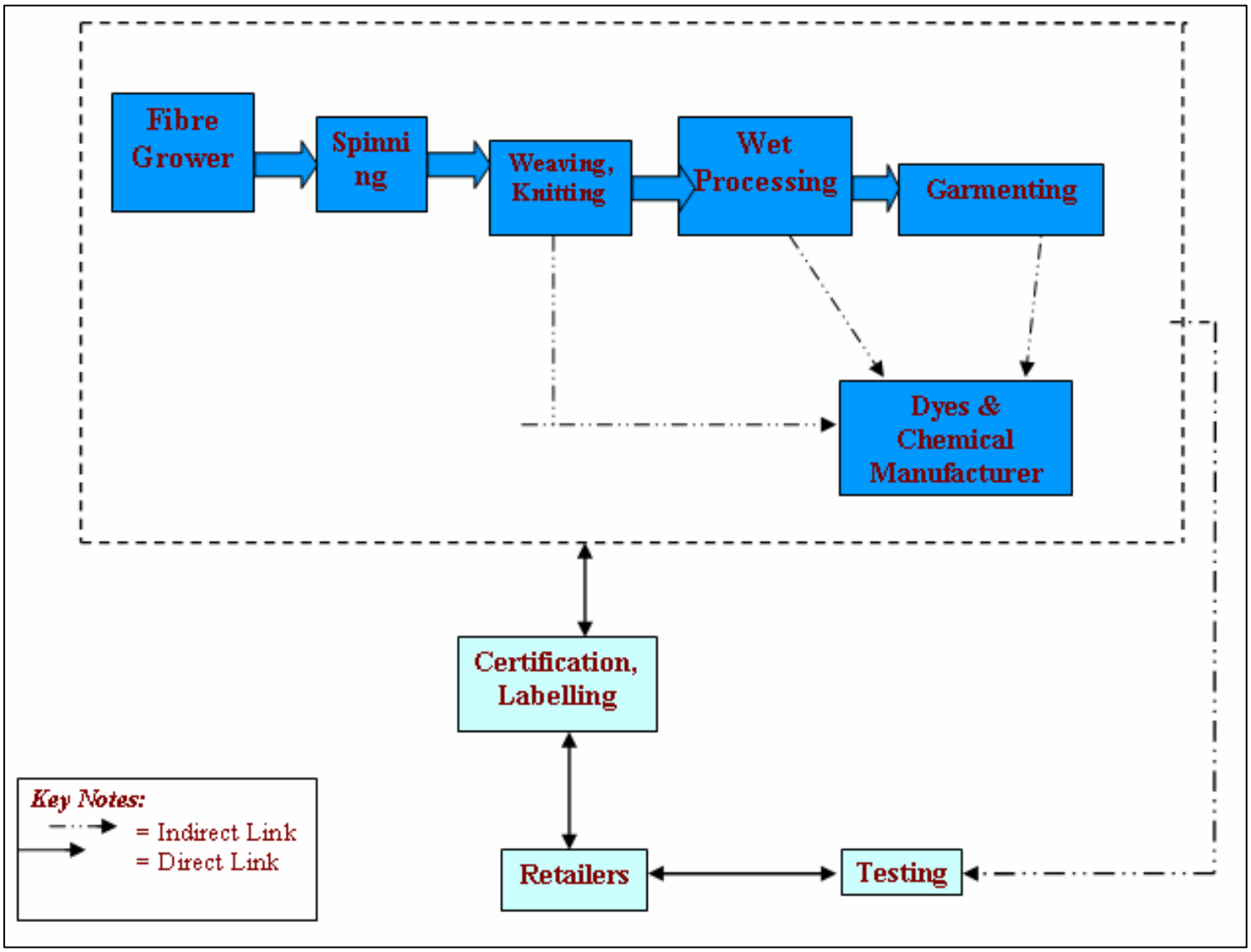


Table 1: Interview Companies

Name/Place of Company	Turnover	Textile Manufacturing/ Testing Facility	age	Representative Name and Designation
Company A, Mumbai, India.	663 million USD, 2009	Garment manufacturer	10 years	Mr. AN, Owner
Company B Textile Industries, Mumbai, India.	2009 3.5 million USD	Spinning, weaving, knitting, processing, garmenting.	26 years old	Mr. MM, Bottoms Marketing Head
Company C Laboratories Pvt Ltd, Thane, India.		Ecological Testing Laboratory	established 1973	Mr. UN, Director
Company D, (HO) Mumbai, India. Singapore.	Worldwide sales amounted to 700 million Euros in 2007	Dyes, Pigments and chemical manufacturing company	started in 1995	Dr. SP (Manager, Laboratory and Textile Services, India), Dr. CJ (Ecology Solutions Manager - Asia),
Company E Ltd, Mumbai, India.	5 x turnover of past 5 years	Textile auxiliaries manufacturing	since 1977	RP, Commercial Manager,
Company F Chemicals India Ltd., Mumbai, India.		Textile auxiliaries manufacturing	33 year old	Mr.VS, Director
Company G Association, Bristol, UK.		Certification Body	founded in 1926	Mr. LH, Trade Relation Manager
Company H Institute, Tirupur India.		Testing and ecolabelling body		Mr. VA, Technical Compliance Manager
Company I	doubled 2009 to achieve around 3 million pound turn over	Retailer of Garments made from Organic cotton	started in year 2004	Ms. AB, Supply Chain Manager

4 Results

As mentioned earlier, the research tried to understand the issues within and across the textile supply chain that come to bear upon the growth of eco-labelled sustainable textiles products in particular and in developing a sustainable textiles industry in general. From the interviews, the following issues arose:

4.1 Sustainable textiles products (STP) are needed

All companies interviewed agreed that STPs are needed. According to textile manufactures companies A and B, STP is a holistic approach and it can be achieved through recycle, reduce and reuse processes. They felt it very important to note that all naturally grown products are not organic or sustainable; for example, organic cotton. All naturally grown cotton is not organic; it might be genetically modified organic cotton. Also, there is no assurance that the land doesn't have any traces of harmful fertiliser, pesticides.

