ABSTRACT

A NOMOLOGICAL NETWORK AROUND SUSTAINABLE FASHION CONSUMPTION

by Luisa Quitalo

This practicum project used existing literature on sustainable fashion to create a nomological network around the variable of interest, sustainable fashion consumption. The objective was to understand why there is a gap between individuals’ attitude toward sustainable apparel and their actual actions when purchasing sustainable apparel. The results show that the consumption of sustainable fashion can be directly or indirectly related to five categories -- attitude, knowledge, ethics, price and advertising. Each category examined based on variables that relate to sustainable fashion consumption. Some of the variables, such as fashion orientation, product brand, and awareness about apparel production were found to impact consumers’ behaviors to buy sustainable fashion. Other variables such as individuality, price premiums, and environmental messages in advertisements either do not influence or negatively impact consumers’ purchasing behavior. Marketing strategies for increasing the sale of sustainable clothing are suggested including understanding consumer environmental concerns and targeting fashion leaders.
A NOMOLOGICAL NETWORK AROUND SUSTAINABLE FASHION CONSUMPTION

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by

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Section I: An environmental perspective of the fashion industry

Over the past decades, a general increase in purchasing behavior has significantly enhanced consumer demand in the fashion industry (Morgan et al., 2009). Fashion consumers want more for less (Sudbury et al., 2011) and want to be able to stay on track with the latest trends (Niinimaeki, 2010). This demand for ‘fast fashion’ or ‘throwaway fashion’ has led companies to produce cheaper apparel utilizing rapid production and marketing methods (Sudbury et al., 2011). Such methods, however, have led to what is described as a fashion paradox in the literature, which is the conflict between the increased consumer demand and environmental impact of the textile industry (Styles, 2011). Phau and Ong describe this phenomenon as a paradox between individualism and ethical consumption. (Phau et al., 2007)

One side of this paradox results from the pressures related to cost, globalization, consumer expectations, and technology. To remain competitive, companies within this industry have to reduce costs as much as possible. In order to do so, they improve their supply chains and maximize efficiency by buying cheaper materials and/or move production to cheaper locations (Nenni et al., 2013). Globalization has led companies to outsource and/or offshore several of their production activities in order to reduce their production costs and remain competitive (Ritch et al., 2012; Nenni et al., 2013). Also, the change in customer expectations has made it more complex to satisfy their needs (Nenni et al., 2013). New technologies have increased communication and led to increased knowledge in trends and brands (Nenni et al., 2013). This has resulted in very flexible and responsive companies that satisfy their consumers by constantly improving technologies and processes (Nenni et al., 2013).

The other side of the fashion paradox includes the non-negligible environmental and social impacts present throughout all stages of the life cycle of the product (Claudio, 2007; Beard, 2012). The production, purchase, and disposal of apparel have negative impacts on the environment (Birtwistle et al., 2007). For instance, textile manufacturing is considered one of the largest consumers and polluters of water worldwide (Kant, 2012) due to the use of significant amounts of chemicals and natural resources and discharge of untreated effluents (Parvathi et al., 2009). The washing, bleaching and dyeing of fibers in particular are very water intensive. The production of one kilogram of textiles uses approximately 200 liters of water. If these effluents
are not disposed of properly, the environmental and health impacts can be very significant (Parvathi et al., 2009). Additional environmental impacts from textile production include significant greenhouse gas emissions from an energy intensive process (Natural Resource Defense Council - The Earth's Best, 2012), odor, noise and safety conditions (Parvathi et al., 2009) and air pollution from point sources and diffuse sources such as boilers, storage tanks, waste water treatment and spills (Parvathi et al., 2009). Figure 1 depicts how the processing of raw materials and manufacturing of clothing items together create a large environmental impact in their product life cycle.

![Figure 1](image-url) "Where are the heaviest impacts? The four heaviest areas of the fashion and apparel industry." (Source: Natural Resource Defense Council - The Earth's Best Defense)

In this practicum project, I will mainly focus on clothing that is processed or manufactured in an environmentally-friendly and socially responsible way. Environmentally-friendly clothing limits the use of hazardous processes and materials that can lead to health or environmental risks during the manufacturing of clothes (Multinational bodies, 2011). Apparel produced in a socially responsible way account for how products are produced, consumed and disposed of, which takes into consideration the environment, morality, and the desire to reduce harm for people and the world (Dickson & Eckman, 2006).

Being aware of this conflict between the demand of individual styles and the environmental impacts of clothing production and maintenance, I wanted to explore whether there was any consumer demand for sustainable fashion products. A review of the literature revealed that in the last decade, consumer interest in sustainable products in general has
increased (Phau et al., 2007). American consumers increasingly feel a sense of social responsibility and do not tolerate ethical abuses as easily as they used to (Freestone et al., 2008). Nowadays, and especially in developed countries, a majority of people have reached a satisfying level of materialism. This has led them to regulate their behavior in trying to become ‘better people’ (Beard, 2008).

Sustainable purchasing patterns have been examined more carefully over the last decade as a means of understanding the processes that motivate people to buy a product (Freestone et al., 2008). Some research indicates that this interest in purchasing sustainable products is especially prevalent in the offspring of the Baby Boomer generation, also called the Millennial, Y, or N generation (born between 1977-1994) (Hill et al., 2012). This population segment, which makes up 25% of the total (US or world) population (MetLife Mature Market Institute, 2013), represents a more informed and educated generation, especially related to social issues (Hill et al., 2012) and are more inclined to make eco-friendly purchasing decisions (Brosdahl et al., 2011). This generation feels personally more responsible to behave in an environmental manner. Several studies have shown that these consumers’ main perception of sustainability is related to the environment, followed by future and long-term effects, then social and economic topics (Hill et al., 2012).

One market sector that has been notably impacted by consumer preferences is the food industry, especially organic foods (Iwanow et al., 2005). According to Huvstedt et al., an increase in the consumption of organic food has taken place because a majority of food consumers (approximately 90%) realize the positive impact that organic food has on one’s health. Only 30% of consumers of organic food purchase organic food because they are concerned about the environment. While not all consumers have changed their purchasing habits (Vermeir et al., 2006), sustainable consumption is still more recognized within the food market than it is within other industries (Ritch et al., 2012). The Oslo Roundtable on Sustainable Production and Consumption in 1994 defined sustainable consumption as the use of products that meet basic needs which are produced with minimal natural resources, toxic elements and emissions (Linkages, 1994).

There is some evidence that the trend of purchasing more ethically responsible goods has not gone unnoticed in the fashion industry. The years 2006-2008 were important in the development of incentives and initiatives in Eco fashion (Beard, 2008). Beard’s (2008) research,
focusing on British companies, found that these companies increasingly invested in commercials promoting the use of fair trade and organic materials. From 2005 - 2008, British consumers also increased spending related to fair trade, organic or recycled apparel from £25 million in 2005 to £52 million in 2006 (Beard, 2008). The market for British organic cotton products doubled from £45 million in 2006 to £105 million in 2008 (Beard, 2008; Huvstedt et al., 2009). However, despite an increased interest in sustainability, the millennial generation interest has not yet reached a high level of concern about the apparel industry (Hill et al., 2012).

Ethical fashion markets have been growing relatively slowly (Niinimaeki, 2010), but it has shown to be particularly hard to shift fashion consumers to more sustainable consumption. Despite a certain level of consumers’ awareness of the environmental impact of their apparel purchases, there is a gap between their behavior and their actions (Goworek et al., 2012,). Discussions and research about ethics in the clothing industry have identified contradictions between the quick satisfactions of consumers’ needs versus their satisfaction in a more sustainable manner (Niinimaeki, 2010). Some research, such as Ritch & Schroeder (2012) and Joergens (2006) indicates that consumers do not necessarily purchase apparel based on the clothes production standards.

In contrast to organic food consumption, little research has been done on socially responsible fashion consumer behavior (Huvstedt et al., 2009; Niinimaeki, 2010). Some research has identified variables closely related to green purchasing behaviors and intentions throughout the apparel lifestyle. These include advertising, clothing disposal and recycling (Huvstedt et al., 2009; Phau et al., 2007). However, other researchers believe that we need a better understanding of consumers’ perspectives and motivations when it comes to sustainable fashion (Goworek et al., 2012). In order to understand certain purchasing behaviors, it is necessary to include variables related to personal motivations and values, especially examining how people trade off values and needs (Freestone et al., 2008). Research shows that, even though consumers believe in certain issues such as the impact of non-sustainable manufacturing practices on the environment, it does not necessarily imply that they change their behavior accordingly (Phau et al., 2007). The existence of a gap between consumer attitudes toward the environment and their actual actions, also called attitude-behavior gap, is of particular interest especially when trying to understand why the consumption of sustainable fashion has not risen to the level of sustainable food products (Ritch & Schroeder, 2012).
The remainder of this report will explain the results of my research on sustainable fashion consumption and present marketing strategies that were revealed during my research. Section I explains the nomological network that I created around the variable of interest--sustainable fashion consumption— and the five key variables identified based on an extensive literature review on that topic. Section III proposes marketing strategies that companies can use to better target their consumers. These strategies are mostly based on the connections that were established in the nomological network from Section II. The last section of this practicum project identifies possible ideas for future research.
Section II: The nomological network around sustainable fashion consumption

To better examine the variables that influence this attitude-behavior gap, I reviewed over 20 papers and created a nomological network around the main/dependent variable ‘sustainable fashion consumption.’ The concept of nomological network was developed by Cronbach, L. and Meehl, P. in 1995, and is used particularly in psychology. This tool is used to construct validation of observable measures and generate testable predictions (Conway, 2007). In order to create a nomological network, it is necessary to relate observable properties to each other, theoretical constructs to observables or different theoretical constructs to one another (Green, 1955). The nomological network created within the framework of this project will relate theoretical constructs to one another.

