INNOVATION AND SUSTAINABILITY IN FASHION INDUSTRY

Deniz Muslu

- Do fashion brands use innovation to be more sustainable?
Abstract
This research is designed to see the level of innovativeness of fashion brands in terms of being sustainable. It also aims to find out if there is a relation between business models and innovativeness within sustainability of fashion brands. Following the literature review, desk research, consumer survey and expert interviews are carried out. Desk research is made through web pages of fashion brands and some organizations. The information from the web pages revealed a lot about the current sustainability actions. In this desk research, 10 companies are examined in regard to their sustainability actions, to learn about what has been done and to see what can be considered as innovative in terms of sustainability. Following the desk research, a consumer survey is designed to explore the consumer opinion on the topics of sustainability and innovation.

A consumer survey of 100 people is conducted at the Swedish School of Textiles. Due to the need for conscious knowledge about sustainability and innovation, people who studies or works in the textile school is specifically chosen as a cluster. The sample is called “Informed consumers” and is believed to have savvy about innovation and sustainability. How sustainability actions of brands are perceived, how consumers evaluate fashion brands and what they understand from “innovativeness” are some questions explored in the survey. Results are given via frequency distribution charts and maps.

Following the survey, 5 interviews are made with contacts from the companies to study the issue also from the perspective of the business world. These expert interviews are verbally structured and are explained within the research. The method of interviews is qualitative research method and the result provides the reader an insight.

To propose an assessment method for fashion companies, “The Innovation within Sustainability Index” is constructed. Although this index is inspired by some current environmental index models, the final model is original and includes the consumer perspective as well as author’s own evaluation on the innovative sustainability actions of the fashion companies. The companies which are evaluated in the index are: H&M, Lindex, Gina Tricot, Zara, Acne, Filippa K, Patagonia and Nike.

At the end, it was not possible to point out significant relation between business models and innovativeness within sustainability. However, this result may differ when the model is applied to larger samples.

Keywords: Innovation, sustainability, environmental impact, fashion brands in Sweden, Innovation within Sustainability Index, sustainability measurements
# Table of Contents

1. **Introduction** .................................................................................................................. 5  
   1.1 Problem Discussion ........................................................................................................ 6  
   1.2 Research Question and Purpose .................................................................................... 8  
2. **Literature Review** ........................................................................................................... 9  
   2.1 Framing Sustainability Innovations ................................................................................ 9  
   2.2 Porter’s Value Chain Theory and Life Cycle Framework ............................................... 10  
      2.2.1 Innovation in Production Stage .............................................................................. 11  
      2.2.2 Innovation in Distribution Stage ........................................................................... 12  
      2.2.3 Innovation in Consumption and Disposal Stage .................................................... 13  
   2.3 Examples from Environmental Assessment Methods .................................................. 14  
3. **Innovation within Sustainability Index (ISI)** ............................................................... 16  
4. **Methodologies** ............................................................................................................... 18  
   4.1 Desk Research ............................................................................................................... 19  
   4.2 Online Consumer Survey .............................................................................................. 21  
   4.3 Expert Interviews .......................................................................................................... 23  
   4.4 Innovation within Sustainability Index (ISI) ................................................................ 26  
5. **Empirical Research** ........................................................................................................ 29  
   5.1 Desk Research ............................................................................................................... 29  
      5.1.1 Fast Fashion Brands ............................................................................................... 29  
      5.1.2 Medium to High Priced Fashion Companies ......................................................... 31  
      5.1.3 Sportswear Companies ............................................................................................ 32  
      5.1.4 Examining Additional Fashion Brands ................................................................. 32  
      5.1.5 List of Sustainability Actions .................................................................................. 34  
      5.1.6 Table of Sustainability Actions for Fashion Brands .............................................. 35  
   5.2 Online Consumer Survey .............................................................................................. 37  
   5.3 Sustainability versus Innovation Maps .......................................................................... 41  
   5.4 Results of Expert Interviews ........................................................................................ 43  
      5.4.1 How important is being innovative? ....................................................................... 43  
      5.4.2 What innovations attract the attention of the business world? .............................. 44  
      5.4.3 Are they trying to find innovative solutions to sustainability issues? ................. 44  
      5.4.4 Do fashion companies think consciously about innovation to achieve sustainability? ....................................................... 45  
      5.4.5 What are the challenges to become sustainable? ................................................... 45  
   5.5 Review of the Interviews ............................................................................................... 46  
   5.6 Innovation within Sustainability Index Results ............................................................ 46  
   5.7 Analyses for Innovation within Sustainability Index ..................................................... 49
5.7.1 Is there a relation between the results of ISI and business models? ....... 49

5.7.2 Is there a relation between Brand Equity Criteria from Life Cycle Dimension and business models? ................................................................. 50

5.7.3 Is there a significant difference between ISI-with consumer perception and ISI-without consumer perception? .......................................................... 51

6 Conclusion ........................................................................................................ 52

7 Bibliography ........................................................................................................ 54

Table of Figures

Figure 1 - The brief model of Innovation within Sustainability Index......................16
Figure 2 - Perceived Innovativeness of Fashion Brands .............................................37
Figure 3 - Perceived Sustainability of Fashion Brands .............................................38
Figure 4 - Importance of being innovative from Consumers perspective ..................38
Figure 5 - Perceived context of Innovation in Fashion Industry – Top of Mind ..........39
Figure 6 - Perceived context of Innovation in Fashion Industry – Spontaneous ........39
Figure 7 - Perceived Innovativeness of Fashion Brands ...........................................40
Figure 8 - Perceived Sustainability of Fashion Brands ...........................................41
Figure 9 – Innovation and Sustainability Matrix .....................................................41
Figure 10 - Innovation and Sustainability Clustering Map ........................................42
Figure 11 - Life time of an average t-shirt .................................................................47
Figure 12 - Results of Innovation and Sustainability Index .......................................47
Figure 13 - Detailed results of Innovation within Sustainability Index ....................48
Figure 14 - Results of Innovation within Sustainability Index – excluding consumer perspective ..........................................................49
1 Introduction

As the fashion industry becomes more and more competitive, most of the companies are trying to differentiate themselves in the market. They work hard to design the optimal business model, the most efficient production patterns and strong corporate values. According to the recent researches carried out by the Sustainable Brands Community (2012), “understanding the latest sustainability trends, consumer insights and industry-specific best practices” is needed by the leading corporations to maintain their competitiveness in the market. Sustainability demands innovation to become more environmentally and socially benign while providing a new source of innovation and competitive advantage at the same time. (Hansen, Grosse-Dunker, Reichwald, 2009, p.685)

The question is: where does the fashion industry stand in regard to this review? Do the fashion companies aim to keep up with sustainability trends and do they improve their practices with an innovative approach? According to the consumer apparel survey Styling Sustainability conducted by Ryan Partnership® Chicago/Mambo Sprouts® Marketing (2012), 69% of shoppers in the US consider buying ecological or sustainable apparel (p.6). However, the determining factors of purchasing decision are comfort/fit and price (p.7). Thus, the need for producing quality and stylish green apparel for a good price has aroused recently for manufacturers. Some leading ready-to-wear fashion companies are more in action about sustainability and publishing about their corporate responsibility. Many Swedish fashion companies have started to include more ecological products into their collections. In this way, they are bringing social responsibility issues more into subject on their web sites. For instance; “Conscious Collection” of H&M is taking attention to the environmental as well as to the social initiatives carried out by the brand (Hennes&Mauritz AB, 2012). Lindex has its fresh “Sustainable Choice” collection (Lindex AB, 2012) while Gina Tricot (2012) also has the “Sustainable Materials” collection for the summer season.

As it is indicated in a Deloitte Review article written on the 2010 World Economic Forum’s Driving Sustainable Consumption initiative, sustainability is composed of common rules and regulations since sustainable consumption is needed to be internalized by consumers, which cannot be achieved by the work of a single company. “Rather, it will require many companies innovating and collaborating across value chains and engaging consumers in a redefinition of value.” (Hutter, Capozucca, Nayyar, 2012, p.47) Thus, competitors should have the common futuristic goal of changing the consumption patterns of buyers, which can be possible by maintaining the innovative mindset within the corporations.

As indicated by Mistra¹, fashion is the one of the most suitable sector for combining innovation and creativity, and also sustainability. “By adding a sustainability perspective in the design

¹Mistra is an initiative that invests in research of strategic importance of the good living environment and sustainable development.
process, the fashion industry has the advantage of combining two of its core competences – creativity and innovation.” (Rydberg-Dumont et al., 2010, p.19) Since the need is sustainability, the question is: are fashion companies using innovation for sustainability?

Baltic Fashion is an EU Project which aims to build a network in order to support Baltic Sea Region companies internationally. The Swedish School of Textiles is one of the project partners and currently conducting the research called Fashion Innovation Digest with the aim of identifying innovative fashion companies as well as the character of innovation among fashion companies. The research plans both to encourage a more innovative approach to the development of the fashion industry and to find examples of innovative fashion companies (Svengren Holm, 2012) This research, on the other hand, focuses on the sustainability innovation of the fashion companies. An index will be developed within the scope of this research in order to analyse the sustainability innovation in the fashion industry and to explore if the fashion companies are trying to be innovative as a way to make their businesses more sustainable.

The paper is structured as follows: the first part is composed of the problem discussion. It starts with the definitions of innovation and sustainability separately. Afterwards, the concept of “innovativeness within sustainability” is defined as a means to make clear the type of innovation this paper is based on. Secondly, the model of the Innovation within Sustainability Index is briefly introduced. Thirdly, literature is reviewed to see how a framework can be built to explore the innovativeness within sustainability concept. Existing assessment models are also studied in this context. Later, the methodology of the research is defined in detail, and then the results of empirical research are elaborately presented. In the following chapter, findings are analysed. And finally, a brief conclusion is given.

1.1 Problem Discussion

Sustainability is an increasing trend in today’s socio-conscious economies which is derived from the sustainable development concept. In business terms, it indicates which businesses are economically, socially and environmentally able to carry on its activities without an interruption (Johnston et al, 2007, p.61). According to the 1987 Brundtland Report prepared by the United Nations World Commission on Environment and Development; the term sustainable development is defined as “...development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Bengtsson and Ågerfalk, 2011; Johnston et al, 2007; Hansen et al., 2009; Singh et al., 2012). Due to the stressed water systems as well as the endangerment of other resources, costs and prices associated with the natural resource supplies have increased. Moreover, in 20 years, two billion middle-class consumers will be added to the current demographics. (Hutter, Capozucca and Nayyar, 2012, p.48) While there is a need for sustainable businesses, maintaining the continuum of healthy life for the welfare of future generations is an urgent need. As enterprises take responsibility to set up a healthy future, companies need to develop a more innovative perspective about their existence and their functions.
The general definition of innovation points out the importance of functionality as well as novelty in it. Merriam-Webster’s dictionary defines novelty as follows; “The introduction of something new, as a new idea, method or device”. (n.d., cited in Damiano, 2011, p.65) Anything that is new and responds to a question or problem can be classified as an innovation. Another interpretation is Kuczmarski’s (2003, p.536) definition; “innovation is a mindset, a pervasive attitude, or a way of thinking focused beyond the present into the future vision.” It is a concept, a shared way of thinking and is needed to be internalized by the group of people in a company with futuristic goals. Innovativeness within sustainability concept, on the other hand, is defined as novel sustainability approaches compared to commonly applied mechanisms. The term “sustainability” in this paper is used to refer “environmental sustainability” instead of all three dimensions.

A part of this research is built on the consumer perspective, thus it also concentrates on the innovation in the fashion industry from consumers’ point of view. It is not realistic to call one brand sustainable by reading its publishing and reports while it is not fair to call another brand unsustainable by reviewing their publications about the subject. However, the communicating brand personality could differ from the brand image perceived by the consumers. According to the PWC 2012 Global CEO Survey, the US CEOs revise their strategies in line with the consumer demand by the amount of 77% (cited in Olins, 2012, p.19). Since consumer demand shapes the future strategies of companies, what consumers think is getting more and more important. The brands, which have a high level of innovation and sustainability according to the informed consumers’ perspective, can be defined as the brands with a futuristic vision. Another goal of this research is to find out if there is a link between innovative companies and sustainability in the minds of informed consumers.

When all these underlined issues above and the endangerment of resources for the apparel industry are taken into account, sustainability stands as the new topic of the fashion world. Although consumers are worried about the future of resources, they do not take their purchasing decisions regarding the problem. Instead, their decision is driven by design, quality and price (Ryan Partnership® Chicago/Mambo Sprouts® Marketing, 2012, p.7). As the research carried out by the French Institution of Fashion reveals (2009, p.10): “People want a wider choice of responsible articles, but the paramount requirement is that the supply must be truly stylish.” That eco or ethical clothing has a “high priced null designs” image from the customers’ perception stands as a problem. Fashion companies need to have an innovative mindset, not only about improving supply chain activities but also about changing the consumer perception about ethical clothing. Many studies about the innovativeness of fashion companies within their actions towards sustainability can be done. Are they trying to be innovative while they are searching solutions to their CSR problems? To what extent are they innovative? Which methods are they using for a more environmental business? Since fashion companies lack a benchmark score for controlling their success on environmental sustainability, an index of sustainability within innovation could be useful for consumers as well as fashion producers. This kind of an index could function as a motivation indicator for being innovative on sustainability issues.
Transparency on the ethical aspects of production can increase the awareness for sustainable consumption and also trigger improvements in the industry. As it is marked by the French Institute of Fashion (2009, p.14), regulations on calculating the carbon foot-print of products done by a brand will have an impact on both brand supply and consumer purchasing criteria. Thus, the measurement of sustainability as well as innovativeness will be necessary and helpful in the near future.

1.2 Research Question and Purpose

The research question of this paper is defined as; “How innovative are fashion companies to become sustainable?” In order to answer the question, I build a method to measure innovativeness within sustainability in the fashion world.

