INVESTIGATING THE INFLUENCE OF PERCEIVED CHARACTERISTICS OF
INNOVATION ON THE RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDES AND
PURCHASE INTENTION TOWARDS ECO-CONSCIOUS APPAREL

by

GAYATHRI KANDIRAJU

M.S., Kansas State University, 2006

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Apparel, Textiles, and Interior Design
College of Human Ecology

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Abstract

The relationship between knowledge, attitudes and behavior has been a subject of interest for researchers for several decades in various fields of study. However, an inconsistency has been found from one study to another with literature showing inconclusive and inconsistent results regarding the relationship between knowledge, attitudes and behavior in general and purchase of eco-conscious apparel in particular. Literature also found perceived characteristics of innovation (PCI) to significantly influencing innovation adoption. However, research investigating the influence of eco-conscious apparel knowledge (EAK) and eco-conscious apparel attitudes (EAA) on intention to purchase eco-conscious apparel (IPEA) that includes PCI has not been conducted in any previously published studies. Therefore, the purpose of this study was to investigate the influential relationship between EAK-EAA-IPEA to understand if including PCI strengthens the inconsistent link between knowledge, attitudes and behavior as well as enhances the predictability of IPEA.

The model of stages in the innovation-decision process developed by Roger's (1983) in the diffusion of innovation theory was used as a theoretical framework for developing the model of innovation-decision process for eco-conscious apparel. Specifically, the three product characteristics used in this current study were based on the PCI (i.e., complexity, compatibility and relative advantage) explained by Rogers (1983) in his model. Two objectives were developed and tested using six research questions and pertinent hypotheses. The research relied on quantitative analysis of responses from 592 respondents to an online survey with eco-conscious knowledge, attitude and behavior questions pertaining eco-conscious apparel products.

Hierarchical regression analysis, t-test and correlation analysis reveal that, inclusion of PCI significantly strengthened relationship between EAK-EAA-IPEA and also enhanced the predictability of IPEA; the ability to predict IPEA as well as strength of the link between EAK-EAA-IPEA was greater when more information was provided about eco-conscious apparel than less information; respondents have limited EAK; EAK was not a good predictor of IPEA; EAA was found to significantly predict IPEA; highly innovativerespondents perceive eco-conscious apparel less complex and highly compatible and are more likely to purchase eco-conscious apparel; all three PCI were found to significantly predict IPEA; demographic variables were found to be related to only certain variables in this study.

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Dedication

This dissertation is dedicated to all those, who with their behavior, make contributions either big or small and direct or indirect toward conserving and making our planet a better place to live for future generations.

Chapter 1 - Introduction

As quoted by John F. Kennedy, "Change is the law of life," change is everywhere around us. Everything changes and so has our earth since its inception. Stern, Young and Druckman (1991) indicated that, "The earth has entered a period of hydrological, climatological, and biological change that differs from previous episodes of global change in the extent to which it is human in origin" (p. 1). According to the authors every human activity has some kind of influence on the global environment. As indicated by researchers in various fields studying interaction of humans with the environment, human activities are influenced by the complex driving forces including social, economic, political, technological and cultural variables. Though change is natural and inevitable, the current change in our ecological systems created by human footprints has resulted in some irreversible, negative effects on the global environment.

Over the last few decades a number of environmental problems have been identified as threatening to human existence. In its fourth assessment report, the Intergovernmental Panel on Climate Change stated that many of these environmental problems, such as global warming, are very likely the results of human behaviors and not natural causes (Pachauri & Reisinger, 2007). Gardner and Stern (2002) stated that "For the first time in history, human activity is beginning to have a major negative effect on global…. environmental systems" (p. 3). Natural resources have been depleted, the ozone layer has been damaged, air and water have been polluted, temperatures are rising, species are becoming extinct, and the land available for agricultural and other purposes has decreased (Stern, Young, & Druckman, 1991).