To understand what drives consumers to purchase ethical apparel and why there is an attitude-behavior gap, I reviewed literature related to the consumption of sustainable fashion. A list of the articles reviewed is found in Appendix I. During my literature review, I realized that several overlapping terms were used to describe the purchase of materials with minimal environmental impact, including green consumption, ethical consumption and sustainable consumption. While these terms are being used interchangeably across industries, there are some differences (Carrigan et al., 2004). A green consumer makes purchasing choices based on environmentally friendly products or recycling behavior (Carrigan et al., 2004). Ethical consumption is broader than green consumption. An ethical consumer incorporates all the principles of environmental and ethical considerations in his product or service choice. The ethical consumer makes certain deliberate consumption choices based on their personal and moral beliefs (Carrigan et al., 2004; Freestone et al., 2008). The Oslo Roundtable on Sustainable Production and Consumption in 1994 defines sustainable consumption as the use of products that meet basic needs, which are produced with minimal natural resources, toxic elements and emissions (Linkages, 1994). Despite these differences, I reviewed literature that included all three terms, because the key variable of interest is sustainable fashion consumption, whether it focuses on the ecological or social part of consumption.
Based on this literature review, I was able to identify over 30 variables responsible for consumers’ sustainable fashion consumption. I then grouped these variables into five categories: attitude, ethics, price, knowledge and advertisement. Each section’s variables are correlated or otherwise related to the main variable, which is sustainable fashion consumption (Figure 2).

**Figure 2** The nomological network around sustainable fashion consumption

I will go over each of these categories individually and explain the correlations that I’ve established based on the results from the peer-reviewed articles (See Appendix I). The first category that I will present is attitude.

**Attitude**

The concept of a gap between the attitude toward sustainability and one’s purchasing behavior has been prominent in the research of sustainable fashion consumption. The attitude-related variables considered in this section include the following: 1) individuality, 2) sustainable purchasing in the past, 3) attitude toward the apparel brand and subjective norm, 4) perceived consumer effectiveness, 5) perceived personal relevance, 6) fashion/shopping orientation, 7)
anti-fashion attitude, 8) environmental concern, and 9) eco-friendly behavior (Figure 3). In this section, I will review each variable and summarize the findings in the literature.

![Nomological network of attitude-related variables and sustainable fashion consumption](image)

**Figure 3** Nomological network of attitude-related variables and sustainable fashion consumption

*Attitude toward a brand* –

Kang et al. (2013) found a positive correlation between a consumer’s general opinion about a brand and their willingness to purchase sustainable clothing items in the product line, in this case organic cotton apparel. They suggested that further research should involve additional marketing variables, such as brand preference, and that additional types of sustainable apparel should be examined.
Research by Hyllegard et al. (2012) found that socially responsible advertisements for apparel also impacted consumers’ attitudes toward a brand. Apparel companies are legally required to provide consumers with information about their products on hang tags or labels, such as fiber content and country of origin (Hyllegard et al., 2012). They can also decide to provide additional information to educate and better inform their consumers (Hyllegard et al., 2012). This is closely related to how companies promote their products and how they inform their consumers.

**Subjective norm**—

Kang et al.’s (2013) research also examined how consumers’ intentions to purchase sustainable apparel are affected by the subjective norm, which defines what consumers think other people expect from them. The results indicate that there is a positive correlation between the subjective norm and consumers’ intentions to purchase sustainable apparel. The study identified three different groups of people that impact consumers’ behaviors, which are close friends, parents and the significant other (Kang et al., 2013).

**Past socially responsible apparel purchasing**—

Hyllegard, et al. (2012) found that purchasing socially responsible apparel in the past positively impacts consumers’ intentions to purchase ‘good clothes’. For this variable, the authors focused specifically on child labor concerns associated with clothes production, which represent the social aspect of sustainability.

Hyllegard et al. (2012) did not analyze how negative experiences during ‘past socially responsible apparel purchasing’ could potentially impact future purchasing decisions. It would be interesting to see if and how an individual’s attitude toward sustainable fashion in general could be impacted.
Perceived consumer effectiveness, and perceived personal relevance as related to attitude –

Kang et al.’s (2013) research focused on young consumers. They studied the impact of perceived consumer effectiveness and perceived personal relevance on consumers’ attitudes and purchase intentions for sustainable apparel. Perceived consumer effectiveness measures consumers’ feelings about being able to influence the production process for a product. The higher their perceived consumer effectiveness, the more they believe that their purchasing decisions can have an impact on the environment. Perceived personal relevance measures how consumers associate certain purchasing behaviors to their values and self-image: consumers who are concerned about the environment will also more likely purchase environmentally sustainable products.

The results identified a positive relationship between perceived consumer effectiveness and attitude: if consumers believe that their consumption behavior can have an impact on the environment, they will be more likely to have a more social and environmentally responsible attitude, which will lead to more sustainable purchases and consumption. The results also identified a positive relationship between perceived personal relevance and attitude. When consumers believe that behaving sustainable enhances their self-image and social presentation, they are more prone to consider socially responsible actions positively. These results provide information about the importance of young consumers, and how the close relationship identified between attitude and intentions to behave sustainably can increase sustainable purchasing behavior.

In further research, it would be valuable to couple these two variables – perceived consumer effectiveness and perceived personal relevance – with price. How much premium will an individual pay if he knows that his action will have a positive impact on the environment?

Fashion orientation & shopping orientation –

Gam (2010) studied how consumers’ fashion orientation and shopping orientation motivate and influence the consumption of sustainable apparel. The results indicated that
consumers who are interested in being well dressed show a stronger interest in purchasing eco-friendly clothes. However, Gam also reviewed other literature that indicated it is harder for consumers to consider environmental issues when purchasing clothes than it is when purchasing organic food.

Gam (2010) only interviewed young college female students with ‘apparel merchandising and design’, and ‘interior and environmental design’ majors. For future research, it would be useful to increase and diversify the sample.

**Environmental concern & eco-friendly behavior –**

Looking at the same population of college students majoring in apparel or interior design, Gam (2011) also analyzed whether general environmental concern, environmental concern for apparel production, and eco-friendly behavior influenced the purchase of environmentally friendly clothing. Gam defined ‘environmentally concerned individuals’ as those who want to protect the environment for future generations, devote some portion of their resources to environmental protection, or think that more resources should be devoted to environmental protection. Results showed a positive correlation between environmental concern and sustainable fashion consumption, which Gam interpreted as that consumers who are concerned about the environment know that they have an impact on the environment and are, therefore, more prone to purchasing eco-friendly apparel.

Gam’s (2011) research also identified a positive relationship between consumer eco-friendly behavior and sustainable fashion consumption. According to Gam’s (2011) literature review, other studies also predicted that eco-friendly behavior and environmental concern are predictors for purchasing of environmentally friendly clothing.

**Anti-fashion attitude –**

Gam (2010) studied two groups of college students – those majoring in apparel merchandising and design, and those majoring in interior and environmental design - to
determine whether anti-fashion attitude impacts the purchasing of eco-friendly clothing. By anti-fashion attitude, Gam (2010) refers to individuals who are against following trendy styles or who believe companies manipulate fashion just to make more money. The results show no significance of the variable anti-fashion attitude on purchasing of eco-friendly apparel in either major.

*Attitude-behavior gap* –

Sudbury et al. (2011) analyzed the influence of certain attitudes, such as *attitude toward ethical fashion, attitude toward throwaway fashion, and individuality*, on *attitude-behavior gap* in order to understand why certain consumers show a positive attitude toward sustainable fashion, but do not actually apply that attitude toward their purchases (Sudbury et al., 2011). Sudbury et al. (2011) found that individuality and self-identity appear as enforcers of consumption and, therefore, have a significant impact on the attitude-behavior gap in the apparel industry (Sudbury et al., 2011).

Analyzing certain attitudes toward ethical fashion, throwaway fashion and the attitude-behavior gap, Sudbury and Boeltner found that individuals attribute value to others’ opinions, but also have the desire to create their own identity that represents their personality (Sudbury et al., 2011). One participant in Sudbury et al.’s (2011) research said that fashion was one of the only ways to show individuality in society. The results of this study show a certain detachment of participants to environmental issues – individuality remains a key factor in their actual purchasing decisions. Even though Sudbury et al.’s results revealed a certain level of criticism from individuals about fast fashion, they purchase such products.