The purpose is to make an evaluation among fashion companies by comparing them to each other in terms of their sustainability as companies, and to see how innovative they are when the topic is functioning environmentally conscious. A mode of comparison, such as an index, can make the results of corporate social responsibility (CSR) attempts clear, which could lead fashion producers to act accordingly while creating transparency for consumers.

The main focus of this research is on the environmental side of sustainability due to the incapability of evaluating social and economical aspects. To limit the scope of the research, fashion market in Sweden and mainly Swedish brands have been focused on though some worldwide known brands are also explored to sample the international methods of sustainability and innovation. Since market evaluation cannot explicitly be defined without the consumer perception of brands, public opinion is needed during the research process. Consumer perspective is commonly used as a parameter to rank the brand values of companies. Thus, the consumer perspective will act as a testimony when the results of desk research and expert interviews are compared. However, since both sustainability and innovation are very specific areas, the vast majority of consumers might not be aware of these subjects. Because of this failure of awareness, the survey for the research is applied at the Swedish School of Textile to be able to reach a more acknowledged consumer group. This group is called “Informed Consumers” and the public opinion mentioned through the paper represents the public opinion of this informed group.

While conducting a desk research, I searched for some analyses on the fashion brands and their sustainability. However, I could not reach any evaluation or mapping of fashion brands. This led me to construct a new model - an index - which considers both sustainability and innovativeness as the equity of several brands. In the light of this index, it could be possible to see if there is a relation between the business models and the innovation within sustainability. This model can be dynamic which means that it can be improved and updated. The model can lead both companies and consumers to think about sustainability from a closer perspective while increasing the transparency of fashion providers.
2 Literature Review

Literature review of this study starts with Micheal Porter’s *Value Chain* concept to define business dynamics in general. Then sustainability innovations are framed in regard to this Value Chain approach but in order to make it more descriptive, *Life Cycle* system is applied to fashion value chain. Ingrid Löschek’s “Fashion Innovation” book is used to define innovation in fashion context, as well as other literature concerning innovation. Sustainability innovations are divided into three according to life cycle approach and available literature is scanned in regard to this division. Finally, different sustainability innovation projects and measurement systems are examined for creating a new model.

2.1 Framing Sustainability Innovations

In order to simplify and make the innovation context more explicit, business activities in the fashion industry are classified according to the life cycle processes such as; “extraction of raw materials, design and production, packaging and distribution, use and maintenance, reuse and recycling, and incineration and disposal” (Gauthier, 2005, cited in Hansen, Grosse-Dunker, Reichwald, 2009, p.687). Although the scope of business activities differs in sector divisions, those phases which are necessary for conducting a business are fundamentally the same in every sector. First, Porter’s Value Chain theory (1986) is used to show the basic division of operations in businesses. Secondly, Life Cycle theory (Gauthier, 2005, cited in Hansen, Grosse-Dunker, Reichwald, 2009) is briefly explained. Life Cycle theory is used to define sustainability innovation areas in the fashion industry. Although there are not any resources in the literature which explore the innovation for sustainability in the fashion industry, there are some indices or assessment methods applied in variable contexts and for different industries. These examples are briefly examined to create the base for constructing an innovation and sustainability index for the fashion industry.

According to Ingrid Löschek’s self-referential system theory; “fashion as a system leads to a structural linkage with other systems such as economics, politics or art”. This means that fashion is a dynamic system which is strongly affected by environmental factors. It is a “self-organizing” system in which there is no given hierarchy between organizing, designing or controlling components and all parts of the system represent potential designers. “Correspondingly; design, production, distribution and consumption are all parts of the system and equal in value.” Thus, when innovation is considered within the fashion system, the innovation does not have to be situated within the product itself, but it can exist in all parts of the process. Additionally, Löschek defines fashion as an “autopoiesis” system, which literally means self-production or self-creation, and those systems must arrive consistently in new forms and contents. Consequently, fashion needs innovation in order to continue. Naturally, this capacity of continuance is guaranteed by the design of fashion products in the industry. (Löschek, 2009, p.24) But all of the stages are liable to be improved by innovations in accordance with the environmental factors.
2.2 Porter’s Value Chain Theory and Life Cycle Framework

Michael Porter’s Value Chain analysis divides activities of the firms in order to conduct businesses. “Such activities are technologically and in most cases physically distinct.” (Porter, 1986, p.13) He divides “primary activities” into three; “the physical creation of the product or service, its delivery and marketing to the buyer, and its support after sale” (p.14). Impacts on environment can occur in any phase of this value chain activities. Yet, “support after sale” phase is relatively redundant in the fashion field because support after sale is not as common as it is in the appliance or the electronic device industries. Consequently, life cycle divisions are mentioned below to create a suitable framework for the fashion industry. This framework is used as a base for creating a sustainability and innovation assessment model.

In the literature, sustainability effects in the production-based systems are especially studied from a life cycle aspect. Life cycle refers to the “physical life cycle” of a product, which is different from the market-oriented life cycle (Hansen, Grosse-Dunker, Reichwald, 2009, p.687). The life cycle concept which is discussed here refers to “input–output exchange processes between the environment and the whole set of processes that entail the entire lifetime of any given product, meaning that the product is analysed according to its energy, resource and emission flows during its lifetime” (Vezzoli and Manzini, 2008, p.55).

In order to decrease environmental impact of business activities, innovations are necessary to change or ameliorate existing systems. “It becomes necessary to embrace effects of products and technologies within the different phases of their physical life cycles.” (Klöpffer, 2008; Saling et al., 2002 cited in Hansen, Grosse-Dunker, Reichwald, 2009, p.688). Thus, the life cycle covers all stages of the product starting with reaching the resources and ending with the end-of-life treatment (Vezzoli and Manzini, 2008, p.55). These processes are usually divided into the following phases: pre-production, production, distribution, use and disposal (p.55).

Nordic Fashion Association has compiled the impacts of an average clothing production under the following titles: water, carbon dioxide emissions, waste, chemicals and labour and ethics. The life cycle of an average garment is examined under these titles. The life cycle stages are listed as follows: raw materials, processing, production, transport, retail, use and waste management (Nordic Fashion Association, 2009, p.11).

Taking fashion business into consideration, the life cycle of a fashion product can be divided into pre-production, production, distribution, consumption and disposal phases as well. Since different impacts on environment are observed in those phases, innovations in sustainability actions can be examined in this framework. Consumption and disposal phases are intertwined in this research because recycling as a disposing action is mainly combined with the consumer behaviour of using or recycling old garments. Also, pre-production activities such as procurement of materials can be included into the production phase in order to simplify the framework.

Innovations in the production phase include new design concepts, new colouring pigments, new
textiles or other materials as well as new cutting or new manufacturing techniques. Innovation in the distribution phase refers to the use of futuristic modes of delivery or new retailing systems. Last but not least, innovations in the consumption patterns might be planned as re-use, re-design or re-sales. These innovations can be applied to businesses either for sustainability or for profit increasing purposes (Svengren Holm, 2012).

Many companies see innovation as a tool to become the market leader (Simon, 2009, p.187). In the competitive markets of today, companies are feeling the need to make radical changes, or bringing “something new” to the market so as to differentiate themselves from competitors. However, this approach is restrictive because when the innovation is considered as a tool, it brings monetary expectations and in the short term it would be disappointing. Thus, when an innovative approach is about to be taken, it should be considered as a long-term objective to achieve a result. In the world of fashion it is not usual to see innovation as the primary objective, unlike technology-oriented businesses because fashion innovation means investments that are mostly made in textile and clothing psychology (Löschek, 2009, p.89). However, when the concern is sustainable changes, the biggest improvements can be achieved in longer terms in the fashion industry. For example, producing organic cotton requires more water before the soil transforms to organic and it is more costly because it requires more labour force and ends with fewer crops (Hulm and Domeisen, 2008, p.31) for a while, but after a few years the amount of yields will increase and the field will require less water, also the cost of pesticides will decrease. Indeed, better solutions to these problems might be achieved by adopting innovations. In this paper, an index will be created and used to compare fashion companies’ innovativeness in sustainability. Before defining the index, the life cycle phases for a fashion product will be explained with regard to existing literature.

2.2.1 Innovation in Production Stage

In this study, product innovation refers to qualitatively new products differing significantly from existing incidents according to the definition by Hauschildt and Salomo (2007, cited in Hansen, Grosse-Dunker and Reichwald, 2009, p.686).

In the article of Hansen, Grosse-Dunker and Reichwald (2009), the idea of innovation is based on technological innovations. Technological innovations refer to product innovations such as eco-efficient products and clean technologies, however, “consideration of product-related sustainability effects in lifecycles phases such as manufacture, process innovations are also part of the technological level” (Armbruster et al., 2008; Cooper, 1998; Moors and Vergragt, 2002; Preuss, 2007 cited in Hansen, Grosse-Dunker, Reichwald, 2009, p.691).

The limited resources of the world and the need for the growth of economies have caused the dilemma of the 21st century; each country desires to increase the total income, which requires more business activities and more use of raw materials, plants, water and energy; yet, these resources are getting depleted. As it is claimed in the sustainability report of the Acne Studios (in press), 80% of the environmental pollution is caused by the products.
“Living and working in a world of up to 9 billion people with rising expectations, providing energy, food and resource security, dealing with climate change, ecosystem degradation, a widening economic divide and a host of other interdependent issues will require massive change in products, services, processes, marketing approaches and the underlying business models which frame them.” (Seebode, Jeanrenaud and Bessant, 2012, p.1)

Consequently, the innovation for sustainability can maintain the growth in the field of fashion while not damaging the future of new generations. Fashion companies can decrease their adverse effects on the environment by starting to revise their production processes. “Corporate design functions have the opportunity to improve environmental and social impacts at the very early stages of product development” (Nordic Fashion Association, 2009, p.14). Not only the product innovations but also the process innovations are included in the first phase of the product life cycle.

Production phases are the most common steps for sustainability. Producing a simple t-shirt made of conventional cotton requires 2,700 litres of water and causes water pollution due to the chemicals used in the production (Willard, 2009). Many Swedish brands are offering organic cotton products in their collections. Sweden Textile Water Initiative (STWI) aims to produce sustainable water management guidelines for textile and leather production (Swedish Water House, 2011). According to the STWI, the future success of companies depends on some changes in their manufacturing policies which are prepared in line with the sustainable criteria (Swedish Water House, 2011).

While conventional cotton fields are covering 2.5% of all the fields worldwide, they are using 25% of fertilizers and 10% of chemical pesticides (Hulm, Domeisen, 2008, p.30). Due to these figures, there is a growing trend towards using organic fibres such as organic cotton, hemp, soy and bamboo. Hemp, soy and bamboo use less water but bamboo, for instance, needs to be processed while turning into fibre, which leaves polluting substances into the water (Willard, 2009). So bamboo fibre is not environmental unless it is processed in a closed loop system.

Better Cotton Initiative (BCI) has also been working to produce more sustainable cotton since 2005. BCI performs activities to decrease the impacts of conventional cotton production which will also make the production process economically, environmentally, and socially more sustainable (Better Cotton Initiative, 2011). Producing new textile materials from recyclable fabrics is another innovative sustainability action. According to the study carried out by the Textiles for Textiles organization (2012), among all the sustainable materials, recyclable fabrics are the leading available sustainable textile materials.

2.2.2 Innovation in Distribution Stage

While delivery of goods by airplanes is very expensive, ground shipping is slow. Moreover, most of the transportation methods are harmful to the environment. Building railroads or changing the
transportation system is not the task of fashion companies; however, small decisions like environmentally friendly vehicles and visionary business designs i.e. manufacturing close to retailing channels, might significantly contribute to the environmental protection. Fulfilling the need for a fast transportation while reducing the toxic emissions polluting the environment can be sustained by innovative transportation modes such as green vehicles. By green vehicles, more environmentally-friendly hybrid or electric cars or trucks are meant. (Deal, 2010) Another environmentally efficient way of transportation is using bio-diesel fuel vehicles. Bio-diesel fuel is a renewable resource, which is made from soy beans, or waste vegetable oil (cooking oil) and it creates less pollution than petroleum diesel (Myhr, 2001).

Retailing is also a part of the distribution phase. Retailing modes are a significant concern for sustainability since stores are designed to attract consumers. For example, just the lighting of stores causes a high amount of energy consumption. Recently, eco-friendly stores which target at less energy and water consumption have been emerging. Eco-efficient store of Zara in Barcelona Portal D’Angel is one of the examples of these stores. According to the corporate document of the parent company Inditex, the store is using 30% less energy compared to conventional stores, saving 50% of water and emitting 150 tons of less carbon dioxide. (Inditex Group, 2011, p.11)

2.2.3 Innovation in Consumption and Disposal Stage


Companies play an important role in consumer behaviour. As they have power to affect buying decisions of shoppers, they have also relative power to change shoppers’ consumption patterns. In this regard, Filippa K’s second-hand shop is an innovative approach. It helps customers to understand that some garments could be used longer than expected. (Svengren Holm, 2012) Even in the developing countries, people can learn the importance of recycling as well as re-use and re-sales by the help of companies. A fashion company can “provide clear and prominent information on energy-efficiency; e.g. labelling on laundry detergents should promote minimum doses (to reduce overall use of detergents) and coldwater washing (to reduce energy consumption in appliances)” (Verghese, Lewis and Fitzpatrick, 2012, p.70). Through such actions, consumer awareness about sustainable consumption would increase, leading to less environmental damage in the future. Lewis (Verghese, Lewis and Fitzpatrick, 2012, p.75) also indicates that the use of materials with recyclable content should be maximized since it consumes less energy during the manufacturing process in general, reduces the consumption of virgin material, often generates less pollution and less greenhouse emissions and sometimes even costs less than the cost of production from a virgin material. Thus, leading fashion companies should design and use recycling systems actively, not only to avoid the impacts of new fabric production, but also to be a model for the others in the industry.
2.3 Examples from Environmental Assessment Methods

“There is a widely recognized need for individuals, organizations and societies to find models, metrics and tools for articulating the extent to which, and the ways in which, current activities are unsustainable”. (Bebbington et al. 2007, cited in Singh et al., 2009, p.281). Those models which can assess the sustainability or the lack of sustainability of companies and their business activities would definitely help to achieve improvements for a more sustainable future. There are a number of sustainability assessment methodologies in practice to evaluate the performances of companies (Ramachandran, 2000 cited in Singh et al., 2009, p.281) however in the fashion industry this number is limited. And besides, the importance of innovation for sustainability is not conceived as a significant factor for the assessment in existing models although available resources will not be enough to meet the demand if the business designs of today remain the same (WWF, 2010, p.85). A few assessment indices will shortly be mentioned in an attempt to present some samples from the existing measurement methods. These examples are chosen from the ecological or environmental basis of the sustainable development.