According to dyes and chemicals manufacturers companies D and F, STP is a mindset (company D) and its "the product which has manufactured by taking care of all the three elements of sustainability that is: social, economic and environmental sustainability and product design is fashionable to sell and sustain in the market"

(company F). STP`s are needed to take care of our eco-system, so that this planet can 'sustain' the lives and livelihood 6 billion inhabitants.

From certifiers (company G), STP`s are those products which are manufactured from fibre cultivated by natural or organic method considering social & environmental impact, understanding soil fertility and animal welfare. Further, Mr A (Company H) added that "producing sustainable textile is one of the ways to overcome the Global warming" and Ms. AB (company I) suggested product made from 'organic cotton' are the best example of STP.

4.2 'Why' and 'How' to become sustainable textile manufacturer

A number of methods are available to enter the sustainability arena; those raised by the interviewed companies included the following:

a. Transparency and extent to which the companies had taken up eco-labelling

All the companies interviewed were either certified or were in the process of receiving certification, ie there was felt to be a general endorsement of the idea of eco-labelling, as demonstrated in table 2.

b. Bolster the claims with independent verification

Third-party verification of environmental credentials can often bring legitimacy to sustainability. Many of the most successful eco-labels are those that have been backed by issues-led organisations, for example GOTS certification for textile products made from organic cotton. Third-party verification can range in scope from qualitative assurance of general claims to detailed verification of all stages of a full life-cycle product assessment. Given the generally low levels of consumer trust in big business, some degree of external verification is an essential component of any credible environmental claim. According to Mr. H (company G) and Mr. A (company H), the claims made by the manufacturer or retailers are cross checked by certification of responsible eco-labelling body by testing the goods which can be picked from market