These observations prove the complexity of shifting consumers’ actual behavior to purchasing more sustainable apparel (Sudbury et al., 2011). Assessing individuals’ attitudes toward sustainable fashion can help understand how to make them more responsive to the environmental impacts associated to the production process. It would be interesting to analyze consumers’ reaction when confronted with the social impacts associated with apparel production, such as child labor, bad working conditions, etc.
Knowledge

The second group of variables revealed in my literature review related to how much consumers knew about environmental issues within the fashion industry and whether this knowledge impacted the purchase of sustainable apparel. Research by Iwanow, McEachern, and Jeffrey (2005) revealed that nowadays, good quality products and excellent customer service don’t entirely satisfy consumers anymore. Consumers are increasingly affected by issues related to child labor, unfair trade, and the environment (Iwanow, McEachern, & Jeffrey, 2005). Consumers want to see retailers show a certain degree of morality. Iwanow et al. noted that having knowledge has impacted consumers’ commitment to purchasing sustainable apparel and therefore he recommends that retailers provide information about how they are addressing these morality issues. (Iwanow, McEachern, & Jeffrey, 2005).

Figure 4 Nomological network of knowledge-related variables and sustainable fashion consumption
Environmental knowledge & attitude –

Brosdahl et al.’s research focused explicitly on students enrolled in textile and apparel programs throughout the United States. In their study, majors such as apparel marketing, merchandising, or retailing, were considered more business majors, compared to other majors, such as apparel design, product development, and textiles. They tried to observe how environmental knowledge impacts one’s purchasing behavior, and can actually influence that purchasing behavior in itself. Brosdahl et al. qualify knowledge as an important variable, because it helps consumers collect and organize different types of information (Brosdahl et al., 2011). They also concluded that these results align with exiting literature, which reports that students with business majors are less environmentally oriented than non-business students.

Kang et al.’s research also focuses on college students in the United States, South Korea, and China, and how environmental knowledge about the product can affect consumers’ purchasing decisions. Kang, et al. defined environmental knowledge as familiarity with the product and knowledge about the product. Kang et al. found that consumers’ environmental knowledge has been assimilated to the development of attitudes and certain behavioral purchasing patterns toward the environment (Kang et al., 2013). They found that people with a certain level of knowledge about the apparel product that they are purchasing, could be a predictor for sustainable purchasing.

Environmental concern & student major –

Brosdahl and Carpenter (2011) tried to identify potential relationships and/or differences in purchasing behavior based on environmental concern. Their sample was composed of students from two different majors - apparel merchandising and design, and interior and environmental design. Brosdahl and Carpenter’s literature review found that results that environmental knowledge alone will not change consumers’ behavior, but that it can be heightened if environmental knowledge develops into environmental concern. Brosdahl and Carpenter’s (2011) research did not identify a difference by majors on the impact of environmental knowledge on environmental behavior. But, the results do show
that students majoring in apparel design, product development or textiles show a higher environmental concern and are also behave more environmentally responsible than students majoring in apparel merchandising, marketing or retailing (Brosdahl & Carpenter, 2011).

This study could become more valuable if expanded to a broader range of majors, such as social sciences, engineering, and environmental sciences. The results would be useful to help set up adequate programs for sustainability-related topics.

**Environmental knowledge about apparel production & environmental concern** –

Kim and Damhorst’s (1998) research identified a correlation between consumers’ knowledge about the environmental impacts of apparel productions and environmental concern. Based on two different models for their analysis, they found that environmental knowledge about apparel production and environmental concerns actually influence each other. In one model, environmental knowledge shows a positive impact on environmental concern, whereas in an alternative model, environmental concern has a positive impact on environmental knowledge (Kim & Damhorst, 1998).

Kim and Damhorst (1998) couldn’t find a clear influence of environmental concern on sustainable fashion consumption behavior. This can be due to the complexity involved in purchasing apparel, but also to the fact that the positive environmental impacts that result from purchasing more sustainable apparel are not as clear and easy to understand as it is for other sustainability activities, such as recycling or energy efficiency.

Nowadays, many individuals purchase apparel to make a fashion statement rather than just to satisfy the necessity for clothes. Therefore, buying sustainable apparel might come at a certain social cost, especially if the sustainable apparel is not as fashionable (Kim and Damhorst, 1998).
Environmentally responsible behavior –

The strongest correlation was found between environmentally responsible behavior and environmentally responsible behavior associated to apparel consumption, meaning that consumers who engage in environmentally responsible behavior are more prone to apply that type of behavior to apparel. Kim found that this connection was true even when the consumer did not have specific knowledge about textiles or the environmental impacts of fashion production (Kim & Damhorst, 1998).

The respondents in Kim & Damhorst’s study did not show a great knowledge about the environmental impacts of sustainable clothing. The authors noted that it would be interesting to explore whether exposing respondents to an educational campaign about the environmental impacts of the industry would affect the outcome (Kim & Damhorst, 1998).

Environmental knowledge & subjective norm –

This study identified a negative relationship between consumers’ environmental knowledge and subjective norm (Kang, Liu, & Kim, 2013). This negative relationship can be explained intuitively: consumers who become knowledgeable about the environmental issues will be less prone to follow pressure from peers or relatives (Kang, Liu, & Kim, 2013). The authors also found a positive relationship between environmental knowledge, and attitude and behavioral intention to purchase sustainable apparel, concluding that consumers who show a certain familiarity and knowledge with the product will also be more prone to purchase sustainable apparel.

Knowledge about manufacturing location –

Among variables, such as price, quality, and style of apparel, Iwanow, McEachern, & Jeffrey (2005) also tried to identify if other variables, such as the manufacturing location of apparel, would have an impact on consumers’ behavior toward purchasing more sustainable clothing. They presented information to the respondents about ethical practices of the suppliers, such as working conditions, minimum wage
levels, and child labor issues within countries like Indonesia, China and Thailand (Iwanow, McEachern, & Jeffrey, 2005). Iwanow et al. found that there is no significant relationship between knowledge about the manufacturing location of apparel and consumers’ purchasing behavior for sustainable apparel. They found, however, that price, quality, and style did influence purchasing behavior and concluded that personal motives appeared to be more significant in an individual’s purchasing behavior than societal issues, such as the location where the products are manufactured.

This study focused on purchases at The Gap, Inc., and therefore may not be generalizable. The variables and the importance associated by the consumers are very interesting, which is why they should be analyzed for a larger and more diverse sample.

Ethics

Two articles studied the impacts of ethicality on sustainable fashion consumption (Figure 5).

**Figure 5** Nomological network of ethics-related variables and sustainable fashion consumption

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*Ethical values & ethical commitment* –

Niinimaeki (2010) examined whether ethical commitment or ethical values had any relationship with sustainable fashion consumption. Ethical commitment referred
mainly to individuals’ commitment to the environment, whereas individuals following ethical values were defined as individuals who consider ethical issues in their consumption behavior. Niinimaeki found that there is an increasing commitment toward ethical fashion but cheap and fast fashion still tempts consumers to go against their “ethical interest, inner values” and purchase unsustainable apparel (Niinimaeki, 2010).

Likewise, Niinimaeki (2010) found that ethical values are a key driver in the purchase of sustainable apparel, but the low-cost fashion can bias consumers’ behavior.

According to Niinimaeki (2010), individuals who follow their ethical values uncompromisingly will apply them in their purchasing decisions, above self-identify or aesthetic values. Following this logic, individuals who are strongly committed to preserving the environment and society will be more likely to purchase sustainable fashion items (Niinimaeki, 2010).

*Ethical issues* –

Joergens (2006) studied the correlation between fashion consumption and ethical issues such as unethical work practices and environmental impacts generated by the fashion industry. Her research showed little evidence of any correlation between ethical issues and sustainable fashion consumption. She clarified that this does not imply that consumers are not aware of ethical issues, nor that they do not care about these issues, rather that they care more about certain issues than others, particularly those that affect them personally (Jeorgens, 2006). Joergens attributed this lack of action to the fact that consumers feel like they do not know enough about the production practices, especially those in developing countries, to issue a judgment (Jeorgens, 2006).

This study focused solely on young consumers, who allocate higher importance to fashion since it strongly relates to self-esteem and individuality (source). Replicating this study with other age groups would help determine whether the results are generalizable or specific to this age group.
Price

Sudbury and Boeltner (2011) identified the product price as a key variable in consumers’ decision-making and purchasing decision (Figure 6).

*Price of sustainable fashion –*

The existing price-gap between cheap fashion and ethical fashion has been identified as a critical component of consumers’ decisions toward sustainable fashion (Sudbury & Boeltner, 2011). Shaw, et al (2006) consider price an alienating variable, because some consumers who desire to behave more sustainably find it financially unfeasible. Shaw et al. concluded that if sustainable clothes don’t reflect the consumers’ identity or self-image, they will less likely pay the price difference. Gam (2011) also found that young female consumers’ were less likely to purchase environmentally friendly apparel when the price was higher than other fashion products.