The first one is the “Eco-Index” Methodology which deals with the life cycle data with a bottom up approach to measure the impact of different products, services and lifestyles (Singh et al., 2009, p.290). There are some examples of eco-indexes made by clothing companies. One is from Klattermusen; the “ECO-index” which provides the information about how environmental is each piece in the product line. The company calculates the average ECO-index for each collection, so this data can be used to track environment-friendliness trend of the company. Besides, the data can be reached by consumers as well. The ECO-index is composed of ten criteria, (1) life of the product, (2) environmental-friendliness of the impregnation and membrane, (3) biodegradability, (4) whether it is manufactured from natural non-fossil materials, (5) whether it can be recycled in an existing system and some other criteria which are not explained in detail. Each product in the collection receives one point for each criterion it fulfils; the sum is assessed against the potential maximum points to obtain a percentage (Klattermusen, n.d.).

Ecological Footprint is a tool to control and assess each physical unit’s viability to “provide its resource supplies and to assimilate its wastes” (Singh et al., 2009, p.290). This analysis measures if the subjected sea or land area can meet the consumption resource needs for the year.

Another measure is “Composite sustainable performance index” which is developed to create an overall performance indicator for a company in terms of economic, environmental and social indices (Singh et al., 2009, p.290). It evaluates how well a company demonstrates its policies and commitments regarding the sustainable development (Singh et al., 2009, p.290).

Life Cycle Index on the other hand, is developed for helping companies to make conscious choices by examining life cycle features of processes and products (Singh et al., 2009, p.290). This index assesses the various design and technological considerations of processes and products and is comprised of four components namely environment, cost, technology and socio-political factors (Singh et al., 2009, p.290). If this index is commonly used by organizations,
conscious choices will increase; and there will be more improvements in relation to the sustainable products as a result.

In *Benchmarking Green Innovation*, Walz and Eichhammer (2012, p.79-80) focus on green technologies to produce energy because they believe “these technologies open up the opportunity for reducing resource use and emissions and for modernizing the energy, water, and transport infrastructure.” For defining green innovations, research is framed in six areas; “(1) energy efficiency, both in buildings and in industry, (2) environmentally-friendly energy supply technologies, including renewable energy, cogeneration, and CO₂ neutral fossil power stations, (3) material efficiency, including renewable resources and eco-design of products (4), transport technologies, (5) water technologies, and (6) waste management technologies” (Walz and Eichhammer 2012, p.80). This research is built to benchmark Newly Industrializing Countries (Walz and Eichhammer 2012, p.79) however; these research areas on energy efficiency, environmentally-friendly energy supply technologies and material efficiency can also be the criteria for measuring sustainability innovation initiatives of businesses.

To sum up, today it is viable to measure the impacts of products, services and business activities on the environment, and it is possible to control if natural units can sustain the same figures next year. In terms of fashion, there are examples of tracking environmental effects of the life cycle of a product, so it is also possible to evaluate the environmental friendliness of garments. However, most of the information is not transparent and attainable by consumers. And there is not any available evaluation and comparison about the sustainability of fashion brands. The created index model in this research does not include any data obtained from the inside sources; all the information is acquired through web pages and combined with the consumer mindset. Basically the index is generated for comparing the fashion brands. I regard this comparison as an emerging need to increase the innovative sustainable initiatives of fashion brands. This information can help consumers make more sustainable decisions in their purchases and companies may increase their efforts for sustainability as the competition on the topic increases. When the competition over achieving sustainability becomes heated, the motivation for innovativeness for sustainability will also increase.
3 Innovation within Sustainability Index (ISI)

In order to measure innovativeness within sustainability of the several fashion brands, I decided to build *Innovation within Sustainability Index (ISI)* which can be developed and broadened through more detailed researches and which will present helpful information to the fashion industry. So, the index can motivate companies for innovation to become more sustainable.

In the light of the literature review, the base of the model is built on the life cycle approach. Earlier in the text, it has been recorded that innovativeness within sustainability in the fashion industry can be divided into three within the life cycle approach (See Chapter 2.2). These divisions are: innovations in production phases, innovation in distribution phases and innovations in consumption phases. Moreover, there are some internal divisions in each section.

These approaches helped to determine the components of the ISI. “Social and environmental impacts across average garment lifecycle” findings of NICE is used as the basis of the components (Nordic Fashion Association, 2009, p.11). However, some adjustments are made to broaden the index into overall sustainability of the brand.

In the production phase there are four sub-divisions: Product Life Time, Use of Environmental Raw Materials and Water Protection Systems. Parts about the product, Product Life Time and Use of Environmental Raw Materials, are retrieved from the Eco Index of Klättermusen. Other sections of Klättermusen Eco Index are eliminated, due to low attainability of information. Water Protection Systems are evaluated in regard to both water initiatives and chemical processing actions since the use of chemicals results with water pollution.

CO₂ Emissions and Energy Saving in Stores are the two sub-divisions of the distribution phase because they make the most direct impacts on the environment during the process. For the third phase which is consumption and disposal; Sustainable Consumption Systems and Waste Management systems are evaluated. In order to include the consumer mindset into the equation, a part of the model is spared for the consumer perception over brands’ sustainability and innovativeness.

---

![Figure 1 - The brief model of Innovation within Sustainability Index](image)

**Product Life Time**  
**Use of Environmentally Friendly Materials**  
**Water and Energy Efficiency in Production**  
**CO₂ emissions**  
**Energy Efficiency in Stores**  
**Sustainable Consumption Systems**  
**Waste Management Systems**

**Sustainable Equity**  
**Innovativeness**  
**Consumer Mindsets**

**Innovation and Sustainability Index**
Some hypotheses are tested in the research. The main purpose of the test is to see if there is a relation between business models and innovation within sustainability of fashion brands. Following hypotheses are built to test:

**Hypothesis 1:** Fast fashion brands and medium price fashion brands are likely to be different in terms of ISI.

**Hypothesis 2:** Fast fashion brands and sportswear brands are likely to be different in terms of ISI.

**Hypothesis 3:** Medium Priced Fashion Brands and Sportswear brands are likely to be different in terms of ISI.

ISI scores could differ not only in terms of overall results, but also in terms of life cycle dimensions, in regard to the business model of fashion brands. In order to test this, following hypotheses are constructed:

**Hypothesis 4:** Fast Fashion Brands and Medium Priced fashion brands are likely to be different in terms of ISI scores when the Production dimension of the Life Cycle is considered.

**Hypothesis 5:** Fast Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Production dimension of the Life Cycle is considered.

**Hypothesis 6:** Medium Priced Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Production dimension of the Life Cycle is considered.

**Hypothesis 7:** Fast Fashion Brands and Medium Priced fashion brands are likely to be different in terms of ISI scores when the Distribution dimension of the Life Cycle is considered.

**Hypothesis 8:** Fast Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Distribution dimension of the Life Cycle is considered.

**Hypothesis 9:** Medium Priced Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Distribution dimension of the Life Cycle is considered.

**Hypothesis 10:** Fast Fashion Brands and Medium Priced fashion brands are likely to be different in terms of ISI scores when the Consumption dimension of the Life Cycle is considered.

**Hypothesis 11:** Fast Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Consumption dimension of the Life Cycle is considered.

**Hypothesis 12:** Medium Priced Fashion Brands and Sportswear brands are likely to be different in terms of ISI scores when the Consumption dimension of the Life Cycle is considered.

Last but not least, two different models of the ISI are desired to be tested to see if they create a significant difference: the ISI-including consumer perspective and the ISI-excluding consumer perspective. The hypothesis for this test is built as follows:

**Hypothesis 13:** The ISI-including consumer perspective likely to be different from the ISI-excluding consumer perspective.

Testing of these hypotheses can be found in Chapter 5.7.
4 Methodologies

The research is designed as an inductive study that starts with a focal point and scrutinizes the subject through various research methods (Greener, 2008, p.16). The scientific approach is a mixture of qualitative and quantitative research methods. According to Dr. Greener (2008, p.17), in business and management research it is suitable to use a mix of quantitative and qualitative strategies since the mixture applies quantitative research methods to find out the observable facts at first and then, studies the perceptions of those who experience these facts. She claims that through this method it could be possible to “use best of two worlds to investigate the messy reality of people and organizations.” (p.17)

Although the process of the research is mainly the same for both, qualitative and quantitative research methods differ from each other in terms of data collection methods, data processing procedures, analysis and the communication of the findings (Kumar, 2005, p.17).

The empirical research of this paper is constituted of three parts. The first part includes the research on the websites of fashion companies which is done in order to obtain information about their sustainability actions in addition to the evaluation of the companies on the basis of their innovativeness. Second part is an online consumer survey and the third part is composed of structured interviews with the experts of the fashion industry.

The research on the web pages supplies information about the sustainability actions of the fashion companies as well as a chance to find out what is innovative in the industry. However, it is not always reliable to make an assessment just by looking through the self-publications of the companies because the information available on the company websites is generally advertisement-oriented and not objective. And even though the author aims to be objective, the reliability of the evaluation might be misleading (Greener, 2008, p.15). Accordingly, common perception stands as one of the elements to increase reliability. Based on this need, qualitative consumer survey is designed. Consumers’ perspective on the sustainability and innovativeness of brands can help to evaluate brands more accurately.

Even though an extensive and structured desk research combined with the consumer survey covers a broad part, expert opinion should also be added to the research in order to see the whole picture of the fashion industry in terms of innovativeness within sustainability. The insider opinion from the fashion industry is used as an insight to the research and clarifies the need of innovation within sustainability. Also, it reveals how companies perceive the idea of innovation within the concept of sustainability.

Below you can see the sub questions of the research. These questions are raised in order to clarify the purpose of the research in detail and they are used as a guidance to design the research methodology.
Sub Questions

1. What are the recently emerging innovative sustainability actions in the fashion industry?
2. What are the efficient sustainable fashion brands from a consumer perspective?
3. What are the efficient innovative fashion brands from a consumer perspective?
4. What would be the ranking of fashion brands in terms of innovation and sustainability?
5. Do consumers think sustainability as an area of innovation in the fashion industry?
6. What kinds of innovations are considered to be of interest from the business perspective?
7. Is there a relation between the business models and innovativeness within sustainability?

The first sub question is asked to learn about existing sustainability initiatives. In order to answer this question, a desk research is designed as a method. Further, sustainability actions in the fashion industry are discussed for each company and also the initiatives of some external organizations and researches are referred for this purpose.

The second question is constructed to learn about the consumer perception about the fashion brands in terms of sustainability. The answer to the question will show which brands informed consumers remember when the question is sustainability. The third question has the same purpose of exploring the consumer perspective. Thus, both of the questions will be answered on the basis of a consumer survey. To include the consumer perception into the “Innovation and Sustainability” index, fashion brands need to be graded by informed consumers, so this need for a consumer opinion led to the fourth question. The answer to the fourth question will be evaluated also in the light of the consumer survey results. The fifth question inquires about consumers’ expectations and understanding from the word “innovation” which is another topic of the consumer survey.

In order to understand companies’ motives behind innovation, the sixth question is raised. The question is asked during an expert interview to find out if solutions to sustainability problems trigger the motivation for innovation in business organisations.

The last question “Is there a relation between the business model and innovativeness within sustainability?” aims to reveal if business models affect the approach (innovative or moderate) to sustainability. If they do, it will be a valuable data for a further research. This question needs a t-test analysis for a satisfying answer.

4.1 Desk Research

First two sub-questions mentioned above are used to conduct a relevant desk research. The starting point of the literature review “What is already known about the topic” (Bryman, 2012, p.8) led me to ask these two sub-questions; “Which approaches do fashion companies have in
terms of sustainability and to what extent can these initiatives be considered as innovative?” and “What are the increasing trends of sustainability actions for fashion companies?”.

The scientific technique of the research is observational content analysis method which is “used to analyze written material into meaningful units, using carefully applied rules” (Kolbe, Burnett, 1991, cited in Aaker, Kumar, Day, 2006, p.213). The content analysis method is objective and systematic and it has a quantitative characteristic to describe the content. (Aaker, Kumar, Day, 2006, p.213) In this case, the unit of analysis is the themes and topics about sustainability.

The content analysis is divided into three in order to observe the inquiry in segment divisions. The approach of segmentation is inspired by the Mistra Future Fashion research initiative. Mistra Future Fashion research divides Swedish Fashion industry into four according to their price segments; 1) Budget: Lowest price category, 2) Moderate: Medium price category, 3) Better: Medium to higher price category (slightly higher quality) and 4) Contemporary. Although classification of brands according to their price segments is a more common approach and this classification can be helpful to a high extent in many research models, Author believes that categorizing companies according to their business models can be more descriptive and helpful in this research since different business models address different consumer needs.

Three segments of fashion companies are listed as follows: 1) Fast Fashion Companies, i.e. companies which offer fashion at low prices and change their collections frequently, 2) Medium Priced Fashion Brands which do not change their collections as frequently as fast fashion retailers and 3) Sportswear Brands which provide products for specific needs and mostly advertise their brand value as being more environmentally friendly.

Different well-known brands in Sweden are selected to represent these different segments. The companies chosen for fast fashion segment are well-known retailer brands in the country. These are H&M, Lindex, Gina Tricot and Zara. For the second category, namely the medium priced companies, Acne and Filippa K are selected. Acne is chosen due to its popularity among young Swedish consumers and its fame as an innovative brand. Filippa K is brought into research also for its fame as innovative in terms of being sustainable. In the sportswear segment Patagonia is preferred since it puts forth environmental issues strongly. Nike is also known for its innovative products. Besides, recently the company has innovative actions in terms of sustainability.