Table 2: the interview companies, their products and their certifications

Name and Place of Company	certifications?	Textile Manufacturing/ Testing Facility	products
Company A, Mumbai, India.	all Sustainable Textile Products, GOTS, OE & Fair-Trade	Garment manufacturer	mostly knitted/ woven baby garments, some adult wear
Company B Textile Industries, Mumbai, India.	EU Flower, KARV, GOTS, OE, SWAN, Oeko-Tex, ISO 9001, ISO 12000, OHSAS 17001, and SA 7000 certificates.	Spinning, weaving, knitting, processing, garmenting.	wide range like, babies, men's, ladies, kids garments; made-ups, speciality fabrics, bags, to H & M, C & A, M & S, Wal-Mart, Woolworth, Asda and Tesco.
Company C Laboratories Pvt Ltd, Thane, India.		Ecological Testing Laboratory	analysis of all aspects of textile and entire textile supply chain. From year 1991, the laboratory started testing ecological parameters eg formaldehyde. Currently carry out testing of most of the ecological parameters eg AOX (Adsorbable Organic Halogen)
Company D, (HO) Mumbai, India. Singapore.	Most products GOTS certified, few are Blue Sign certified, all other follow own RSL norms tested and assessed by own Ecology cell follow self monitoring.	Dyes, Pigments and chemical manufacturing company	dyes, pigments, processing aids for textile processing from spinning to garment washing as well as Expert, Ecology, Colour, and Testing solutions.
Company E Ltd, Mumbai, India.	GOTS , Oekopass certified. in the process of certification for REACH	Textile auxiliaries manufacturing	silicone and silicone based products manufacturing company
Company F Chemicals India Ltd., Mumbai, India.	Oeko-Tex 100 and GOTS certified	Textile auxiliaries manufacturing	Specialty Chemicals for Textile, Paper & Pulp, Leather and Plastic, Intermediates for Agriculture, Rubber, Pharmaceuticals, Dyes, Reactive Dyes and Commercial Construction
Company G Association, Bristol, UK.	UK's leading organic organisation certifying body for the certification of organic products	Certification Body	inspect & award organic certification to farms and businesses. Also also developed standards for areas not covered by government or EU regulations like conservation, fish farming, textiles and health and beauty care products; Soil Association symbol is th
Company H Institute, Tirupur India.	carry out testing for Oeko Tex 100 and 1000	Testing and ecolabelling body	testing, inspection and certification
Company I	only deals with organic products certified by GOTS (Global Organic Textile Standards) and few factories are certified by SA 8000 which gives assurance of social accountability.	Retailer of Garments made from Organic cotton	baby products upto age of 8 years

store to confirm whether claims are right or wrong. In case of dyes and chemical, customer requires proof from third party initiating business.
Therefore many companies use the test reports as a marketing tool to prove the product and company integrity. Within this study, it was the analysis, researcher has observed that, all the segments of supply chain apply for certification or verification as a buyer requirement.

c. Educate, enable, and encourage

Educating, enabling, and encouraging people to act towards sustainability is key for the success of any eco-label and STP as consumers' usage and disposal patterns liberate CO_2 and so there should be programmes to educate them. Methods to do this range from placing trust worthy eco-label with required info on it, through various media, and through regulations. Once the consumer gets educated then may be encouraged to prefer buying more sustainable products by linking them with promotions and reward schemes (carefully and consistently in accordance with principles of sustainable consumption). Product information can now be shared via many more 'touch points': at point of sale; in retailer magazines, leaflets and websites; through road shows, help lines and education packs. Enlisting employees to promote sustainability is another method as employees are key players of any manufacturing facility. Investing in the skills of employees is part of a sustainable and responsible human resource management (Brito et al., 2008). To educate their employees, company A celebrates days like Green Day, Earth day in factory to increase the awareness of sustainability. Company B have organised seminars for their employees, their suppliers, buyers, contractors etc before starting production of organic cotton where they have invited expertise from industry on subjects like eco-friendly dyes and chemicals, GOTS, ethical production practices etc.

d. Reduce, Reuse, and Recycle:

To become sustainable, everyone, from manufacturer to consumer should think of 'Reduce', 'Reuse' and 'Recycle'. Textile waste in landfill contributes to the formation of leachate as it decomposes, (which has the potential to contaminate groundwater), methane gas (a major cause of greenhouse gases contributing to global warming) and ammonia (highly toxic for land, water and air) (Productivity Commission 2006). The companies interviewed engaged currently in the following activities to try to reduce waste and reuse material:

Company A –

- by utilizing solar energy company is running around 20 computers within factory,
- from cutting waste, manufactured 5000 bags and sold at local super market subsidiary price
- Currently working on yarn manufactured from solar energy,
- Reusing treated effluent water for gardening and washing purpose (specifically washing of printing screens).

Company B –

- Have reverse osmosis (RO) plant for purification of processing effluent, after purification of that water it utilised for washing, gardening etc.
- Have started recycling of old paper cones (used in spinning for packing) and making new ones.

Company I –

- Offering shopping bags to their customers made of potato starch i.e. 100% biodegradable.