![Nomological network of price-related variables and sustainable fashion](image)

**Figure 6** Nomological network of price-related variables and sustainable fashion

*Income –*

Iwanow, McEachern, Jeffrey, et al.’s (2005) study focused on how consumers’ ethical concerns impact the purchase of apparel. They found that price was identified as a key decision influencer, especially for individuals earning up to £19,999 and between
£25,000- £29,000. Individuals in the higher income class were more influenced by the quality of the products.

For further research, it would be interesting to analyze a potential correlation between income and sustainable fashion purchasing. This could help determine how often individuals purchase sustainable apparel, and whether it varies with income.

**Shopping enjoyment**

Gam’s (2011) analysis shows that consumers who respond negatively to product price will still show a certain degree of interest in purchasing environmentally friendly apparel (even more expensive) if they enjoy shopping. Shopping enjoyment is defined as individuals who shop often and in different stores to be knowledgeable about new fashion trends (Gam, 2011).

Gam’s results suggest that consumers’ main reason for not purchasing sustainable apparel is related to price premiums. It would be interesting to examine whether this holds true for different types of sustainable apparel, such as socially responsible apparel and apparel made from 100% recycled fabrics. The research could examine how consumers react to different types of fabric, what do consumers think is most fashionable, and what type of sustainable fashion products would these consumers consider comparable to fast fashion?

**Store-related attributes**

According to Chan and Wong’s results (2012), store-related attributes (store’s ethical practices, customer service, store’s environment, shop convenience) are positively correlated to ethical fashion consumption, except when a price premium is added for sustainable apparel. They found that consumers generally have a certain price range they feel comfortable with. If the price of the product goes beyond this price threshold, consumers are less likely to purchase the good. Chan et al. identify as store-related attributes as a key influencer of eco-fashion consumption decisions.
**Product-related attributes of eco-fashion (product design, quality, price)** –

Chan found that consumers who are not very familiar with certain brands or products will be more reticent to purchase them if they are more expensive, because they are afraid of making a mistake. The price premium-aspect of product-related attributes led Chan to conclude that consumers associate prices with a certain level of product quality. According to Chan et al., fashion consumers describe eco-fashion products as scratchy and uncomfortable (Chan, 2012).

**Consumers’ support toward socially responsible businesses** –

Shen et al. (2012) researched how ethical fashion and consumer purchase behavior can impact consumers’ willingness to pay a premium for ethical apparel. The results show that consumers are more willing to pay a premium for products from socially responsible businesses than for environmentally responsible businesses. The authors cite existing literature indicating that people are more concerned about human rights-related issues rather than environmental issues and protecting the environment.

**Advertisements**

Kim and Damhorst (1997) note that advertising in general can shape consumer’ and societal values, and that fashion advertising has the power to influence peoples’ tastes and trends. Figure 7 is divided into two sections, which are both related to consumer responses to advertisements. Whereas the literature review established a clear relationship between sustainable fashion consumption and the variables in the upper section of Figure 7, it did not establish a clear relationship with the variables from the lower section of the figure and sustainable fashion consumption. Nonetheless, I think that it would be worth doing further research about the connection between the variable consumers’ effective responses to environmental messages and sustainable fashion consumption.
Figure 7 Nomological network for advertisement-related variables and sustainable fashion consumption. The double-arrowed line with the question mark shows that the literature does not provide a correlation between the upper and lower section of Figure 7, but that these variables seem to be closely related.

**Variables in upper section of Figure 7**

*Explicitness of message and brand name’s correlation to consumers’ attitude toward an advertisement –*  

Yan et al. (2012) investigated how a product’s brand name and the explicitness of the message in the advertisement influence young college student’s attitude toward the advertisement as a consumer. To study the effect of brand
name, Yan et al. (2012) added the word ‘Eco’ to the actual brand name, and studied consumers’ responses between brands with and without words such as eco, natural, sustainable, etc. The results showed no significance, which means that they could not prove that brand name or explicitness of the advertisement message actually influence consumers’ attitudes toward advertisements. The authors of the article think that consumers’ possibly built up a certain degree of skepticism against green marketing strategies, which would explain the non-significance of the results. This study used fictitious brands. It would be interesting to do that type of study with well-known brands, and see if consumers’ reaction would remain the same.

While an explicit message did not influence an attitude toward the advertisement, the message does influence the consumers’ attitudes toward the brand. The positive correlation of the explicitness of the message on consumers’ attitudes toward the brand was stronger than the correlation of the brand name on consumers’ attitudes toward the brand (Hyllegard et al., 2012).

For further research, Hyllegard et al. propose to use well-known brands instead of fictitious brands, which might provide more insight on the importance of socially responsible business practices to consumers.

**Hang tags**

Another variable in the advertisement category is whether including socially responsible information on the hang tags of a product will impact consumers’ purchasing intentions toward a brand. According to Hyllegard, Yan, and Ogle (2012), consumers’ use of labels and hang tags in the apparel industry have increased over the last years. They also found that female consumers tended to give more importance to information on hang tags about the product than male consumers, and also use it in their purchasing decision. Based on their results, the authors conclude that companies would benefit from using hang tags with logos and socially responsible information, as well as including explicit messages.
For further research, it would be interesting to understand how the design of hang tags can impact consumers’ attention and interest toward the information on the hang tag.

Consumers’ concern about the environment correlate to their affective responses to environmental advertisement –

In order to assess this situation, Kim and Damhorst (1998) analyzed the behavior of green and non-green consumers when faced with specific advertisements. They researched potential relationships between consumers’ level of environmental concern and consumers’ affective response to the advertisement.

Their findings show that consumers’ that have higher environmental concern react more favorably to fashion advertisements, even for advertisements without environmental messages.

Variables in lower section of Figure 7

Advertisements containing environmental messages correlate to environmental concern –

Kim and Damhorst (1998) also found that consumers who are particularly concerned about the environment responded more positively to advertisements with environmental messages than with advertisements without environmental messages (Kim & Damhorst, 1998). In relation with the previous variable – environmental concern – they observe that consumers with low environmental concern showed a lower interest in the advertisement when it had an environmental message (Kim & Damhorst, 1998).

The key result is that the combination of consumers’ environmental concern and environmental messages in ads has a positive impact on their affective response to the fashion ads (Kim & Damhorst, 1998).
Type of environmental message in advertisement & consumers’ affective responses to environmental advertisement – Kim and Damhorst (1998) also analyzed potential correlations between the type of environmental message used in the advertisement and consumers’ affective response to the advertisement, but no correlations were observed.

Product-related messages and store-related messages in ads’ correlation with consumers’ affective responses to environmental advertisement – Phau and Ong (2007) focused their analyses on promotional messages and consumers’ responses. Their findings show that consumers’ react more positively to product-related messages than they do for messages that are focused to the company’s environmental activities and actions. Also, they show that consumers give more credibility to environmental messages when they relate to credible sustainable products, compared to mainstream products (Phau & Ong, 2007).

As mentioned before, the articles didn’t establish a correlation between the variables ‘sustainable fashion consumption’ and ‘consumer effective responses to environmental advertisement. Based on the close connections between the variables that I have explained in this section, it would be interesting to do further research on potential connections between these two variables.

Summary of the five categories

The presentation of these five categories is useful in understanding the influencers of consumer behavior in the apparel industry. This literature review shows that cheap and fast fashion has increased, leading to more choices and diverse trends. This type of fashion is affordable and it allows people to follow seasonal trends. Many individuals feel pressured to do so (Sudbury & Boeltner, 2011). Interviewees by Sudbury and Boeltner (2011) admit that they shop even when not necessary, especially in cheap shops where they can make good deals. Their research results confirmed the attitude-behavior paradox. Variables such as environmental
concern, environmental knowledge, subjective norm, and attitude appear in the five categories. This illustrates well the connections between the categories, and how consumers’ behavior can’t be strictly compartmentalized in the categories without overlapping.

In the attitude category, results show that consumers highly value individuality, and don’t seem to find enough satisfaction when it comes to sustainable fashion (Sudbury & Boeltner, 2011). But, consumers who are more fashion-oriented seem to show more interest in sustainable fashion than those who do not. (Gam, 2011). Consumers also give importance to the product brand and to the opinion of their family members, friends, and other relatives (Hyllegard et al., 2012). Individuals that are concerned about environmental issues and show an eco-friendly behavior are generally more likely to purchasing sustainable fashion (Gam, 2011). However, it is important for consumers to know that their behavior is having an actual impact (Kang, Liu, & Kim, 2013).