Additional brands, which are not covered in the ISI, are included into the desk research to study their innovative sustainability actions. Polarn O.Pyret is being included because the company intensively uses environmentally friendly materials and has the reputation of providing long lasting products. Rapanui and Klättermusen are found during the background information research on sustainability.

Components of ISI (Innovation within Sustainability Index) are defined in regard to the current sustainability actions within the industry with the life cycle theory in mind. The knowledge obtained through the desk research is used to determine the fashion companies’ level of
innovativeness within sustainability.

4.2 Online Consumer Survey

According to the model Kumar (2005), the underlying philosophy is based on rationalism, and the approach to the issue has a structured and predetermined methodology (p.17). The main purpose is to quantify the extent of variation (Kumar, 2005, p.17) like the perception of consumers about sustainability and innovativeness of available fashion brands in Sweden. The measurement mode emphasizes the classification of variables, in this case ranking of fashion brands. The results are obtained from a greater sample size which is designed to get 100 responses from the selected sample. The research narrows down the focus to innovation and sustainability contexts without going into detail. It is aimed to get feedback from greater number of respondents. The dominant research topic is to find out consumer opinion about sustainability and innovativeness of fashion brands. Data is analysed over frequency distributions and tabulations. So, findings are presented in a more analytical way (Kumar, 2005, p.17). Following these facts, quantitative research method will be used for the consumer perception research.

While the target population (Aaker, Kumar, Day, 2006, p.380) is all fashion-savvy consumers in Sweden, the respondents of the survey sample are chosen from the informed consumers who are actively involved in textile or fashion domains. The content requires respondents specialized in these fashion areas, so more accurate and reliable answers can be obtained. The online survey is structured to explore the informed consumers’ opinion because consumers conscious of fashion trends are important for fashion researches and fashion practitioners. They are seen as “the drivers, influentials and legitimist of the fashion adoption processes” (Goldsmith et al.; Tigert et al., cited in O’Cass, 2004, p.871). Cluster sampling method is employed to increase sampling efficiency (Aaker, Kumar, Day, 2006, p.390). Since Borås is known as textile and fashion production centre of Sweden and the textile department of the university is called “Swedish School of Textiles”, the clustered sample is determined as students and teachers of this department. Since both sustainability and innovation subjects are quite specific and require knowledge, random sample could be uninformed about these topics. Thus, the research output cannot provide relevant information (Aaker, Kumar, Day, 2006, p.380). This clustered sample is believed to make a more accurate assessment and the innovation in fashion context can be interpreted more easily.

Web survey is used as a survey method. The questionnaire is offered on the web page, so the interviewer has no contact with the respondent and the environment does not play a role in data collection process (Aaker, Kumar, Day, 2006, p.234). The web survey method has especially been selected for being fast, inexpensive and high quality (Aaker, Kumar, Day, 2006, p.261). Web-based survey is high quality because it eliminates the bias caused by an interviewer since there is no contact between interviewer and respondents; moreover, it gives researchers a control over data quality since logic checks can be built into survey so that contradictory and nonsensical answers will not be allowed (Aaker, Kumar, Day, 2006, p.261).

In order to collect responses from people who are studying or working at the Swedish School of
Textiles, the survey is distributed via the school e-mail addresses. An e-mail with cover letter and the survey link is sent automatically by the student coordinator to 330 students and 106 staff from the textile faculty. In total, the survey reached to 436 people. Although “the bigger the sample the more representative it is likely to be” (Bryman and Bell, 2012, p.195) in random samples, when the sample is selected - as it is the case in this research - it tends to be more homogenous, i.e. people study or work at textile school and the amount of variation lessens (Bryman and Bell, 2012, p.196). This means, when the amount of variation is less, the sample size can be relatively smaller. Sample size of the research for probability samples, i.e. clustered sample, depends on following concerns: number of subgroups within the sample, accuracy required for the results, cost and variability of the population (Aaker, Kumar, Day, 2006, p.410). In the referred clustered sample, it is assumed that there are not any significant sub groups which can be determining for the results; instead it is taken as one sub group that is informed about fashion brands available in Sweden as well as their sustainability and innovativeness. Thus, there is not a significant variability among the respondents. With these facts in mind, the research is designed to be conducted with up to 100 people who are studying or working at the Swedish School of Textiles, Borås. This limit is set due to the technical restrictions like the incapability to display over 100 questionnaires in the selected medium of data collection.

The questionnaire consists of nine questions. The first question inquires about the age of a respondent. The age classification is made as 0-14, 15-64 and 65+ age groups according to the structure set by the Central Intelligence Agency (CIA) (Central Intelligence Agency, 2012).

Since the most efficient sustainable and innovative fashion brands are to be learnt, questions referring to this inquiry are asked at the beginning of the survey before reminding any brands to consumers. Three empty rows are provided for respondents to write their answers. To find out the top of mind brands, the answers in the first row have been counted. The total score is calculated as number and as percentage and given in the results as Top of Mind Score. The brands which are written on the second and third rows are added to each other and recorded into the top of mind scores. The total score of brands constitute Total Spontaneous Score which shows respondents’ recall frequency of brands in terms of sustainability and innovation.

In order to see what consumers understand from being innovative, an open-ended question is also directed. Importance of being innovative is explored through 5-point Likert scale, so how customers value innovativeness of fashion companies is seen.

In order to grade selected brands’ innovativeness and degree of being sustainable, 5-point Likert scales are employed for the forth question. The grading increases from “Not innovative at all” to “Very innovative”, with the neutral answer in the middle “Neither non-innovative nor innovative” while the brands are listed on the left column. The fifth question has the same question format and the grading scale, increasing from “Not sustainable at all” to “Very sustainable” with the neutral answer “Neither unsustainable nor sustainable” in the middle and the same brand list on the left column. At the beginning, these questions were drafted with a pre question where the respondent could choose the brands he/she has heard before, and then the
respondent would be asked to grade those brands. However, constructing the answer list according to previous question’s answers, i.e. connecting questions, was not viable on the chosen online survey medium. Thus, N/A (Not Applicable) answer is added to the grading scale for both of the questions. The last question “According to your experience so far, how would you assess the lifespan (lifetime) of an average t-shirt of following brands?” is asked for the completion of the index as an indicator of the product lifetime score (see chapter 3, p.12) since data about the durability of garments is necessary and consumer experience is the only way of finding it. In this question, 3-point scale - Short Lifetime, Medium Lifetime and Long Lifetime choices - are indicated as well as N/A choice. At this juncture, the number of the selected brands in the list has decreased to 14 since the question refers to a t-shirt and some listed brands such as Polarn O.Pyret and Abecita are specified in other product lines.

In all the questions with a list, the brands are randomized to avoid giving priority to specific brands.

In this consumer survey, 17 brands are marked to be inquired. These brands are; H&M, Lindex, Gina Tricot, Zara from fast fashion producer companies; Acne, Eton, Filippa K, Hope, Dagmar, V Ave Shoe Repair, PolarnO.Pyret and Abecita from medium priced companies; Patagonia, Klättermusen, Peak Performance, Adidas and Nike from sportswear/outdoor companies. Due to the limitations of the research paper, the brands are chosen representatively. In the survey, the list could be more flexible and thus, several brands which have some reputation among consumers as being innovative are added to the brand lists.

There is not any statistical analysis made explicitly concerning the consumer survey results, however, the answers are given on charts while some important and detailed information regarding the results are also included. Review of the results is made to reach a clear conclusion on the research. Although there is not a statistical analysis regarding the results, some maps are drawn with regard to perceived innovativeness and perceived sustainability of brands. One map is drawn with brand positioning approach, labelling sustainability on the x-axis and labelling innovativeness on the y-axis. In this way, brands can be differentiated as being innovative and as being sustainable, or as being innovative but not sustainable and so on. The second map is to make a simple clustering of the brands, again including their innovativeness on the x-axis and sustainability on the y-axis.

\[4.3 \text{ Expert Interviews}\]

Once again, according to the study of Kumar (2005, p.17-18), the nature of expert interviews is defined as follows: The underlying philosophy of the expert interviews is empiricism, as it is believed that experiences of experts will bring knowledge. Approach to inquiry is flexible and open since the main purpose of investigation is to describe variation in the phenomenon, to learn about experts’ perspective towards innovation within sustainability and the difficulties they encounter in their professional lives. Measurement of variables is more descriptive rather than statistical, sample size is fewer and the focus of the inquiry covers multiple issues but collects the required information from fewer respondents from different areas. Dominant research value is
authenticity but it does not claim to be value-free. Dominant research topic explores experiences, meanings and perceptions. Analysis of data involves subjects’ responses to sustainability and innovation questions, and communication of findings is organized as more descriptive and narrative in nature (p.17-18). Besides, expert interviews are designed as a qualitative research. When the research needs to be made through qualitative methods, use of unstructured interviews or observations as the data collection method seems more likely (Kumar, 2005, p.17).

The expert interviews of this research, which aim to find out companies’ perceptions of innovation and sustainability, are designed to be carried out with the corporate social responsibility contacts from the fashion companies and organizations as well as with some fashion experts. The expert interviews have the “direct” and “unstructured interview” model in which respondents are aware and informed of the purpose, and the interview follows a predetermined schedule and topics that are to be explored by the researcher (Boalt, Ericsson and Jonsson, 1970). “Respondent is compelled to formulate [interviewer’s] answers without guidance from the given answer. Difficulties may arise interpreting the answers, but the method can provide nuanced information-rich views” (Boalt, Ericsson and Jonsson, 1970). In the referred interviews, questions are explained without giving bias to answers in an attempt to get clear and related answers from the subjects.

These interviews aims to learn what kinds of innovation are important in the eye of the business organisations and if the experts believe that fashion companies are trying to find innovative solutions for sustainability issues. As Greener underlines (2008, p.17), “a qualitative approach to research […] often uses an interpretive model allowing existence of multiple subjective perspectives and constructing knowledge rather than seeking to “find” it”. In order to see multiple subjective perspectives and to relate these perspectives to the situation of innovativeness within sustainability, experts are selected from different domains of the fashion world.

The experts were contacted through the company’s web site or via special channels (consultancy of the supervisor and lectures in THS). Although 15 experts were tried to be contacted either by phone or bye-mail, only 5 of them approved to be interviewed.

Thus, five interviews with contacts from different areas of fashion industry were made in total. Since the roles of these contacts show variations, the questionnaire is customized according to each respondent. The structure of the research has a mixed method which is the combination of mail survey and telephone interview. The questionnaire with open-ended questions was mailed to the respondents, and then the follow-up telephone interview was made to clarify issues and answers on the questionnaire. E-mailing and phoning were the most viable way to conduct expert interviews in terms of time-efficiency. As Aaker, Kumar and Day (2006, p.253-254) record; “The telephone is particularly effective method to gain access to hard-to-reach people”, such as managers. Moreover, the accuracy of responses do not vary significantly during telephone or personal interviews (Aaker, Kumar, Day, 2006, p.254).

Interviews were conducted between the dates of May the 15\textsuperscript{th} and the 24\textsuperscript{th}, 2012. Questions were
sent to contacts via e-mail, so that they could fill up the survey themselves. Phone interviews are made afterwards to clarify the answers and to discuss the questions. Since interview included open-ended questions, respondents had answered and sent the questions back before the telephone interview was made. The complete sentences or some key words were recorded on a word document. During the phone interview, interviewer repeated the questions and clarified the answers. Also, points which had not been understood by the respondents were explained. Phone calls lasted for 10-15 minutes. None of the respondents demanded to stay anonymous.

The respondents were: Sandya Lang, the CSR Manager of Nudie Jeans, answered the questions as the representative of the fashion brand. Lotta Ahlvar, CEO of the Swedish Fashion Council, revealed her opinion as a fashion council representative. Jonas Peterson, who is currently the Business Development Manager in the AB Ludvig Svensson, has a professional history including his experiences in sportswear brands Salomon, Craft and Cross; thus he represents the perception of sportswear company. Anne Broström, the CSR Environment and Quality manager of Unibrands, answered the questions from a supply chain process oriented view since Unibrands is an intermediate party between the fashion brands and product suppliers. Finally, Sara Winroth, the Environment and CSR Coordinator of Lindex, gave her opinion about the importance of innovation although she refused to participate in the research fully.

Documentation of interviews is devised in two phases. First, answers of the each respondent are brought together to form a text. By this compiled text, the perspective of the respondents has become more observable and more explicit to analyse. After noting the conclusion composed of the texts of each interview, different respondents’ answers to the same questions were brought together when it is possible. Each question may not have five different answers since the questionnaires have been customized according to the position or profession of the respondent. The aggregation of replies to these questions did not only give the answers to previously aroused sub research questions like “What kinds of innovations are considered to be of interest from business perspective?”, but also helped the analysis of expert interviews.

As in every research model, there were also some limitations to achieve the ultimate results of the research. Most limitations emerged when it became difficult to persuade the company representatives to be involved in the research. Firstly, mostly the big companies have the CSR departments and it is usually more difficult to reach or get answers from the big companies. Secondly, in order to get the attention of the responsible person and to convince him/her to participate in the research, the subject of the research - innovation and sustainability in this case - must be specified in the cover letter and that it is not a sensitive or a company-private issue must be underlined. Consequently, representatives had already known the topic before answering the questions so they had sustainability in their mind while answering each question and thus it was not possible to ask top of mind questions about innovation. The last but not least, limitations on this research were natural since it included interviews. Although the medium language was commanded well by the interviewer and by the experts who take place in interviews, it was not the first language of the both parties in any of the cases. In some cases, a word may have different meanings in different cultures, yet the meaning of the words is very important since the data of
the qualitative research are words (Patton, 1990, cited in Aaker, Kumar, Day, 2006, p.195). Even though a significant effort was performed to keep the correct and clear meaning of the words during the translation, there is always a potential of meaning lost when the common language is not the native tongue of the parties.