5 Discussion and conclusion

The proliferation of voluntary certification and labelling schemes for environmentally and socially responsible production is often seen as a driven by companies and consumers. Consumers are heavily involved in environmental pollution because of their buying behaviour and consumption of textiles and significant associations were found between environmental shopping attitudes and behaviour and willingness to pay more for organic cotton products and observed that consumers with a greater environmental awareness demand more environmentally friendly merchandise (Fraj and Martinez, 2006).

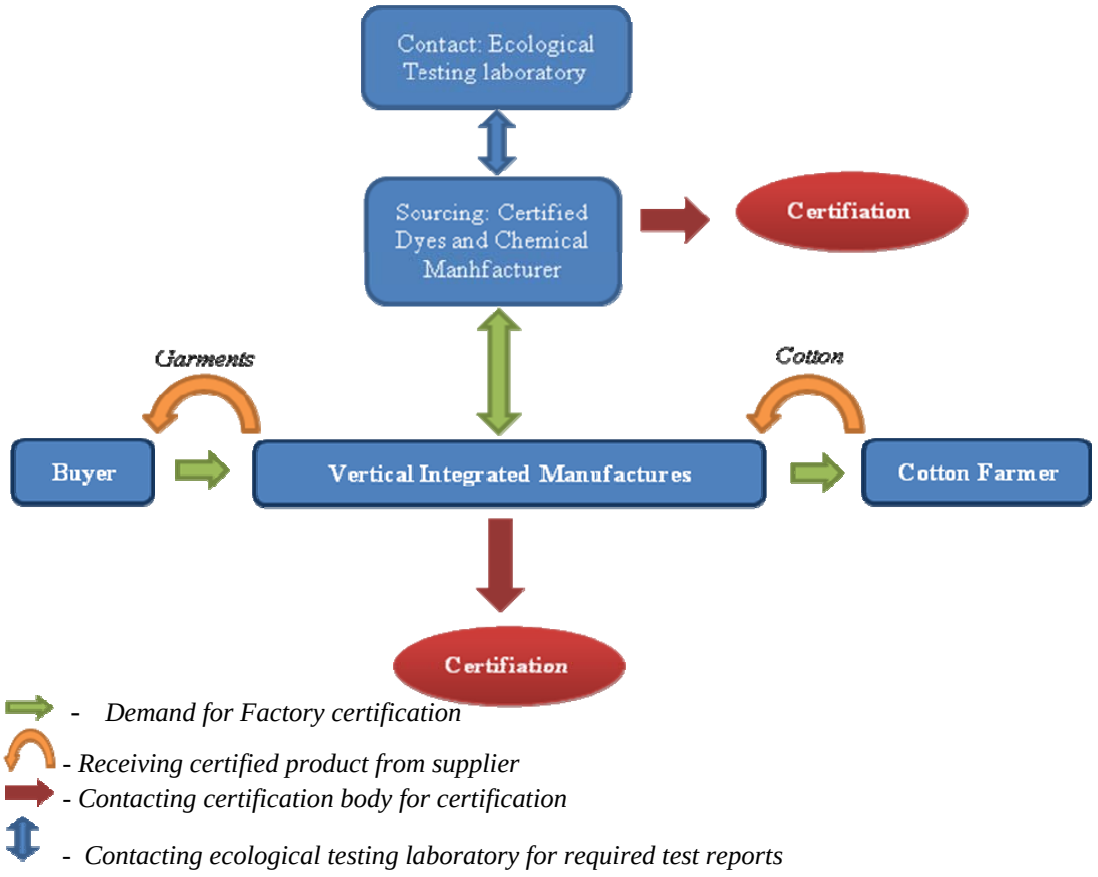
Eco-labels are not simple to understand as they appear and so may not be as appropriate marketing tools as suggested by the government policies. For example, GOTS and OE standards labelling guide are both standards applicable for products made from organic cotton on which retailers, manufacturers can use respective logo on their tags. Under both the standards it's mandatory to mention the percentage of organic cotton on the label and if the product is made from 100% organically cotton, manufacturer or retailer can use the statement "Organic" and "Made with 100% organically grown cotton" respectively. However, GOTS is based on social, technical and environmental areas while Organic Exchange 100 Standard (OE 100) is for tracking and documenting the purchase, handling, and use of 100% certified organically farmed cotton fibres (or organic - in - conversion cotton fibre) in yarns, fabrics and finished goods. The significance of this difference that, while purchasing the product a consumer will check only the organic content and assume that product is eco-friendly or sustainable. However, this is not a completely accurate picture as an OE standard does not look into social or harmful dyes & chemicals or about the environment related issues and an OE 100 logoed garment may be made from 100% organically grown cotton but then finished with harmful dyes and chemicals, printed with non-eco-friendly printing technique like solvent based printing. Therefore a large problem in marketing communication is using eco-labels is the lack of common definition or general understanding exists for what constitutes environmentally friendly clothing and eco-labelling.