In the knowledge category, the research indicates that environmental knowledge does not lead consumers to have a positive attitude toward purchasing more sustainable apparel (Kim & Damhorst, 1998). It was interesting to see that individuals who have a certain level of environmental knowledge will not let peers or relatives impact their purchasing choices as easily as they would if they didn’t know anything about the product (Kang, Liu, & Kim, 2013). Kim and Damhorst (1998) found that environmental concern does not impact consumers purchasing behavior, whereas Gam (2011) found that it does. Nonetheless, individuals who show an environmentally friendly behavior also show a higher interest in purchasing sustainable apparel. Sudbury and Boeltner’s (2011) study showed that, despite consumers’ knowledge about the negative environmental impacts of cheap and fast fashion stores, such as poor labor conditions, their actions don’t reflect their attitudes. Despite some individuals being aware of the issue, they don’t act upon it and are not as strongly affected as they claim to be. Other consumers don’t feel affected by environmental issues, because they blame it on retailers – according to these consumers, retailers make fast fashion very affordable and ethical fashion too expensive.

In the ethics category, you can see that consumers purchasing behaviors are affected by their ethical commitment to sustainability and their ethical values. Despite a positive relationship of these variables with the variable of interest, consumers are still tempted by cheap and fast fashion.
In the price category, the research results showed that there is a negative correlation between the price premium of sustainable fashion and consumers’ intentions to purchase that type of apparel. Nonetheless, if associated with variables such as shopping enjoyment (Gam, 2011) and consumers’ support toward socially responsible businesses (Shen et al., 2012), this negative relationship with price is weakened. It appears that consumers value store-related attributes (store environment, customer service, etc.), which is not a strong enough motivation to overcome the price premium (Chan & Wong, 2002). Price is identified as a key factor in consumers’ decision-making process. Sudbury and Boeltner’s (2011) find that the existing gap between attitude and behavior is due to one key variable, the price of the product. According to the interviewees, the price premium of eco-apparel is too high and not worth it.

The last category, advertisements, is very valuable, since it provides insight into the type of information that has an impact on consumers’ behavior. Consumers who have a higher environmental concern will also react more positively to advertisements with environmental messages (Kim & Damhorst, 1998), where information about product-related attributes are key (Phau & Ong, 2007). It is also important to remember that explicit messages do impact consumers’ attitudes toward a brand (Hyllegard et al., 2012). This information is valuable for marketers, because it allows them to better tailor their advertising.

**Conclusion**

Fashion is part of our society and of who we are. Only in the last decade have sustainability and ethicity been introduced to the world of fashion (Joy et al., 2012). Literature shows that there has been an increased interest in sustainable fashion, but individuals are still not actively involved in purchasing eco-friendly apparel. This lack of action is described as an attitude-behavior gap, which represents a difference between individuals’ attitudes and their actual actions.

This practicum project’s main goal was to find literature on sustainable fashion consumption and identify variables that influence the purchase of sustainable fashion products. While it appears this topic has been researched over the last decade, the number of articles found on this topic was rather limited. This literature review (23 articles about sustainable fashion consumption) put forth many variables that are directly or indirectly related to sustainable
fashion consumption. These variables could be categorized into 5 main categories - attitude, knowledge, ethics, price, and advertisements – and help understand consumers’ behavior toward purchasing sustainable fashion products. The nomological network created around the main variable of this project, sustainable fashion consumption, is useful because it provides insight on the why of the attitude-behavior gap identified in consumers. It also helps understand how you can to reduce it, which is a key focus of most research articles on this topic. It was also interesting and intuitive to observe that these categories can’t be separated categorically, because they are interrelated and impact each other. This explains part of the complexity associated to predicting and understanding consumers’ behavior and attitudes toward certain brands or organizations.

The nomological network created around the sustainable fashion consumption helps companies target their corporate or/and marketing strategies. Based on the articles from the literature review, I was able to identify nine topics that companies should consider when creating their marketing strategies. The following section explains these strategies.
Section III: Marketing strategies that could help sustainable fashion companies promote their products

In addition to identifying variables that influence the purchase of sustainable fashion, the literature review also provided a list of marketing strategies that can be used by companies in the fashion industry. Sustainable companies can be essential drivers in promoting sustainable fashion and influence consumers’ purchasing behavior (Chan & Wong, 2002), especially if the information is included in their marketing strategy (Phau & Ong, 2007). Niinimaeki (2010) noted that, to make change, one must appeal to consumers’ desires, not guilt. It is important that companies identify marketing strategies that match consumers’ attitudes and concerns toward environmental issues with their purchasing behaviors. According to Gam (2011), there is still a lack in consumers’ understanding and knowledge about sustainable apparel. Despite an increased focus on green products by media, retailers, and governments, consumers still don’t feel comfortable or experienced enough to change their purchasing habits.

**Marketing Strategy 1: Satisfy your consumers’ expectations**

Gam’s (2010) research results show a positive relationship between consumers’ fashion and shopping orientation and the purchase of eco-friendly clothing. Consumers particularly interested in fashion and shopping are more likely to purchase new apparel products and attribute more value to being well dressed. Therefore, it is important for eco-designers, manufacturers, and apparel companies, to identify and try to satisfy consumers’ expectations related to fashion. Some expectations that Gam identifies include the fact that consumers want apparel that adapts as society changes, they want apparel that is not boring and they want apparel that helps them conform to their social affiliations (Gam 2010). Gam (2010) found that fashion leaders are not particularly interested in purchasing sustainable fashion, which could be mainly due to the fact that they don’t see eco-fashion as trendy or fashionable enough. Therefore, marketers and merchandisers have to create attractive apparel for fashion leaders, which would help spread among general consumers (Gam, 2010).
Marketing Strategy 2: Understand consumers’ environmental concerns

Gam (2011) identified a positive relationship between consumers’ concern about the environmental impacts of apparel production and their purchase of environmentally friendly clothes. Consumers who purchase sustainable apparel are aware of the impact of their purchases on the environment. In order to attract additional consumers, it is important for companies to understand consumers main environmental concerns by conducting market studies and assessments of different population segments and stages of their lives (Gam, 2011).

Marketing Strategy 3: Educate your consumers and let them know that they can make a difference

Based on the nomological network, we observed that consumer knowledge has a positive indirect impact on consumers’ behavior toward sustainable apparel purchasing. Kang et al. (2013) highlight the importance of letting consumers know about the impact of their contribution to the environment. Companies could use marketing strategies and promotions in such a way that consumers associate the products to their lifestyles or values (Kang, Liu, & Kim, 2013). Since consumers positively respond to environmental advertisement with explicit messages (Yan et al., 2012), in particular to product-related messages (Phau & Ong, 2007), it would be interesting to research how including information such as manufacturing practices, materials used, and other key factors may influence consumers’ to pay a price premium.

Based on Hyllegard et al.’s (2012) research results, consumers show a stronger positive attitude toward a brand when faced with advertisements containing explicit messages than they do toward a brand name. A possible explanation might be that sustainable apparel is a not very well understood topic; therefore, it is helpful to use explicit messages (rather than implicit messages), because they help consumers better understand the product’s complexity (Hyllegard et al., 2012).

Marketing Strategy 4: Collaborate with manufacturers

In order to satisfy consumers’ needs, wishes and values, companies and producers should collaborate with manufacturers to identify ethical features for their consumers/target market,
which may vary according to the industry and the product, into the design and production process of their products (Niinimaeki, 2010). By doing so, they can guarantee consumers’ attachment to the product, but also increase the product’s lifespan by increasing quality and slowing down the cycles of fashion (Niinimaeki, 2010).

**Marketing Strategy 5: Store- and product- related attributes – influence consumers at the point-of-sale**

Research indicated that investing time and resources in the stores that sell the products can increase sales, because it does affect customers’ positive or negative experience with a store. Stores or brands that focus on educated customers should be aware of their expectations, and tailor their strategies toward them (Paulins & Geistfeld, 2003).

Chan and Wong (2012) researched whether store or product-related attributes impact consumers’ sustainable purchasing habits. Their results didn’t show any significance between product-related attributes and consumers’ purchasing habits for sustainable fashion, which means that consumers’ purchasing behavior for sustainable apparel is not impacted by product-attributes, such as quality, product, design, etc. of a product (Chan & Wong, 2002). But, the authors identified a positive relationship with store-related attributes. Consumers set expectations based on the store’s performance and perception (Bloemer & Oderkerken-Schroeder, 2002).

Similar research was done for the food industry, where they identified positive relationships of product- and store-related attributes on the consumption of such products (Bloemer & Oderkerken-Schroeder, 2002). Also, product-related attributes are considered precedents of store-related attributes, because consumers who purchase a certain product in a store will associate that product experience to the store (Bloemer & Oderkerken-Schroeder, 2002). According to Bloemer and Odekerken-Schroeder (2002), consumers’ trust and commitment are considered mediators of their store satisfaction and store loyalty. A consumer who is committed to a store is very likely to keep up and maintain the existing relationship with that retailer (Bloemer & Oderkerken-Schroeder, 2002). This connection between trust and commitment is extremely important, which is why companies should focus on creating and maintaining this with their customers.
The same logic can be applied to the sales of brands that are only sold in specific stores, so-called ‘store-brands’ (Semeijn, Riel, & Ambrosini, 2004). This allows retailers for example to carry unique store brands, and allows them to have higher margins in comparison with mainstream brands (Semeijn, Riel, & Ambrosini, 2004). Generally, a good brand image is associated with the store’s physical environment as well as its service quality, which positively impacts the store’s reputation, the sold brands, as well as consumers’ attitudes toward the brand. Some of the main store factors (depending on the type of store) that are determinant in store environments are: layout, merchandise, and service (Bloemer & Oderkerken-Schroeder, 2002).