4.4 Innovation within Sustainability Index (ISI)

The assessment model created in this research has a self-created methodology and differs from existing models by combining the company evaluations and the consumer perspective. The idea of the index is based on the previously explained models like Klättermusen ECO-index (for products) and Life Cycle Index (See Chapter 2.3). Although Life Cycle Index helps businesses see the impact of their business activities, this index does not aim to compare different companies. This index on the other hand, is built to disclose to what extent the existing environmental actions are achieved by each company and to what extent they are innovative while being sustainable.

The assessment method of the model is based on the existence of initiatives on the selected indicators like the use of environmentally-friendly materials, water protection systems etc., but it is not based on the real environmental improvement results provided by these initiatives. It is assumed that in the covered areas environmental impacts decrease (Ekins, 2010, p.271). However, while evaluating parameters, if any initiative resulted with a decrease in the environmental impact, this fact is considered. The summary of the index can be seen on the table below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of Sub-indicators</th>
<th>Scaling</th>
<th>Weights</th>
<th>Aggregation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation within Sustainability Index</td>
<td>3 groups with 7 sub-groups, 2 additional indicators</td>
<td>Aim: 10 Worst: 2</td>
<td>Weighted</td>
<td>Summation divided by 20</td>
</tr>
</tbody>
</table>

Three categories defined here refers to the life cycle division of sustainability and innovation areas; Production, Distribution and Consumption phases. Seven indicators are; Product Life Time, Use of Environmental Raw Materials, Water Protection Systems, CO₂ Emissions, Energy Saving in Stores, Sustainable consumption systems and Waste Management.

Publications posted on each company’s website were used to obtain relevant information. However, regarding that one particular company’s publication about sustainability can be more intense than others, another indicator was included into the index because one other company might be taking the same actions but publishing less. So, informed consumers’ (See Chapter 4) experience and perception about sustainability and innovation were also included into the index. And the data acquired from the consumer survey counts 30% of the total score.
Each part of the “Sustainable Equity” section is graded with 10 points, whereas each part of the “Consumer Mindset” is graded by 15 points. The grading of parts can be seen in the following tables:

<table>
<thead>
<tr>
<th>Life Cycle Stage</th>
<th>Sustainable Equity Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>Product Life Time</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Use of environmental raw materials</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Water protection systems</td>
<td>10</td>
</tr>
<tr>
<td>Distribution</td>
<td>CO₂ Emission</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Energy saving in stores</td>
<td>10</td>
</tr>
<tr>
<td>Consumption and disposal</td>
<td>Sustainable consumption systems</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Waste Management</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer Mindset Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>15</td>
</tr>
<tr>
<td>Sustainability</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

In the “Sustainable Equity” part, each organization is graded in the following levels, except the Product Life Time section (in which answering options are “long life time, average life time and short life time). This grading system aims to grade innovativeness within sustainability actions. When a brand is graded as “Doing Nothing”, it means there is not any initiative taken in the related area and the brand gets 2 points for this evaluation. If it is graded as “Starter Level”, it means some initiatives have recently been taken in the area but results have not been achieved or have not been available to consumers. “Moderate Solution” level indicates that many brands conduct similar activities and the examined initiatives on the subjected area and their level of innovativeness do not differ compared to others. However, in order to be considered in the level of “Moderate Solution”, improvements in regard to action should be achieved and be available. “Good Solution” level means the solution/initiative has a good approach which differs from moderate solutions but somehow it is not completely innovative. The highest grading in this system is the “Innovative Solution” level which indicates that significant innovative actions are being taken and its results are obvious.

<table>
<thead>
<tr>
<th>Level</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doing Nothing</td>
<td>2</td>
</tr>
<tr>
<td>Starter Level</td>
<td>4</td>
</tr>
<tr>
<td>Moderate Solution</td>
<td>6</td>
</tr>
<tr>
<td>Good Solution</td>
<td>8</td>
</tr>
<tr>
<td>Innovative Solution</td>
<td>10</td>
</tr>
</tbody>
</table>
Product Life Time grades are retrieved from the answers of informed consumers who were involved in the online research. In the online survey, the product life time question is asked in 3-point scale, however all scores are multiplied by 3.33 to expand the scores to 10 point scale.

Innovativeness and Sustainability scores, which are retrieved from Consumer Survey, are to be assessed when included into the overall scores. While each criteria of Sustainable Equity is equal to 10, Innovation and Sustainability contributes to the score by 15 points. This number is determined to include the consumer perspective into the research in a considerable amount.

At the end, Sustainable Equity and Consumer Mindset scores are all added up together for each brand and each brand gets a score over 100. Then these scores are divided by 20 to have the index score up to 5.00.

Following the index results, some hypotheses are tested to draw some conclusions. Firstly, the analysis is made to see if there is a relation between business models and innovativeness within the sustainability of fashion brands. This question is tested in pairs for the scores of each business model. Secondly, analysis targeting to have a closer look into the innovative sustainability approaches is divided according to the life cycle dimension. To observe if any of the business model divisions lead to significantly different results in different life cycle dimensions, nine different t-tests are applied once again. These t-test values are given on the table for the efficient space use and easy reading. And finally one last t-test is run to see if the inclusion of the consumer perspective has created a significant difference in the results of the ISI.
5 Empirical Research

Empirical research of this paper consists of three parts. The first is the desk research which contains the content analyses of several web pages; the second is the online consumer survey which covers the answers of 100 respondents from the Swedish School of Textiles and the last one is the expert interviews which were made with five experts from the fashion industry.

5.1 Desk Research

Desk research in this research paper is targeted to accomplish two purposes. The first purpose is to search the existing innovative sustainability actions while the second one is to evaluate the selected brands for the ISI. The former purpose of exploring the existing innovative sustainability actions is fulfilled through the content analysis method which was applied while analysing the fashion companies’ web pages. The units of the analysis are determined according to the frame determined for ISI in line with the literature review (See Chapter 3). A list of all existing sustainability actions of fashion companies is shown on the table (table no). By making this list, it became possible to point out which company engages in which action and thus, the evaluation of the brands become easy. Consequently, the first purpose serves to accomplish the second one.

To search the existing sustainability actions, previously defined classification of fashion brands is used (See Chapter 4.1). This classification is done as follows: 1) Fast Fashion Brands, 2) Medium to High Priced Fashion Brands and 3) Sportswear Brands. After the content analysis of the each brand, three other brands are also studied for their sustainability actions. These brands are Klattermusen, Rapanui and Polarn O. Pyret. Although these three brands are not included in the ISI, it is believed that their sustainability actions are notable in terms of preparing the existing sustainability actions list.

5.1.1 Fast Fashion Brands

H&M

H&M as the worldwide fast fashion brand has been known for providing fashion for low cost. Recently it has brought sustainability issue into attention in addition to its low priced clothing. The company is the biggest buyer of the organic cotton in the Swedish market (Hennes & Mauritz AB, 2012). The total percentage of organic cotton over total cotton consumption is 7.6. Apart from the organic cotton, H&M reports that it uses some other sustainable materials such as recycled cotton, recycled polyester, recycled polyamide, recycled wool, Tencel®, recycled plastic (for accessories and jewellery), organic linen and organic hemp. The company is monitoring the water efficiency and decreased the amount of water used in the denim production by 300 million in 2011 (Hennes & Mauritz AB, 2012).

Besides the use of sustainable materials, the company also uses a waste management system. Recycled plastic bags are used in stores and “transport packaging waste is eliminated due to reusable boxes.” (Hennes & Mauritz AB, 2012) They also have a “waste and recycling guide” provided to each retailer; however, the challenge here is that the waste management procedures
vary in cultures according to regions (Hennes&Mauritz AB, 2012). But the group uses 100% recycled content in the plastic cases and reusable boxes for the transportation which help to save 400,000 trees each year. The 17 stores of H&M in Switzerland has been collecting used garments from the customers to recycle, and when consumers bring those products, an H&M voucher is given as a gift. Since the brand has its stores on four continents, it requires transportation by air, sea and land which cause CO₂ emissions. Company is trying to reduce the total CO₂ emission and it was reduced by 5% in 2011(Hennes&Mauritz AB, 2012). In 2010 the company set up the Supplier Energy Efficiency Program and 11% less energy was used in stores (Hennes&Mauritz AB, 2012).

Lindex
Lindex is also one of the big retail chains of Sweden in the field of fast fashion. Lindex is offering organic cotton and better cotton products; however, they are not specified in the current percentages of total production and there is no information about the usage of other sustainable materials (Lindex AB, 2012). The suppliers of the retailer have to participate in several improvement projects which can be classified roughly as the water and energy efficiency and the use of chemicals. Lindex has a system to rate suppliers according to their existing water treatment and chemical handling, disposal and release (Lindex AB, 2012). They do not end contracts of low rated suppliers but give them a chance to improve themselves. The company has participated in the “Cleaner Production” action in which twelve suppliers have taken part. The project resulted with a decrease in the use of natural gas, water, chemicals as well as a significant decrease in carbon dioxide emissions in a year. They have energy saving projects for their bigger supplier in China. Lindex is a member of the STWI and BCI. The company declares that they have been using renewable energy efficiently in stores and they are working on reducing the environmental impact of freight and packaging and waste (Lindex AB, 2012). The amount of air used in transportation is low and is not preferred except some special cases. They have been closely calculating and reporting the CO₂ emissions caused by the transportation (Lindex AB, 2012). They avoid packaging waste by recycling and reusing the existing packages. Production leftovers are recovered by donation (Lindex AB, 2012).

Gina Tricot
Gina Tricot has fewer publications about the company’s corporate sustainability. In terms of sustainable materials, Gina Tricot uses organic cotton, recycled polyamide and Tencel® to produce garments. The company is a member of the STWI and Swerea IVF’s Chemicals Group to comply with REACH chemicals prescriptions (Gina Tricot, 2012b). However, there is not much information provided on the website about water usage or water protection. Suppliers’ performance is monitored according to the compliance with the code of conduct provided by the company. The headquarter building in Borås is certified as a green building which consumes 25% less energy. They donate leftovers and defective goods to relief organizations. They also have outlet days in Boras at the end of seasons to sell surplus or defected garments for cheaper prices. All the plastic bags are made from recycled plastic (Gina Tricot, 2012a).
**Zara**

Zara, as the biggest chain of Inditex Company, has listed their actions as saving energy, waste management, increasing awareness of the staff, using ecological fabrics, and the use of bio-diesel fuel. Company uses organic cotton but further information is not provided. More than 200 million clothing items are transported in a year by using bio diesel fuel in the ratio of 5%, and this change results in reducing the company’s CO₂ emissions by 500 tons. Inditex has opened four eco-stores, each of which saves 30% of energy compared to a normal store. Zara recycles hangers and alarms as well as cardboard and used plastic materials. The 2007-2010 Strategic Plan of Inditex was composed of four main projects; IEMA (Energy and Environmental Integration), IPK (transportation improvements), The Eco Store concept and the Terra Project (Reducing the emission caused in environment) (Zara, 2010).

**5.1.2 Medium to High Priced Fashion Companies**

**Acne**

Acne has not published about its sustainability actions on the brand’s website yet. However, by contacting the corporate sustainability department, I acquired the environmental strategy report which will be released by the company soon. To control the adverse effects of products they have made five sub divisions as quality, material, chemicals, consumer use and the end-use management. The company stresses the importance of material used in the collection. They publish that they are planning to increase the use of sustainable fibres such as Lyocell (Tencell) and organic cotton. Products are manufactured according to the “Acne Studios Material Policy” which includes chemical restrictions and animal welfare. As it is mentioned earlier, Acne is also in cooperation with the STWI to develop supplier guidelines for sustainable water use for textile and leather manufacturing. Besides, they have a restricted chemicals list which was prepared in accordance with the REACH law and they are phasing out the use of PVC. They declare that they are controlling the sales to prevent over-production, and unsold as well as faulty garments are sent to outlet stores. At the moment, most of the products are transported from Asia by air (61%) and the rest (39%) is transported by boat. From Europe, Morocco and Turkey most of the transportation is made by trucks. The company has lately started to map and calculate the carbon dioxide emissions and targeted to reduce the effects for the next year (Acne Studios, 2012). There are some initiatives for waste management taken by the company. They have improved a data system to measure the improvement and have been searching for the recycling and energy efficiency at all of the stores. There is a well-developed recycling system in the company’s warehouse and they reduce plastic wastes.

**Filippa K**

6% of the products in the 2010 collection were made from eco-friendly materials and Filippa K aimed to increase the amount to 10% in Autumn-2010; however, the information published on the website has not been updated since then. In terms of eco-friendly materials, they produce organic cotton and Lyocell/Tencel material (Filippa K, 2010). The company is also one of the Swedish brands which are a member to the STWI. Additionally they are in collaboration with Nordic Eco-label to avoid using excessive amount of energy and water. The company is using
green energy at its offices, and company vehicles are replaced with eco-friendly ones. Bicycles are bought to be used in Stockholm. Collaboration with the Nordic Eco-label leads the company to use less energy during the production process. Filippa K has a good innovative action towards the sustainability in consumption thanks to its own second hand store. Consumers who do not want to use their Filippa K garment, can leave this item to the second hand store and get a 40% commission when the item is sold at the store (Filippa K Second Hand, n.d.).

5.1.3 Sportswear Companies

Patagonia
Patagonia uses organic cotton, recycled polyester, hemp, chlorine-free wool and recycled nylon in its product line. All the cotton they use in the sportswear line is 100% organic cotton (Patagonia, 2012). “The Footprint Chronicles” which is designed to calculate the energy consumption, CO₂ emissions, waste generation and water use in each step of the supply chain. However, results are not published on the website, so it is not possible to see if any reduction is achieved in the areas (Patagonia, 2012). Patagonia is applying Bluesign® standard to its suppliers as the standard regulates the water and energy consumption as well as the use of chemicals. Patagonia has the LEED certified green building as its head quarter and also, the company has built solar energy system to produce renewable energy. Energy used in the manufacturing process is controlled by the Bluesign® Standard and recorded in the Footprint Chronicles. For the waste management, Patagonia has the leading score by using 30% post-consumer recycled paper in its catalogues while hangtags, product packaging and marketing materials are 100% post-consumer recycled. Half of the cardboard boxes are 100% post-consumer recycled while other half is 65% recycled cardboard. Patagonia recycles used garments. Since 2005 they have been taking 45 tons of clothing back and have produced 34 tons of new clothes from these inputs (Patagonia, 2012).