Eco-labels backed by solid third party certification give confidence to consumers about the genuineness of product. Certification bodies are the key player for the growth of eco-labelled STP who confirms the product, process and manufactures integrity with respect to sustainability. In this study, across the whole supply chain, most of the people had positive thought about requirement of certification. However, cost of certification can be high in relation to the value of the product and thus can become prohibitive. This is especially true for textiles because of the number of process are involved from production to consumer. To overcome the certification and labelling cost, Ibanez and Grolleau (2007) suggested "carrot" approach - the firm who preserve the environment appreciate them by subsidizing a recognized labelling and "stick" approach - increase of labelling cost for polluting firms by enforcing stricter labelling guidelines and severe punishment in case of deceptive use of environmental claims.

According to Getz and Shreck (2006), despite much analysis of third-party certification, little is known about how certification is enabled or enacted at the point of production. The insights of those few who have explored some of the political and social effects of certification at the point of production are worthy of further examination. In this study researcher has analysed the 'how' certification process works within the organic textile-clothing industry and 'why' it is required.

Having reviewed the process of certification and how individual actors of supply chain get involved into this very complex, time consuming and sometime costly process of certification. Fig 3 illustrates how each actor of supply chain is dependent on each other. Therefore we suggest that manufacturers take a vertically integrated approach through networking or developing two or three processing facilities to overcome cost and time of certification, reduce handling, transportation CO_2 emission and time to retailers' shelves. Companies such as M&S, H&M, Zara, who are bringing STP's to the mass market must be operating in this manner.

Figure 5: Vertical Integrated Approach to Certification



Moreover we suggest (table 3), a fourth to the traditional three pillars of sustainable development; "technical" by which the first three may be achieved.

Table 3: Achieving sustainable development pillar

SD pillars	Why	How
Economic	Competitiveness	Process and product innovation; Process and product substitution.
Environmental	Clean out puts	Reduce, Reuse and Recycle
Social	Social fairness	Better human resource management
Technical	Eco-friendly inputs	Use of certified products

6 Recommendations for Further Research and Industry

There are numerous possibilities for future research in eco-labelled STP. For this research manufactures were from India, results may vary from country to country. However, based on general understanding, the study results indicate the following areas of further research:

1) Most of the research is carried out to identify the consumers' willingness to pay for sustainable, organic or fair tread products. However, research has been not carried out about
   (i) how much consumer knows about eco-labels, and eco-textile standards and
   (ii) the shopping behaviour and attitudes of STP consumers have not yet been analysed through actual purchase data.
2) Investigate the health claims dictated by the lack of direct categorical data available on environmental benefits claims versus health benefits claims on labels (Nimon et al., 1999). Are there are any serious health benefits of STP especially Organic Cotton to human being?
3) Why are eco-standards not mandatory throughout the textiles industry?

6.1 Limitations to the research

This study's limitations need to be taken into account when considering its contributions to theory and findings. This being a one year period of study, time and cost were main limitations and affected the sampling, since it was impossible to visit entire population due to budget restrictions, large dispersal of locations. It was also not possible to include either the logistics sector (also responsible for CO_2 emission); government authorities' whose views may put some light on government policies and approach towards eco-labelled STP or the manufacturers who are not certified by any of the standards to understand why they are not willing to get certify. The results have not been validated, again due to lack of time. Bias may arisen, some participants tend to express views that are consistent with organic cotton, GOTS, OE standards only and try not to present themselves negatively. In addition, the interviewees may have also been unable to disclose some information due to the privacy issues with various companies. Information collected may be prone to some inaccuracy as a result of less than accurate recall, lack of information, or discomfort with self-disclosure.

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