Paulins and Geistfeld (2003) also researched how consumers’ perceptions about retail store attributes can impact consumers’ preference about a store. The four variables identified as important to consumers are (by descending order): type of clothing desired in stock, outside store appearance, shopping hours and advertising. The first variable -- type of clothing desired in stock -- implies that stores offer an appealing merchandise selection, because otherwise, the store can lose customers. The second factor -- outside store appearance -- is also important. Customers will not be tempted by a store that is not physically appealing to them. Research shows that individuals’ age and education play a role as well. More educated customers pay more attention to attributes, such as advertising, return policy, sales assistance, and parking (Paulins & Geistfeld, 2003). Another interesting observation is that customers apply these type of factors less strictly when it comes to discount stores. Reasonable prices can outbalance some of the store attributes, especially for store selling designer brands (Paulins & Geistfeld, 2003).

Goworek, Fisher, Cooper, Woodward, & Hiller (2012) found that information at the point-of-sale has a significant impact on consumers, specially with young consumers. Based on their research, they recommend retailers to act more sustainably, because consumers’ behavior can be altered if provided information about this topic.

**Marketing Strategy 6: Socially responsible information on hang tags**

There is a positive relationship between apparel hang tags and consumers’ purchasing behavior (Hyllegard et al., 2012). Promotional communication strategies, such information about the product on hang tags help to inform consumers about socially responsible practices and lead to positive behavior toward the purchase of sustainable apparel (Hyllegard et al., 2012).
According to Hyllegard et al. (2012), related research found that consumers increasingly use hang tags to learn about the product. There is also a gender difference: women tend to be more attentive to information on hang tags than men. This information is particularly useful for businesses specialized on female products. Research shows that women mostly consider the following information on hang tags (by descending order): fiber content, care instructions, brand name, construction methods, and socially responsible business practices.

Individuals also pay particular attention to the display of the information on the hang tags. This is also an option that should be looked into, since it can impact consumers’ purchasing behavior (Hyllegard et al., 2012). According to Hyllegard et al. (2012), it is recommended to use hang tags with intrinsic (appearance, quality, color, etc.), extrinsic (brand name, production location, etc.) product information, as well as information about the company’s business practices.

Printing companies recognized this as a good business opportunity, and started offering more and sustainable hang tags options, such as the recycling of old hang tags, or using the back side of the hang tags to include information about the company’s mission and objectives, especially if the company is eco-friendly (PS Print).

Instead of considering hangtags as a requirement to provide information about a product, it can be used as a relatively cheap source of advertisement. If a business can be innovative and be different, it will catch individuals’ attention.

Marketing Strategy 7: Use social responsibility as a differentiation tool

Nowadays, companies are not only expected to provide high quality products and excellent customer service, they also have to follow a certain degree of morality (Iwanow, McEachern, & Jeffrey, 2005). Companies can take this as an additional difficulty, or they can market ethics and use it to their advantage by turning it into a differentiation tool (Iwanow, McEachern, & Jeffrey, 2005). Morality and profits are compatible, because it represents a commercial opportunity (Iwanow, McEachern, & Jeffrey, 2005).
The key objective is to position your brand, so that consumers associate your brand with sustainability. In order to guarantee a certain degree of success, it is essential to increase consumers’ knowledge and awareness of the products — What makes your products special and/or different (codes of conduct, resources used, child labor, fair trade, etc.)? According to Iwanow, McEachern, and Jeffrey (2005), the best way to promote a company’s commitment to sustainability is by using its codes of conduct — What is the company doing, and what is it doing better than its competitors?

**Marketing Strategy 8: Reduce the price-gap between ethical apparel and fast fashion**

Sudbury and Boeltner (2011) interviewed consumers to identify the reasons behind attitude-behavior gaps when it comes to purchasing sustainable apparel. The price premium appears to be a key variable in their purchasing decisions, which is why Sudbury and Boeltner recommend a reduction in the price of ethical fashion.

**Marketing Strategy 9: Target and encourage purchasing by fashion leaders**

Fashion leaders play a key role in fashion because of their power of fashion diffusion (Gam, 2011). Individuals who enjoy shopping and being well-dressed are also more likely to purchase environmentally friendly clothing (Gam, 2011). Therefore, marketers should pay particular attention to that consumer segment, by increasing their product offers and services. Also, since knowledge and information about sustainable fashion is a key variable in increasing sustainable purchasing of fashion consumption, companies need to develop more promotional and educational materials that would be especially relevant to consumers that are considered leaders. (Gam, 2011). Since Brosdahl and Carpenter (2011) found that students majoring in apparel design, product development or textiles are more concerned about the environment than students with other majors, apparel one can consider reaching these audiences, especially while still in school.
Section IV: Practicum Summary

For this practicum project, I worked with LUR, a sustainable fashion company located in Cincinnati, OH, because I have developed a particular interest in fashion and its impact on the environment (Appendix II). Given my experience with carbon footprints, my initial project was to help calculate LUR’s carbon footprint (Appendix III). After creating a survey instrument and translating it into Spanish, it was determined that collecting the data from the off-shore companies would not be possible in this time frame. Therefore, the survey was transferred to an online survey and is available for the client when they are able to gather the data.

The practicum project’s focus shifted toward understanding consumers’ behavior, more specifically consumers who purchase or tend to purchase sustainable apparel. The focus of the project then shifted to conducting a rather extensive literature review about articles (Appendix I) that specifically study sustainable fashion consumption, and identify variables that are directly or indirectly connected to this main variable. This resulted in a nomological/theoretical network composed of five main sections that can be used for future research.

Lessons learned

One of the main lessons that I learned from this practicum project is a project’s results can change, despite all your efforts to stay well organized. It is important to define the scope of the project from the beginning, which does not mean that everything will go smoothly. The scope of this project had been clearly defined since the beginning of the academic year 2013-2014, but the data collection process became challenging. This was mainly due to the complexity of collecting data from a manufacturing facility that doesn’t manufacture only products for LUR. LUR’s manufacturing location in Guatemala is not owned by LUR, and is not restricted to manufacturing their products only, which makes the data collection process very complex.

Despite problems in the data collection process itself, I was able to find a free carbon footprint tool, the Carbon MAP, and provide my clients with information that they can use for the calculation of their future carbon footprint. I created an online survey with Qualtrics that LUR can use to send out to their manufacturing locations to collect the data necessary for a carbon footprint (Appendix IV). It was interesting to observe that sustainable fashion companies
have not been calculating their carbon footprint. This might be due to the complexity of the supply chain of apparel, or because there are no specific calculation tools that they could use.

The master’s in environmental science allowed me to follow my interests and do a project in relation with fashion. I never thought that it would be possible to combine environmental science with marketing, fashion, problem-solving and project management. Several classes helped me accomplish this task. Project Management helped me better understand the problems that you come across when working on a project with real clients, such as human errors, time constraint, scope creep, and limited resources. I was able to apply these concepts to my practicum project and better understand why the class is a core requirement. People who work on several of these projects at the same time have to be organized and very well structured in order to work around the limitations I had to face.

Several other classes also helped me enhance my professional skills. Environmental Problem Solving helped me when I had to review articles and identify those that were going to be essential for this project. It was important to be able to filter the information that I needed. Only later did I realize that the professional service project (PSP) taught me a lot. During this project, I learned how to work with a team of people, my clients, and my committee members.

As an international student with an economics and business background, my English writing and reading skills improved immensely. Thanks to memos, papers, and reports that we are required to write in all our classes, I could improve my English writing and communication skills over a two-year period. This program and practicum project has been a challenging and positive experience that I will certainly use in my professional career.
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APPENDICES
## Appendix I: List of relevant articles

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<tr>
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<td>Marylyn Carrigan, Isabelle Szmigin and Joanne Wright</td>
<td>Shopping for a better world? An interpretive study of the potential for ethical consumption within the older market</td>
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<td>Consumers' awareness of sustainable fashion</td>
<td>Marketing Management Journal</td>
<td>Fall 2013</td>
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<td>pp.134-147</td>
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Appendix II: LUR Apparel Inc.

LUR apparel, a sustainable fashion company, was created in 2012 with a special focus on sustainability. Mark Heiman and Alan Brown, co-founders of LUR, created the company headquartered in Cincinnati, Ohio, because they believe that the apparel industry can positively impact our planet. The company’s commitment is clear “Beautiful for you. Kind to the planet.” LUR apparel’s target audience is women of all ages committed to people and planet (LUR, 2013), and its collection items range from tops, dresses, jackets, and pants, to accessories.