Nike
Nike uses organic cotton, recycled polyester, environmentally preferred rubber and PVC in addition to its Phthalates-free footwear. There are some figures presented on the website; however, they have not been updated since 2009, so they are still showing the target for 2011. Besides, a minimum of 5% organic cotton is used in cotton apparels (Nike Inc, 2012). Nike Energy and Carbon Program provided a 6% decrease in total carbon emission in 2011 compared to 2008 (Nike, Inc, 2012). Nike has had the data of company foot print since 2001, especially in terms of water usage. The company works with suppliers to reduce the impacts on water and to eliminate the water usage (Nike Inc, 2012). They have been monitoring the total energy consumption since 2008 and taking some initiatives at the manufacturing stage. A new factory with 50% more carbon and energy efficient system has been opened in Indonesia and has received the LEED certification (Nike, Inc 2012). All the Nike shoe boxes have been made of 100% recycled cardboard since 2005 (Nike, Inc 2012).

5.1.4 Examining Additional Fashion Brands

Klättermusen
Swedish outdoor clothing company Klättermusen is also known for its environmental practices as well as its sustainable business perception. The environmental work of the company has four
main divisions in environmental actions. The first one is the “rECOver” project which is a deposit system for Klättermusen garments produced after 2009. When consumers bring their used apparels back to company, they are refunded 1, 5, 10 or 20 Euros. Garments produced before 2009 do not have any deposits; however, they are accepted by the company in order to recycle. The second action of the brand is the “Eco Index” which has mentioned before in this paper. Eco Index gives company and consumers the information about how environmental is each piece in the product line. The company calculates the average ECO-index for each collection and by calculating the average sustainability within a collection and taking an overall performance score each year they determine an environmental trend for the company. Thirdly, the company donates the 1% of each year’s turnover to an environment project. And the fourth environmental action is to produce recycled nylon fibre. As stated by the company, Klättermusen is the first company to produce a robust nylon fabric from recycled nylon fibre. After breaking down the nylon products into molecular level and spinning them again, recycled fibre is produced and the quality of the recycled fibre is the same as the quality of the input material (Klattermusen, n.d.).

**Rapanui**

Rapanui Clothing is a British brand that claims to produce Eco-Fashion by using renewable energy and is awarded due to their sustainability efforts. The company projects its policy as “making eco-fashion cool”. One of the most emphasized specialties of Rapanui is the traceability of its supply chain. This tracing concept has claimed to be very transparent, allowing consumers and suppliers to see through the supply chain “from seed to shop” (Rapanui Clothing, n.d.). In its collections, clothes made from bamboo take their place. Company asserts that their suppliers’ method of producing bamboo fibre is not harmful to the environment because they are manufactured in a closed-loop process system which does not release any chemicals to the environment. They are working with a factory which has a 5-stage closed loop water filtering system and which prevents dyes from mixing into natural water circulation. Company also claims that they are manufacturing through the use of sustainable energy sources like wind and solar power and they have reduced the total carbon dioxide emissions by 80% since 2008. Another system of Rapanui is the “Eco-Labeling” of garments. Inspired by the light bulbs showing their energy efficiency, the eco rating is defined between A to G; in which A is organic, ethical and sustainable; G is not organic, ethical or sustainable and the parts in between varies in these substances (Rapanui Clothing, n.d.).

**Polarn O.Pyret**

Polarn O.Pyret, fashionable children’s clothing brand has three different distinctions of sustainable garments. The first one is Swan labelled knitwear which needs to be made from 95% certified organic cotton, the second is 100% organic cotton garments and the third one is recycled synthetic fibres which are either recycled from PET bottles or textile waste materials. Chemical usage is restricted in all areas (Polarn O.Pyret, n.d.). One innovative initiative of Polarn O.Pyret is their “Buy and Sell” platform which allows consumers to sell or buy used children’s clothes. Either to sell or buy and to make the system work, consumers have to select the garment’s clothing type, age/size, price, city and some keywords (Polarn O.Pyret, n.d.). Since “Polarn O.Pyret” is the sixth most searched word on the Swedish version of e-Bay -Tradera.com (Antonov, 2010), the demand for the second hand Polarn O.Pyret clothes must have come into
the attention of the company which led the company to build this internal system in order to re-sell the products on their own website, which is an innovative action.

### 5.1.5 List of Sustainability Actions

| Use of environmental raw materials | Organic Cotton  
|                                  | Better Cotton  
|                                  | Recycling natural fibres  
|                                  | Recycling chemical fibres  
|                                  | Tencel  
|                                  | Organic Linen  
|                                  | Organic Hemp  
|                                  | Sustainable input measurement systems  
| Water and Energy protection systems | STWI  
|                                  | Supplier Rating system  
|                                  | Following REACH law  
|                                  | Guidance for Suppliers  
|                                  | Water efficiency in production  
|                                  | Energy efficiency in production  
|                                  | Renewable energy sources in production  
| CO₂ Emission | Bio-diesel fuel  
|               | Changing to better transportation modes  
| Energy efficiency in distribution and business activities | Green Building  
|               | Eco Stores  
|               | Using renewable energy sources in stores  
| Sustainable consumption systems | Labelling products according to their sustainability  
|               | Buying and selling used products  
|               | Transparent supply-chain  
|               | Repairing impaired products  
|               | Deposit for sold products  
|               | Informing consumers about longer use  
| Waste Management | Donating leftovers  
|               | Outlet Stores for unsold and faulty products  
|               | Recycled Plastic Bags  
|               | Re-usable boxes in transportation  
|               | Waste and recycling guide for stores  


### 5.1.6 Table of Sustainability Actions for Fashion Brands

<table>
<thead>
<tr>
<th>Sustainability Action</th>
<th>H&amp;M</th>
<th>Gina Tricot</th>
<th>Lindex</th>
<th>Zara</th>
<th>Acne</th>
<th>Filippa K</th>
<th>Nike</th>
<th>Patagonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Cotton</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Better Cotton</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycled fibres</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycled plastic</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tencel</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Linen</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Hemp</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainable input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>measurement systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Being member of STWI</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Rating system</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following REACH law</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guidance for Suppliers</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water efficiency in production</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Energy efficiency in production</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Using renewable energy sources in production</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Score</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Bio-diesel fuel</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changing to better transportation modes</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Energy Efficiency in offices</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Efficiency in Stores</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using renewable energy</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Indicating products’ sustainability in detail</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling used products</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-selling used products</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive for bringing used products back</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairing old products</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparent supply-chain</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicating</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability in stores</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care guide for longer use</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Sustainability Action</td>
<td>H&amp;M</td>
<td>Gina Tricot</td>
<td>Lindex</td>
<td>Zara</td>
<td>Acne</td>
<td>Filippa K</td>
<td>Nike</td>
<td>Patagonia</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----</td>
<td>-------------</td>
<td>--------</td>
<td>------</td>
<td>------</td>
<td>-----------</td>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>Donating leftovers</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Outlet Stores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Recycled Plastic/Paper Bag</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Re-useable boxes in transportation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Waste and recycling guide for stores and plants</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Total Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the “use of environmentally friendly materials” section; H&M, Filippa K and Nike are scored to be in the Moderate Level since they use organic cotton by 7.6%, 7% and 5% (respectively) in their collections. Although H&M has more variety of environmental materials, the total amount of usage is not provided in its report. Others scored with 4 points except Patagonia. Patagonia scored with 8 points by producing all the cotton garments out of 100% organic cotton and using recycled materials and organic hemp. Others are ranked in the Starter Level; even though they declared the use of environmental materials, the data about the amount of usage is not provided on the websites. In terms of the Water and Energy Protection Systems, Lindex, Nike and Patagonia managed to be ranked in the Good Solution Level thanks to their having supplier rating system, providing guidance for suppliers as well as water and energy efficiency in production. Gina Tricot, Acne and Filippa K are members of the STWI, thus they work on the water efficiency of their systems but Filippa K distinguishes from others by also being a member of the Nordic Eco Label, so the brand has to have energy efficiency during manufacturing stage. Zara is not involved in any of these initiatives.

Gina Tricot, Acne and Filippa K do not have any initiatives in terms of CO₂ emissions. H&M, Lindex, Nike and Patagonia aim to decrease the CO₂ emissions by using better transportation options like reducing the air freight and increasing the use of trains. Lindex, H&M and Nike published their overall CO₂ emission on yearly basis and showed their improvement on the topic. For Patagonia, this information was not available. Zara uses bio-diesel fuel but the decrease in the CO₂ emission is not mentioned as percentages. In terms of energy efficiency in distribution and business activities; H&M and Patagonia has moderate level scores. H&M has decreased energy used in its stores by 11%. Lindex has also decreased the consumed energy by 11% but it is ranked in the Good Solution level for using renewable energy in stores, offices and distribution centres.

The highest score belongs to Patagonia in relation to the sustainable consumption criteria. The brand is followed by Filippa K and Nike. Filippa K’s second-hand store brings 6 points to the brand although the brand is not involved in other actions. Nike collects old athletic shoes all over the world and recycles them. Actions of H&M, Lindex and Acne are regarded as being in the starter level.
In terms of waste management, H&M and Patagonia have the leading scores by being involved in many actions. Gina Tricot, Lindex and Nike, on the other hand, have significant initiatives to be graded in the moderate level while Zara and Acne remain in the starter level.

5.2 Online Consumer Survey

The first question in the survey which is to find out the top of mind innovative brand in the Swedish fashion market has resulted with three brands. Acne is leading the list by having 25% total spontaneous score. V Ave Shoe Repair is following Acne with 12% total spontaneous score. And the third one is H&M with a 9% total spontaneous score. The high brand awareness of H&M might have an impact on these scores. And also, the score of V Ave Shoe Repair might be affected by the recent conference of Astrid Olsson in the University of Borås, since the conference was about innovation and the respondents of survey are all from the Textile department of the university. Like a seasonal effect, respondents might have had a quick connection with the brand.

![Figure 2 – Perceived Innovativeness of Fashion Brands](image)

Spontaneous answer to: “When you think about fashion brands available in Sweden, which brand is the most innovative among others?” Response Count: 100

In the second question, the most sustainable fashion brand available in Sweden is aimed to be learnt without reminding any brand names; Nudie Jeans is perceived as the most sustainable brand amongst the other fashion brands when no brand name is reminded to the respondents. The second most sustainable brand is H&M while Acne has a similar score with H&M.
The third question which inquired the importance of being innovative for a fashion brand is answered by 68 people. 82% of these people declared that it was either important or very important, whereas only 7% replied as “not very important” and “not important at all”. This shows that consumers think that being innovative is quite important for a fashion brand.
Since further information is needed to define what is the understanding of being innovative is, the following question is asked: “According to your opinion in which areas of fashion industry innovation might take place?” This open-ended question is also directed to the respondents without reminding any context. It revealed four main areas of innovation in the fashion industry; design, materials, environment and production.

![Perceived Context of Innovation – Top of Mind](image)

Figure 5 – Perceived Context of Innovation – Top of Mind Answers
“In which areas of fashion Industry innovation can take place?” Response count: 54

This graph shows the top of mind answer which is defined as the first area to come into the minds of respondents. All the numbers given are in percentages of overall answers. Aesthetical design is leading the scores with 30%, materials and environmental areas have similar scores and are followed by the production/technology methods. Logistics, Pattern Making, Business models, Supply Chain Design, Consumer Behaviour and Sportswear answers scored higher than 3% and lower than 4%. As it is seen, there is a stress on supply chain activities when low scored answers are examined.

Since this question had three empty lines on the answer sheet, the answers on the second and the third line are added to the Top of Mind answers to get Spontaneous scores.

![Perceived Context of Innovation – Spontaneous](image)

Figure 6 – Perceived Context of Innovation – Total Spontaneous Answers
“In which areas of fashion Industry innovation can take place?” Response count: 54
More than half of the respondents answered the innovation question on the basis of aesthetical design of the brand, this situation shows that the understanding of innovation is regarded as new trends, new collections or differentiated styles. Production, materials and environmental areas have been perceived with similar scores to each other. Logistics, sourcing and retailing answers are scored between 11% and 12%. Brand communication activities; branding and marketing are also mentioned by 7%. Functionality is also mentioned by 7%.

After these open-ended questions, the innovativeness evaluation of each brand comes to stage. This question is a closed-ended question in which brand names are listed and asked to be evaluated in 5-point Likert Scale. Results are shown on the graph with each brand’s mean score over innovativeness.

![Mean Score of Innovativeness](image)

Figure 7 – Perceived Innovativeness of Fashion Brands
5-Scale grading question: “What is your opinion about being innovative for the following brands?” Response Count: 52

Apparently, Acne, Nike and Klättermusen have the leading scores. In addition to the sportswear brands, Acne and V Ave Shoe Repair brands were perceived as being innovative.

What is not included from the grading scale into the chart is the N/A option. Klättermusen has the highest N/A answer (48%), which is possibly the indicator of its low brand awareness. The 37% N/A answer for Hope and the 35% N/A answer for Abecita might also stem from the low brand awareness; however, this conclusion also requires a specific question inquiring the brand awareness. Gina Tricot, Lindex and Polarn O.Pyret have the lowest mean values, which show that those brands are not perceived as innovative.

This time, the same question with the grades of sustainability was asked to the respondents. While Patagonia was not recalled in the open-ended questions, in this question it had the highest score. Peak Performance and Klättermusen had been barely recalled in the open-ended questions.
but when the question was asked with the brand list, these two brands were perceived more sustainable than the many other brands.