The concept of triple bottom line (TBL), also called the 3Ps, was first introduced by J. Elkington in 1994. Elkington created a consultancy company, SustainAbility, which focused on three different bottom lines to assess a corporation’s performance – corporate profit, people, and planet. Including the 3Ps in a company’s performance assessment provides a more accurate scorecard of the full cost and benefits involved in doing business. In addition to economic profitability, socially and environmentally responsible companies are proactive by incorporating adequate strategies into their operations, hence becoming sustainable (The Economist, 2009).

As a sustainable company, LUR emphasizes on its triple bottom line as well, and goes beyond measuring profit or return on investment, because people, planet and prosperity are equally important to them. (LUR, 2013) In the textile industry, the manufacturing process has non-negligible environmental and social impacts. These are worsening daily and can’t be ignored by any company claimed sustainable (Claudio, 2007).

The manufacturing process of apparel is very water intensive and uses a significant amount of chemicals and natural resources. Textile manufacturing is considered one of the largest consumers and polluters of water worldwide (The Guardian).

Companies like LUR work hard to implement practices to reduce by-products incurred by the manufacturing process as much as possible. A main differentiation factor of LUR is the product itself. The company’s apparel is made from 100% recycled materials (55% pre-consumer cotton scraps recycled into cotton, 45% post-consumer plastic bottles recycled into polyester fiber). LUR goes beyond organic, since it minimizes the necessity for new fibers in its manufacturing process (LUR, 2012). In addition to producing yarn from 100% recycled materials, the technology used, K2N Technology, uses no harmful dyes, because it uses the dyes already present in the fibers they recycle. This technology also reduces the water usage and
energy consumption during the finishing process\textsuperscript{1} by almost 70\% compared to traditional manufacturing methods (LUR, 2013).

LUR’s 100\% recycled materials are made of cotton scraps and plastic bottles. Their technology does not only reduce energy and water consumption during the production process; it also reduces the demand for cotton, since it uses cotton scraps from commercial apparel and textile facilities (LUR, 2013) that would otherwise probably end up in landfills. To get a better understanding of the positive effects their type of technology has on the environment and society, it is important to take a closer look at cotton crops, harvesting and manufacturing. Even though it is one of the most popular clothing fibers worldwide, it is also considered one of the dirtiest crops (Organic trade association, 2011). “Cotton covers 2.5\% of the world’s cultivated land yet uses 16\% of the world’s insecticides, more than any other single major crop. […] The average acre of California cotton grown in 1995 received some 300 pounds of synthetic fertilizers or 1/3 pound of fertilizer to raise every pound of cotton. Synthetic fertilizers have been found to contaminate drinking wells in farm communities and pose other long-term threats to farm land.” These environmental impacts lead to health problems for animals and humans (EcoChoices Natural Living Store - An EcoPlanet Internet Store). The harvest process can already be very polluting, and the processing and manufacturing process result in additional environmental impacts.

LUR does not only focus on improving its production technology, it also actively invests in guiding and helping its employees by creating initiatives destined to create opportunities for communities to get out of poverty.

In 2014, and despite being a young company, LUR was featured in several magazines like Ethical Fashion Academy, Organic Spa Magazine, Cincinnati Magazine, and others, showing that transparency and innovation lead to recognition and interest in society.

\textsuperscript{1} The finishing process, which is part of the manufacturing process of fiber, fabric or clothes, gives the functional properties to the fiber or fabric using different types of physical and chemical treatments. (New Cloth Market)
Appendix III: Greenhouse Gas Emissions Inventory for LUR Apparel

What is a GHG Emissions Inventory?

“A greenhouse gas inventory is an accounting of greenhouse gases (GHGs) emitted to or removed from the atmosphere over a period of time” (US EPA, 2014). A GHG emissions inventory is divided into three emissions sections, called scopes (scope 1, scope 2, and scope 3). For an inventory to be recognized as such, companies need to complete at least scopes 1 and 2. Scope 1 emissions, also called direct emissions, are sources that are owned or operated by the company and factory. It mainly encompasses stationary sources, such as on-site fuel combustion and on-site steam generation facilities. Scope 2 emissions, also called indirect emissions, are emissions from sources that are neither owned nor operated by the company. It mostly represents purchased electricity from a provider. Scope 3 emissions are emissions that are neither owned nor operated by the company, but financed or otherwise linked to the company. Scope 3 emissions include emissions from travel, paper procurement, waste, etc. (US EPA, 2012).

Develop a GHG Emissions Inventory For LUR- Methods

Developing a GHG inventory is a lot of work for any company. Many companies don’t necessarily collect data of their supply chain operations, which makes it time and labor intensive to assess the company’s emissions. Nevertheless, it enables companies to be more transparent and assess their environmental performance. The results obtained help companies identify the main emission sources of their operations, create mitigation strategies and track progress (US EPA, 2014).

LUR considers this an opportunity to assess the company’s operations environmental impact. Its K2N technology requires no natural resources, therefore reducing its environmental impact. This project was particularly challenging, because of the limited number of free available tools in this industry.
Tool - The Carbon MAP
One of the tools available to calculate LUR’s GHG inventory is the Carbon MAP (Management and Analysis Platform), a web-based tool created by the Clean Air-Cool Planet institution, and used by thousands of institutions, in the U.S. and abroad (Loftus, 2014).

The Carbon MAP was not designed specifically for fashion companies. Therefore, the first step of the process consisted in trying to apply the Carbon MAP’s features to this specific case. The textile industry is characterized by a complex production network, which generally goes beyond national borders (MJC2, 2013).

For LUR’s GHG inventory, it is impossible to get concrete information from the bottom end of the pre-consumer cotton scraps and post-consumer plastic bottles used in the production of its fibers. This would necessitate the calculation of the life-cycle of the cotton scraps they receive from commercial factories. Therefore, it was necessary to understand the limits of the calculation tool. Electronic correspondence with Clean Air – Cool Planet and discussions on how to adapt the tool (Carbon MAP), made clear that the Carbon MAP could only provide an approximation of the company’s emissions, tracing the emissions that can be directly attributed to LUR (emitted from sources that are owned or controlled by LUR apparel) and indirect emissions (emitted from sources that are not owned or operated by LUR apparel, but directly linked to the company’s energy consumption) (Clean Air - Cool Planet, 2013).

LUR’s textile factories are located in Guatemala, Central America, but LUR doesn’t have ownership over these plants. In addition, these plants’ resources are not entirely used for the manufacturing of LUR apparel, which adds complexity to the data collection process.

To start the data collection process, I created a questionnaire and an online survey that will be filled out by the factory supervisors. The questionnaire and survey were also translated into Spanish to make it more accessible. Mark Heiman, the co-founder of LUR, will go on-site to oversee the data collection to the best of his abilities.

The short timeline for this project (academic year 2013-2014) didn’t make it possible to complete the company’s GHG inventory. Nevertheless, LUR is committed to stay on that track of transparency and improvement.
Results
GHG inventories have not become a major marketing tool used in the fashion industry. This might be mainly due to the complexity of this industry.

Recommendations
GHG inventories are extremely valuable. They do not only serve as comparison or promotional tool; it allows a company to be more transparent and get a better understanding of the different activities within its supply chain. I recommend LUR to plan the calculation of a GHG inventory by improving its data collection process in its Guatemalan factories.

Since LUR is a small and young company, it would be costly to hire a third party to assess its emissions. It was a wise decision to understand the steps that are necessary to calculate its emissions, since it will help to oversee future data tracking and data collection processes. This project provided the company with information about the type of data necessary to assess its emissions, as well as with a calculation tool for the next steps of this project directed toward sustainability.
Appendix IV: Questionnaire – Tulong LLC – Carbon Footprint

Tulong LLC is a proactive sustainable company working toward reducing its carbon footprint and committed to benefitting people and the planet in its high quality production process.

Therefore, Tulong LLC has decided to assess its carbon footprint, which consists in calculating the amount of carbon dioxide emissions and other carbon compounds emitted by the company through their production process.

Calculating a carbon footprint is a tedious and time-consuming but valuable task. The main part of it being the data collection process: filling out this questionnaire is very important and valuable.

Once we receive your data, we will input it into the Campus Carbon Calculator, the tool used for calculating the carbon footprint.

This questionnaire is composed of 4 important sections, which need to be filled out appropriately. The questionnaire seems long, but most of it consists in circling the right answer and/or doesn’t apply to you. Please read it thoroughly!

Once again, we want to remind you that this is a very tedious and time-consuming task, but extremely important and will allow Tulong LLC to calculate its carbon footprint and compare it other comparable companies.

If you have any questions or doubts and need more information, please don’t hesitate to contact Luisa Quitalo at Quitall@miamioh.edu or call +1 (513) 461 1435

Please fill out the questionnaire by January 15th, 2014, the latest.

Without you this would not be possible – thank you so much!

Tulong LLC
UNDERSTANDING THIS QUESTIONNAIRE – PRELIMINARY EXPLANATIONS

NOT ALL THE QUESTIONS WILL APPLY TO YOUR COMPANY/FACTORY. PLEASE READ THE FOLLOWING GUIDELINES CAREFULLY.