![Mean Scores of Perceived Sustainability](image)

**Figure 8** – Perceived Sustainability of Fashion Brands
5-Scale grading question: “What is your opinion about sustainability of following brands?” Response Count: 50

### 5.3 Sustainability versus Innovation Maps

![Innovation and Sustainability Matrix](image)

**Figure 9** - Innovation and Sustainability Matrix
Patagonia, Klätternusen, Peak Performance, Eton and Acne are the brands, which are considered both innovative and sustainable. V Ave Shoe Repair, Dagmar, Nike, Hope, Adidas and H&M are the brands which are innovative but not very sustainable; although V Ave Shoe Repair and Dagmar are very close to being sustainable, they are below the level. H&M differentiates from other fast fashion brands since other fast fashion brands are considered as both not sustainable and not innovative except Zara. Zara is standing on the line of innovativeness; which means that it is neither innovative nor not innovative. Filippa K and Abecita are also regarded as not sustainable and not innovative; however, Filippa K is very close to the sustainability line. Polarn O.Pyret, on the other hand, is perceived to be sustainable but not innovative.

Another map, the scatter chart of innovativeness and sustainability scores, clustered according to the each brand’s business model is drawn. Making the scatter map with average rating values of innovativeness level on the X-axis and sustainability level on the Y-axis for each brand allows seeing the data in a big picture. Clustering among the brands is highlighted by coloured balloons.

![Figure 2 - Innovation and Sustainability Clustering Map](image)

The red balloon in which Lindex, Gina Tricot and Zara are included, shows the brands with low innovativeness and the low sustainability value whereas the grey balloon pinpoints the ones in the middle level, finally the green one covers the brands which present a higher performance in both innovativeness and sustainability. Although red balloon is consisted of fast fashion brands only, H&M has distinguished from this cluster due to its high value of innovativeness. Besides, it is considered more sustainable than the rest of the brands. In addition to H&M, Peak Performance, Nike and Adidas are also included in the grey –middle- segment with the rest of the designer
brands. Nike and Adidas are considered as innovative; however, they are not perceived as sustainable as Klättermusen to be involved in the high cluster. In the green balloon, Patagonia has the leading position whereas Klättermusen is close to it with its sustainability, and Acne is also close with its innovativeness level. Yet, to come closer to Patagonia’s level, they need to be perceived more sustainable than they do now.

5.4 Results of Expert Interviews

In this part, the importance of innovation is aimed to be seen from the business perspective. Below, expert interviews are aggregately presented under different topics. The first topic examines how experts conceive innovation and how they evaluate its importance. The second one deals with the kinds of innovations that are considered to be essential from the business perspective. The third topic is to question which sustainability innovations those experts have experienced in their professional work. Later, the question whether companies consciously think about innovation to solve their sustainability problems is tried to be replied. And the last question aims to inquire about the sustainability challenges from the business point of view.

5.4.1 How important is being innovative?

Lotta Ahlvar, the CEO of Swedish Fashion Council, states that being innovative is very important for a fashion company. According to her, it is necessary to build the brand on an innovative concept for a long term success; otherwise it requires much more effort to compete with the rivals. And when the company has a good innovation level, it has a competitive advantage over other brands.

The Corporate Social Responsibility Manager of Nudie Jeans, Sandya Lang, also supports the idea that being innovative is very important for a fashion company. She adds that in order to find new ways to work with the CSR, and to control the production, innovations are needed.

Jonas Peterson says innovation is the key for successful businesses. Companies need to have a constant strive to find out new solutions and they should search for innovative ways to increase their performance levels.

Anne Broström, CSR, Environment and Quality Manager Unibrands, underlines that being innovative is also very important for a trader who must provide something special, find solutions to customers’ questions and meet their demands.

Environmental coordinator of Lindex, Sara Winroth, records that innovation is not only important in terms of product development and processes but also important in supplier and sub-supplier levels in the supply chain. According to her, in order to create a sustainable future, fashion companies and suppliers need to collaborate, find common solutions to tackle the current challenges and the problems which can rise in the future. To overcome these problems, not only collaboration but also innovation and commitment are necessary in the fashion industry.
5.4.2 **What innovations attract the attention of the business world?**

When I asked to Lotta Ahlvar about what kind of innovations are of interest to the business world; she said that it depended on the business modes of the brands since there might be different interests in different categories ranging from a women line to a sportswear line; however, the innovative actions generally require to have a commercial aspect to be essential in the eye of the business world.

According to Sandya Lang, innovations which attract the attention of the business world can be listed as the extension of the product life-cycle as long as possible and the presentation of transparency to suppliers and customers.

Jonas Peterson claims that firstly the innovations in adaptable technology raise interest in the business world, and secondly, the innovations in relation to environmental topics are of interest since the improvements in reusing and refining change the life cycle of a product.

Anne Broström lists environment, chemicals, quality, security, quality insurance and attractive collections as the essential innovation areas of the business enterprises. She stresses that these are the areas where innovation takes place in the fashion industry.

5.4.3 **Are they trying to find innovative solutions to sustainability issues?**

As Sandya Lang from Nudie Jeans indicates, the brand has been carrying out projects like Re:pair Re:use Re:duce and Post Recycle Dry to make products live longer. In Re:pair Re:use Re:duce project, they make discount to customers who bring their old jeans and these jeans are repaired and sold as a second hand product with a label of “Bra Miljöval/Good Environmental Choice” (Nudie Jeans Co, n.d.). Post Recycle Dry project aims to produce new denim out of old jeans, the process includes cutting jeans into pieces, turning them into yarn and adding organic cotton to make them more durable.

Jonas Peterson declares that innovation can emerge as fibre innovations, and how to reuse as well as how to create more environmentally-friendly production processes stand as the first questions to be answered. He also offers to reuse leftover garments and fabrics. Further, he mentions broadening the product line by making individual garments on the basis of customers’ demands while underlining the importance of producing in smaller production lots.

For Anne Broström, the innovative sustainability actions held by Unibrands are; following the REACH law of chemicals and to be able follow the law, they have become a part of the Sveria chemical group. Meeting quality insurance even in daily actions like making instructions, producing garments, checking accessory factories and better shipment methods can be regarded as an innovative action in her view.
5.4.4 Do fashion companies think consciously about innovation to achieve sustainability?

In reply to the question “in which areas of fashion industry can innovation take place?” Lotta Ahlvar offers two main areas; designing and retailing. According to her perception, sustainability is not one of the first areas. Sandya Lang declares that innovation can take place by presenting a transparent picture of the production process and by finding answers to the questions of how an increase in the environmental responsibility through the product’s life cycle is managed, how to cooperate with suppliers instead of controlling the supplier, how to cooperate with other fashion brands to compose an audit sphere, how to improve the working conditions in the factories and how to produce 100% organic products. According Sandya’s answers and Nudie Jeans’ approach to these questions, it seems that the company is thinking consciously about innovations to solve sustainability problems. Since Jonas Peterson answers the innovation question by mentioning environmentally-friendly manufacturing modes and the reuse concept, it can be claimed that sportswear clothing companies have the culture of environmentally-friendly approach. Unibrands as a company is thinking and trying to solve sustainability issues; however, they are not innovative in finding solutions. The actions they are involved in are more mainstream solutions and commonly applied methods of the Swedish fashion industry.

5.4.5 What are the challenges to become sustainable?

In relation to the challenges against being sustainable; Lotta Ahlvar points out the cost of turning into a sustainable business and adds that the cost needs to be calculated before starting. Thus, the requirements to become sustainable should be considered well before starting the business. Still, she claims that being innovative is important for being sustainable because it adds value to the company’s name in many aspects.

Sandya Lang, on the other hand, claims that the first challenge is to find good suppliers who are also willing to work in the same direction while the second and the third challenges are the difficulty of replacing conventional cotton with the organic one and disclosing the activities throughout the production phases. She says that it is possible to be innovative and being sustainable at the same time and this is an advantage when accomplished.

Jonas Peterson again underlines the importance of reuse especially within the cradle to cradle design perspective. Secondly, he marks the consumer habit as a key point in sustainability. He claims that consumers need to show tendency to buy locally made clothing even though the price is higher. Consumer behaviour can make a difference in sustainable productions; they are ambitiously talking about being sustainable and are conscious of their choices. However, it is not clear if consumers are ready to turn the words into actions.

Jonas Peterson is the first person to say that innovation can affect sustainability both in positive and negative ways. According to him, with a true focus on sustainability it is possible to direct innovation towards sustainability direction in a company. Yet, it depends on the corporate values and the ambition for being sustainable.
The CSR manager of Unibrands, Broström argues that she cannot think of being innovative as a negative factor in relation to sustainability. It contributes positively because both innovativeness and sustainability shape the future. As she mentions, for a trading company like Unibrands, what is challenging is to present the brand actions in an attractive way to the customers while another challenge is to explain the suppliers the importance of the actions like REACH. They are trying to persuade the suppliers by putting forth the argument that following the actions is essential to leave a better world for their grandchildren. To achieve this goal, they have an office in China which can closely follows suppliers’ actions and contact with them in their own language.

5.5 Review of the Interviews
Innovativeness has an important place in the eye of the fashion brands because it helps being competitive in the market, improving the CSR actions as well as monitoring and collaborating with the partners through the supply chain. A trader also finds it necessary since innovation meets the demands of both sides and stands as the key element for establishing successful businesses.

An innovation can attract the attention of the business world when it is profitable or helps to improve production activities. Innovations in adaptable technology and solutions to environmental issues like changing the life cycle of a product are beneficial to the business enterprises since they also help them to produce attractive collections.

Fashion companies consider being innovative for being sustainable especially in terms of raw materials and supply chain activities. They think that manufacturing by using more environmentally-friendly materials and producing more ecological products can be achieved by being innovative. Chemicals, use of leftovers are the top areas of sustainability innovation according to the business world.

Challenges to be sustainable can be classified under different categories from the business perspective. Considering all the necessities of today’s world and replacing the old systems with the new ones constitute financial aspect. Less technical knowledge and less availability of sustainable production in the supplier level is another challenge against applicability and needs to be overcome by the industry. The consumer culture is another challenge; although consumers are aware of and talking about the importance of conscious choices, the real demand for sustainable products is in small numbers.

5.6 Innovation within Sustainability Index Results
The last question of the consumer survey is included into the research to learn about the lifetime of a t-shirt produced by different brands. This information is used in the “Product Life Time” part of the Innovation within Sustainability Index. Below, the results of the consumer perception about the life time of a t-shirt are given. Patagonia, Filippa K and Acne are considered to have the longest life time in their products. Nike is the single brand which is perceived to have a medium
life time while Zara, Lindex, H&M and Gina Tricot are the brands whose products are perceived to have a short life time.

![Image of bar chart](image_url)

**Figure 11 - Life time of an average t-shirt**

3-Scale grading question: “According to your experience so far, how would you assess the lifespan (lifetime) of an average t-shirt of the following brands?”

Results of the Innovation within Sustainability Index are shown below on the bar chart. Results are levelled to five as follows: “Very Good, Good, Moderate, Starter and Weak”.

![Image of bar chart](image_url)

**Figure 3 - Results of Innovation within Sustainability Index**

According to this classification, Patagonia is the only brand that has achieved to be in the Good level. Nike, H&M and Lindex are in the Moderate range. Whereas Filippa K and Acne are very close to be in the Moderate level, Zara and Gina Tricot are closer to be weak. H&M and Lindex are significantly distinguished from other fast fashion brands.

Below, the values of each brand for each criterion of brand equity part are disclosed by the help of bar charts. Patagonia has the highest scores for Product life time, Use of Environmental Raw Materials, Water Energy Protection Systems, Sustainable Consumption initiatives and Waste
Management sections. Lindex has also high scores for Water protection systems and Energy saving in stores. H&M and Nike are mostly ranked in the moderate level except the waste management systems. Nike scores well together with Acne and Filippa K in the Product Life Time evaluations. Acne, Gina Tricot and Zara mostly have low or starter level scores but Gina Tricot show a higher performance in terms of the Waste Management. And Acne has a higher score on the Product Life time.

**Comparison of Brands’ Sustainable Equity**

![Comparison of Brands’ Sustainable Equity](image)

Figure 13 – Detailed results of Innovation within Sustainability Index

Below, the index is generated excluding the consumer perception. Results of the desk research are used without adding the consumer perspective criteria covering the topics of the Product Life Time, Sustainability and Innovation.
When the consumer perception is excluded from the index, some differences are observed. Most of the brands get lower scores except H&M and Lindex. The score of H&M increases for 0.09 points while the score of Lindex increases for 0.26 points. The biggest difference is observed in relation to the score of Acne. A decrease of 0.85 points is seen in the brand’s score. Zara, Filippa K and Nike are perceived better in the eye of consumers when compared to their context grading.

5.7 Analyses for Innovation within Sustainability Index
In the following parts of Chapter 5.7, several hypotheses are tested with the t-test analysis method.

5.7.1 Is there a relation between the results of ISI and business models?
In order to test the difference between the index results statistically, t-test hypothesis testing is used. For this test, the first hypothesis is “There is no difference between the results of the Fast Fashion Brands and the results of the Medium Price Fashion Brands”. Data list of the samples are:

<table>
<thead>
<tr>
<th>ISI Scores</th>
<th>Fast Fashion Brands</th>
<th>Medium Priced Fashion Brands</th>
<th>Sportswear Brands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Observations</td>
<td>(n_1)</td>
<td>4</td>
<td>(n_2)</td>
</tr>
<tr>
<td>Mean</td>
<td>(X_1)</td>
<td>2.39</td>
<td>(X_2)</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>(σ_1)</td>
<td>0.51</td>
<td>(σ_2)</td>
</tr>
</tbody>
</table>
Whereas the variance between two means ($\sigma_d^2$):

$$\sigma_d^2 = \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2} \quad \text{and thus;} \quad \sigma_d^2 = \frac{0.51^2}{4} + \frac{0.04^2}{2} = 0.07 \quad \text{and} \quad \sigma_d = \sqrt{0.07} = 0.26. \quad \text{Following;}

T-value = \frac{x_2 - x_1}{\sigma_d} = \frac{2.54 - 2.39}{0.26} = 0.59.