Important:
If you leave sections blank, please use NA (Not Applicable) if it is because the question doesn't apply to your company/factory.
If you leave sections blank because you don't know the numbers, please mention it in the answer.

HOW TO ANSWER TO THE QUESTIONS - EXAMPLE:
Percentage of production attributed to Tulong LLC
Which percentage of your total production can be attributed to the production for Tulong LLC?

Answer: __XXXXXXXXXX_____

What are the units of measurement? (please circle the correct unit)
% per day - % per week - % per month
Section 1 – We are trying to evaluate how much energy is used to produce Tulong products. We recognize that you also produce additional products at your factory. In order for us to calculate the amount of energy attributed to Tulong products, this first section asks how much of your total factory/company production (per day, week, month) is produced for Tulong LLC? Provide us with a number that is easiest for you – please specify.

Percentage of production attributed to Tulong LLC

1. What percentage of your total production can be attributed to the production for Tulong LLC?

Answer: __________________

What are the units of measurement?

% per day - % per week - % per month - other (please specify) ______________
Section 2 – Provide data from January 1st, 2012 - December 31st, 2012

Section 2 – Please answer to all the questions (questions 2, 3, 4, and 5).

POPULATION

2. How many full-time workers do you employ at your facility?  
   Answer: __________________

3. How many part-time workers do you employ at your facility?  
   Answer: __________________

BUDGET

4. What is your total operating budget (in $)?  
   Answer: __________________

   a. How much of the total operating budget can be directly attributed to energy ($ or %)?  
      Answer: __________________

PHYSICAL SPACE

5. What is your total space?  
   Answer: __________________

   What is the unit of measurement? (please circle the unit that applies)  
   Gross square feet - Gross square meters
**Section 3** – Provide data from January 1\(^{st}\), 2012 - December 31\(^{st}\), 2012

**SECTION 3** - This section focuses on energy that is produced on site. **If you produce your own electricity and your own heat on site, this is called “cogeneration.”**

**Question 6:** Do you have a cogeneration plant on-site? This means - do you produce your own electricity and heat on site?

*If yes* → Which fuels do you use in your cogeneration plant? Circle the ones that apply.

*If no* → skip to Section 3 – question 8.

**Question 8:** Do you use other sources on-site to produce heat, cooling and/or electricity?

*If yes* → circle the fuels that apply

*If no* → skip to Section 3 – question 9.

---

**Cogeneration**

6. Do you have a cogeneration plant on-site? *(please circle correct answer)*

   Yes  
   No

**If yes** - Which fuels do you use for the cogeneration plant? *(circle all that apply + circle units of measurement)*

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Yes</th>
<th>No</th>
<th>if yes, please circle the unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Residual oil</td>
<td>___</td>
<td>___</td>
<td>gallons liters mmbtu</td>
</tr>
<tr>
<td>b. Distillate oil</td>
<td>___</td>
<td>___</td>
<td>gallons liters mmbtu</td>
</tr>
<tr>
<td>c. Natural gas</td>
<td>___</td>
<td>___</td>
<td>mmbtu therm CCF</td>
</tr>
<tr>
<td>d. LPG (propane)</td>
<td>___</td>
<td>___</td>
<td>gallons liters mmbtu CF</td>
</tr>
<tr>
<td>e. Coal (steam coal)</td>
<td>___</td>
<td>___</td>
<td>mmbtu short tons pounds metric tons</td>
</tr>
<tr>
<td>f. Incinerated waste</td>
<td>___</td>
<td>___</td>
<td>mmbtu short tons pounds metric tons</td>
</tr>
<tr>
<td>g. Wood chips</td>
<td>___</td>
<td>___</td>
<td>mmbtu short tons pounds metric tons</td>
</tr>
<tr>
<td>h. Wood pellets</td>
<td>___</td>
<td>___</td>
<td>mmbtu short tons pounds metric tons</td>
</tr>
<tr>
<td>i. Grass pellets</td>
<td>___</td>
<td>___</td>
<td>mmbtu short tons pounds metric tons</td>
</tr>
</tbody>
</table>
j. Residual BioHeat ___ ___ gallons liters mmbtu
k. Distillate BioHeat ___ ___ gallons liters mmbtu
l. Other (please specify) _______________________
   What are the units of measurement? _______________________

7. If you have a cogeneration plant on site, please answer the following questions: (Circle unit of measurement that apply)

a. What is your electric output? ________________________ MMBTU - kWh
b. What is your electric efficiency? _____________________ %
c. What is your steam output? _________________________ MMBTU - Pounds - Therms
d. What is your steam efficiency? _____________________ %

Other on-site stationary sources: If you also burn other fuels on site for heating, cooling or electricity generation (excluding vehicle fleet) please answer question 8.

8. Which other fuel(s) are burned on-site for heating, cooling and/or electricity generation? (excluding vehicle fleet) (circle all that those apply + circle units of measurement)

   a. Coal Answer: ________________ per year
      What are the units of measurement? MMBTU Short tons Pounds Metric Tons

   b. Residual oil Answer: ________________ per year
      What are the units of measurement? Gallons Liters MMBTU
c. Distillate oil
Answer: __________________________ per year

What are the units of measurement? Gallons Liters MMBTU

d. Natural gas
Answer: __________________________ per year

What are the units of measurement? MMBTU Therm CCF

e. LPG (propane)
Answer: __________________________ per year

What are the units of measurement? Gallons Liters MMBTU CF

f. Incinerated waste
Answer: __________________________ per year

What are the units of measurement? MMBTU Short tons Pounds Metric tons

g. Wood chips
Answer: __________________________ per year

What are the units of measurement? MMBTU Short tons Pounds Metric tons

h. Wood pellets
Answer: __________________________ per year

What are the units of measurement? MMBTU Short tons Pounds Metric tons

i. Grass pellets
Answer: __________________________ per year

What are the units of measurement? MMBTU Short tons Pounds Metric tons

j. Residual BioHeat
Answer: __________________________ per year

What are the units of measurement? Gallons Liters MMBTU

k. Distillate BioHeat
Answer: __________________________ per year

What are the units of measurement? Gallons Liters MMBTU

l. Solar, electricity generated on site. Answer: __________________________ per year
What are the units of measurement? MMBTU kWh

m. Solar, thermal  Answer: ____________ per year

What are the units of measurement? MMBTU other (___________)

n. Wind, wind generated on site  Answer: ____________ per year

What are the units of measurement? MMBTU kWh

o. Geothermal  Answer: ____________ per year

What are the units of measurement? MMBTU other (___________)

p. Other (please specify) __________________________

Fleet: If you use vehicles, please answer question 9. This includes vehicles traveling outside the plant as well as vehicles, such as forklifts, used in or around the facility.

9. Fuel used for the vehicles owned or leased by the company:

(includes conventional vehicles (gasoline and diesel) + alternative fuel vehicles (B100, B20, B5, compressed natural gas (CNG), E85, electric and hydrogen). Also include vehicles used within the company/factory)

a. Gasoline  Answer: ____________ per year

What are the units of measurement? Gallons — Liters

b. Diesel  Answer: ____________ per year

What are the units of measurement? Gallons — Liters
c. Compressed natural gas  
Answer: ____________________ per year
What are the units of measurement?  MMBTU – CCF – Therms

d. E85  
Answer: ____________________ per year
What are the units of measurement?  Gallons – Liters

e. B5  
Answer: ____________________ per year
What are the units of measurement?  Gallons – Liters

f. B20  
Answer: ____________________ per year
What are the units of measurement?  Gallons – Liters

g. B100  
Answer: ____________________ per year
What are the units of measurement?  Gallons – Liters

h. Hydrogen  
Answer: ____________________ per year
What are the units of measurement?  MMBTU

i. Electric Fleet  
Answer: ____________________ per year
What are the units of measurement?  MMBTU – kWh

j. Other Fleet Fuel (please specify)  
Answer: ____________________
Section 4 – Provide data from January 1st, 2012 - December 31st, 2012

SECTION 4

Question 10: Do you purchase electricity from a provider?
If yes → answer to question 10: How much electricity do you purchase?
If no → skip to question 11.

Question 11: Do you purchase steam from a provider?
If yes → answer to question 11: How much steam do you purchase?
If no → skip question 11.

Question 12: Do you purchase chilled water from a provider?
If yes → answer to question 12: How much chilled water do you purchase?
If no → skip question 12

Purchased Electricity

10. How much electricity do you purchase? (please circle units that apply)

Answer: __________________ per day - per week - per month - per year

What are the units of measurement? kWh - MMBTU

Steam

11. How much steam do you purchase? (please circle units that apply)

Answer: __________________ per day - per week - per month - per year

What are the units of measurement? MMBTU - Pounds - Therms
Chilled water

12. How much chilled water do you purchase? (please circle units that apply)

Answer: __________________ per day - per week - per month - per year

What are the units of measurement? MMBTU - Ton hours

_________________________________________

Thank you for your time!

If you have any questions, don't hesitate to contact Luisa Quitalo via email Quitall@miamioh.edu or call +1 (513) - 461 - 1435.