When looked at the t-value table, for our hypothesis to be declined in 0.05 significance range and 4 degrees of freedom ($n_1 + n_2 - 2$), it should exceed the value of 2.78.\(^2\) However, 0.59 is lower than 2.78, we cannot reject the null hypothesis and thus, it is not possible to say that the Fast Fashion brands score different than the Medium Priced brands. This result does not change when considered in 0.1 significance range, since critical value in this range is 2.13.

Second null hypothesis is: “There is no difference between the results of the Fast Fashion Brands and the results of the Sportswear Brands” is also tested similarly:

$$\sigma_d^2 = \frac{0.51^2}{4} + \frac{0.57^2}{2} = 0.23 \quad \text{and} \quad \sigma_d = \sqrt{0.23} = 0.48

T-value = \frac{3.50 - 2.54}{0.41} = 2.32. \quad \text{With this t-value, the null hypothesis cannot be rejected in 0.05 significance range and 4 degrees of freedom ($n_1 + n_3 - 2$); however, it can be declined in 0.1 (90%) significance level, since the critical value is 2.13 for 4 degrees of freedom.

The third null hypothesis is: “There is no difference between the results of the Medium Priced Fashion Brands and the results of the Sportswear Brands” can be tested as:

$$\sigma_d^2 = \frac{0.04^2}{2} + \frac{0.57^2}{2} = 0.16 \quad \text{and} \quad \sigma_d = \sqrt{0.16} = 0.41 \quad \text{and thus;}

T-value = \frac{3.50 - 2.54}{0.41} = 2.36. \quad \text{According to this t-value, the null hypothesis cannot be declined neither in 0.05 nor in 0.1 significance ranges for 2 ($n_2 + n_3 - 2$) degrees of freedom.

5.7.2 Is there a relation between Brand Equity Criteria from Life Cycle Dimension and business models?

To recall the Life Cycle sub-groups defined in this research:

<table>
<thead>
<tr>
<th>Life Cycle Dimension</th>
<th>Sustainable Equity Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>Product Life Time</td>
</tr>
<tr>
<td></td>
<td>Use of environmental raw materials</td>
</tr>
<tr>
<td></td>
<td>Water protection systems</td>
</tr>
<tr>
<td>Distribution</td>
<td>CO₂ Emission</td>
</tr>
<tr>
<td></td>
<td>Energy saving in stores</td>
</tr>
<tr>
<td>Consumption and disposal</td>
<td>Sustainable consumption systems</td>
</tr>
<tr>
<td></td>
<td>Waste Management</td>
</tr>
</tbody>
</table>

\(^2\)The table of t-test can be accessed through: <http://www.stattools.net/tTest_Tab.php>
In order to obtain scores related to Life Cycle Dimension, means of each sub-group is taken separately for each brand. These values can be seen on the table below:

<table>
<thead>
<tr>
<th></th>
<th>H&amp;M</th>
<th>Lindex</th>
<th>Gina Tricot</th>
<th>Zara</th>
<th>Acne</th>
<th>Filippa K</th>
<th>Patagonia</th>
<th>Nike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Life time</td>
<td>4.47</td>
<td>5.17</td>
<td>4.13</td>
<td>5.23</td>
<td>8.03</td>
<td>8.13</td>
<td>9.63</td>
<td>7.53</td>
</tr>
<tr>
<td>Use of environmental raw materials</td>
<td>6.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>6.0</td>
<td>8.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Water Energy Protection Systems</td>
<td>6.0</td>
<td>8.0</td>
<td>4.0</td>
<td>2.0</td>
<td>4.0</td>
<td>6.0</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Mean</td>
<td>5.49</td>
<td>5.72</td>
<td>4.04</td>
<td>3.74</td>
<td>5.34</td>
<td>6.71</td>
<td>8.54</td>
<td>7.18</td>
</tr>
<tr>
<td>CO2 Emissions</td>
<td>6.0</td>
<td>6.0</td>
<td>2.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
<td>4.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Energy Saving in stores</td>
<td>6.0</td>
<td>8.0</td>
<td>4.0</td>
<td>4.0</td>
<td>2.0</td>
<td>4.0</td>
<td>6.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Mean</td>
<td>5.83</td>
<td>6.57</td>
<td>3.35</td>
<td>3.91</td>
<td>3.11</td>
<td>4.24</td>
<td>6.18</td>
<td>5.06</td>
</tr>
<tr>
<td>Sustainable Consumption Actions</td>
<td>4.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
<td>4.0</td>
<td>6.0</td>
<td>8.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Waste Management</td>
<td>8.0</td>
<td>6.0</td>
<td>6.0</td>
<td>4.0</td>
<td>4.0</td>
<td>2.0</td>
<td>8.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Mean</td>
<td>5.94</td>
<td>5.52</td>
<td>3.78</td>
<td>3.30</td>
<td>3.70</td>
<td>4.08</td>
<td>7.39</td>
<td>5.69</td>
</tr>
</tbody>
</table>

To do the referred analysis, brands are grouped according to their business models and tested in pairs according to their each Life Cycle Dimension scores. Hypotheses 4-12 (See Chapter 3, p.17) are tested. T-test results of testing these hypotheses are given on the table below. The methodology follows the same structure as defined in Chapter 5.7.1.

<table>
<thead>
<tr>
<th>t-test Scores</th>
<th>Fast Fashion and Medium Priced Brands</th>
<th>Fast Fashion and Sportswear Brands</th>
<th>Medium Priced Fashion Brands and Sportswear Brands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees of Freedom</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Production Level</td>
<td>1.51</td>
<td>3.67</td>
<td>1.90</td>
</tr>
<tr>
<td>Distribution Level</td>
<td>1.31</td>
<td>0.74</td>
<td>2.83</td>
</tr>
<tr>
<td>Consumption Level</td>
<td>1.11</td>
<td>1.78</td>
<td>3.07</td>
</tr>
<tr>
<td>Critical Value for 95% Confidence Interval</td>
<td>2.78</td>
<td>2.78</td>
<td>4.30</td>
</tr>
<tr>
<td>Critical Value for 90% Confidence Interval</td>
<td>2.13</td>
<td>2.13</td>
<td>2.92</td>
</tr>
</tbody>
</table>

According to these values, only the Null Hypothesis 2 can be declined in 95% confidence interval. This means that there is a significant difference between the Fast Fashion Brands and the Sportswear brands in terms of Production dimension of the Life Cycle. When the confidence level is taken in 90% interval, it can be also said that Medium Priced Fashion Brands and Sportswear Brands do differ in their innovative sustainability actions in terms of Consumption dimension of the Life Cycle approach.

5.7.3 Is there a significant difference between ISI-with consumer perception and ISI-without consumer perception?

The model of ISI (Innovation within Sustainability Index) is built by including the consumer perspective into the measurements. Although it is not possible to tell which of the methods are more reliable, one last t-test can be done to measure if there is a significant difference between the ISI including consumer perspective and ISI excluding consumer perspective.
### Including Consumer Perspective  Excluding Consumer Perspective

<table>
<thead>
<tr>
<th></th>
<th>Including</th>
<th>Excluding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3,91</td>
<td>3,50</td>
</tr>
<tr>
<td>2</td>
<td>3,10</td>
<td>2,83</td>
</tr>
<tr>
<td>3</td>
<td>2,91</td>
<td>3,00</td>
</tr>
<tr>
<td>4</td>
<td>2,57</td>
<td>2,17</td>
</tr>
<tr>
<td>5</td>
<td>2,74</td>
<td>3,00</td>
</tr>
<tr>
<td>6</td>
<td>2,51</td>
<td>1,67</td>
</tr>
<tr>
<td>7</td>
<td>2,01</td>
<td>1,67</td>
</tr>
<tr>
<td>8</td>
<td>1,90</td>
<td>1,83</td>
</tr>
</tbody>
</table>

**Mean**

<table>
<thead>
<tr>
<th></th>
<th>Including</th>
<th>Excluding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,71</td>
<td>2,46</td>
</tr>
</tbody>
</table>

**Standard Deviation**

<table>
<thead>
<tr>
<th></th>
<th>Including</th>
<th>Excluding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0,64</td>
<td>0,67</td>
</tr>
</tbody>
</table>

In regard to these values, t-test is applied for two lists of variables and the value is: 0.44, which is far below both 2.45 (Critical Value for 95% Confidence interval for 6 degrees of freedom) and 1.94 (Critical Value for 90% Confidence interval for 6 degrees of freedom) values. Consequently, the null hypothesis, “There is no difference between the ISI-including consumer perspective and the ISI-excluding consumer perspective” cannot be rejected in this case. However, this result might change with bigger samples.

## 6 Conclusion

The purpose of this study was to make an evaluation among the fashion companies, comparing them to each other in terms of their environmental sustainability actions and to observe how innovative they are in relation to the topic. The literature review suggested to divide environmental sustainability into life cycle stages while building a model. It also revealed a weakness in comparison methods by not measuring environmental sustainability innovations of companies through the same methodology. This study aimed to address this weakness by developing the ISI index model and using it to analyze the innovativeness within sustainability of some fashion brands available in Sweden.

The ISI index was developed as a composite index that incorporated the following dimensions of innovations within sustainability in regard to the life cycle approach: Production, Distribution and Consumption. The subsequent analysis used the content analysis and surveys to calculate and compare the ISI scores of H&M, Lindex, Gina Tricot, Zara, Acne, Filippa K, Nike and Patagonia fashion brands. I tested whether the ISI scores differ according to the business model by comparing three business models (Fast Fashion, Medium Priced, Sportswear) to each other.

The study findings revealed that the fashion industry in Sweden is cognizant of this fact in general as they are trying to cooperate with partner organizations, suppliers and even with each other; because they are aware that the sustainability of resources means the sustainability of their businesses. According to my interviews, companies consider being innovative when innovation brings monetary outcomes or improves the production processes or the CSR actions. Yet, they
see being sustainable as a challenge when it is necessary to replace the current systems with the new models since sustainable materials are less available and cost more. However, the increase of sustainability in supplier level requires more demand from companies. My conclusion in regard to these findings is that when fashion companies broaden their need of sustainable products, suppliers will work more to meet the demand. This leads us to make a conclusion in relation to the demand coming from the consumers. Companies claim that consumers talk about sustainable purchases but they do not make their purchasing decisions accordingly. Again, my conclusion is that companies should regard their role in sustainable consumption and be innovative on the consumption dimension of the life cycle processes.

I did not find significant differences between the business models in distribution and the consumption dimensions (within 95% confidence interval). This may be due to limited sample sizes, and further research is needed to get a better understanding of the differences between the business models in terms of innovation within sustainability. I found the only significant difference between the business models in regard to the life cycle approach as I was making the comparison between the Fast Fashion Brands and the Sportswear brands in terms of the production phase. This shows that when the topic is the sustainability of products and production processes, the Fast Fashion brands need to be more innovative.

This study contributes to the literature by bringing a new perspective on the measurement of the level of innovativeness within sustainability of fashion brands, and it helps companies monitor their position in the market in regard to this value. Further research can be done by improving the model of the ISI and applying it in a bigger context, i.e. more detailed criteria with bigger samples. Including the economic and social aspects of sustainability into the model can also create useful information for the further development of fashion industry.
REFERENCES

Acne Studios, (in press) *Acne Studios Environmental Strategy*.


Appendix

CONSUMER PERCEPTION OF INNOVATIVENESS AND SUSTAINABILITY
May 2012

1. Please choose your age from the age groups below.

<table>
<thead>
<tr>
<th>Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
</tr>
<tr>
<td>15-64 years</td>
</tr>
<tr>
<td>65+</td>
</tr>
</tbody>
</table>

2. Please indicate your gender.

<table>
<thead>
<tr>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
</tbody>
</table>

3. When you think about fashion brands available in Sweden, which brand is the most innovative among others?

4. When you think about fashion brands available in Sweden, which brand is the most sustainable among others?

5. According to your opinion, how important is being innovative for a fashion company?

<table>
<thead>
<tr>
<th>Importance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Important</td>
</tr>
<tr>
<td>Important</td>
</tr>
<tr>
<td>Neither important nor not</td>
</tr>
<tr>
<td>Not very important</td>
</tr>
<tr>
<td>Not important</td>
</tr>
</tbody>
</table>
6. According to your opinion in which areas of fashion industry innovation might take place? Please write at least three possible areas.

1. 
2. 
3. 
4. 
5. 

7. What is your opinion about being innovative for the following brands? If you haven't heard a brand on the list, please select N/A.

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Very Successful</th>
<th>Successful</th>
<th>Neither Successful nor Unsuccessful</th>
<th>Not very Successful</th>
<th>Not successful at all</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gina Tricot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zara</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acne</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eton</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filippa K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarn.O.Pyret</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abecita</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Avenue Shoe Repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House of Dagmar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patagonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klatternmsenen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nike</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adidas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. What is your opinion about the sustainability of following brands? If you haven't heard a brand on the list, please select N/A.

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Very Successful</th>
<th>Successful</th>
<th>Neither Successful nor Unsuccessful</th>
<th>Not very Successful</th>
<th>Not successful at all</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gina Tricot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zara</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acne</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eton</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filippa K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarn.O.Pyret</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abecita</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Avenue Shoe Repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House of Dagmar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patagonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klattermusen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nike</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adidas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. According to your experience so far, how would you assess the lifespan (lifetime) of an average t-shirt of following brands?

<table>
<thead>
<tr>
<th>Lifetime</th>
<th>Short Lifetime</th>
<th>Medium Lifetime</th>
<th>Long Lifetime</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gina Tricot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zara</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acne</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filippa K</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Avenue Shoe Repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House of Dagmar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hope</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patagonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klatternmusen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nike</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adidas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. According to your opinion, how important is being innovative for a fashion company?

2. What innovations are of interest from a business perspective?

   1.
   2.
   3.
   4.
   5.

3. In which areas of fashion industry should innovation take place? Please write at least three different areas.

   1.
   2.
   3.
   4.
4. Which of those innovative actions the organization taken so far?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

5. What are the challenges to become sustainable?

6. According to your opinion does being innovative affect being sustainable in positive or negative way? If yes, how and in which areas?