Two major causes credited for the current environmental changes are overpopulation and overconsumption (Baltz, 1999). Global population surpassed 7 billion in 2011 and is increasing

exponentially by 1.2% each year, resulting in a net addition of more than 70 million people per year (Harris, & Roach, 2013). The world population is expected to reach 9.2 billion by 2050 (United Nations Population Fund, 2008). The relationship between population and consumption is very direct and both are highly interdependent. As the population increases, so does the demand for products, resulting in increased production and consumption. If the issues related to current unsustainable growth patterns of consumption and population are not addressed immediately, it could result in irreparable damage to the environment.

Advocates of technology-focused solutions to environmental issues argue that continuous technological innovations and intelligent design solutions have made it possible to reduce the depletion of ecological resources and emissions of toxic chemicals while continuously meeting the demand for increased production and consumption that has resulted from increasing population. However, in reality a pure technological approach to reduce human impact on the environment has failed because people's increasing scale of consumption has outpaced these technological improvements. For example, a study by Schor (2005) stated that the purchase of more and larger vehicles and more miles driven per vehicle have outweighed technological innovation of cleaner and green cars. Similarly, technological improvements in residential energy encourages people to purchase larger homes and more energy-using appliances, resulting in increased total residential energy use thus making the benefit of technological improvement ineffective. These examples suggest that technological changes, while necessary, are not sufficient for reducing environmental impact of human behaviors. In other words, though reducing environmental impact through technological advancement seems promising, it is not adequate in itself to curtail the current rate of environmental degradation. Since, individual and family consumption habits are also a major contributor to environmental degradation, it is

important to better understand influences on such behavior which will lead into the problem of this study.

Background of the Study

The 2004 Living Planet Report stated that by 2001, people's consumption of natural resources had already exceeded global bio-capacity by 21% (Loh, & Wackernagel, 2004). Global overshooting, that is, "spending nature's capital faster than it is being regenerated" (Loh, & Wackernagel, 2004. p. 10) started in the 1980s and has been growing ever since. The tendency of people to over-consume is one of the significant contributors toward environmental degradation and depletion of natural resources. As stated by consumption critic Juliet Schor and economist Clive Hamilton, excessive consumption is increasing because as people become richer, they tend to spend more on goods that they do not use (Hamilton, 2003; Schor, 2005). This especially holds true with regard to consumers from affluent developed countries which account for only 20% of world population, but whom consume about 80% of the world's resources (Buchholz, 1998; Tukker et al., 2008). For example, when comparing consumption patterns of people in developed countries with those in developing countries, on an average, a North American consumes 90 kg of natural resources each day, a European 45 kg, and someone in developing countries in Asia or Africa consumes an average of 14kgs and 10 kg of natural resources per day respectively (Giljum et al., 2009). Overconsumption not only results in the depletion of renewable and nonrenewable resources, but also creates an insurmountable amount of solid waste while also polluting air, water and land.

According to the United States Environmental Protection Agency (EPA) the total amount of solid waste generated by people in the United States in 2012 was 251 million tons. The EPA (2014) reported that around 34.5% of the total amount of solid waste is recycled and composted

while the remaining waste of 65.5% is discarded in landfills. The EPA (2014) further stated that there are 2300 landfills in the United States, which are reaching their saturation point. The waste generated in 2012 in the US comprise 28% of yard trimmings and food waste, 27% of paper and paperboard, 13% of plastics, 9% of metals, 9% of rubber, leather, and textiles, 6% of wood, 5% of glass and 3% of miscellaneous waste. On average, in 2012, per capita generation of waste per day in the US accounted for 4.38 pounds in which 1.51 pounds were recycled and composted while the remaining 2.87 pounds was discarded in landfills (EPA, 2014).

Not only is solid waste generated through production, distribution, consumption and discard of goods, but the production and consumption system also contributes to greenhouse gas (GHG) emissions. In general, GHGs trap solar energy in the atmosphere by acting like a blanket around the earth causing it to retain some of the sun's heat. Although a balanced amount of GHGs in the atmosphere is important for survival of life on earth, an increased concentration of GHG is detrimental to the planet's ecosystem including plant and animal population, human beings and the biodiversity. GHGs include naturally occurring gases like water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide and ozone as well as halogenated substances like hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). While some GHG occur naturally, others are the result from human activities. Emissions of GHG from human activities worldwide increased by 26% from 1990 to 2005, and in the United States alone, it increased by 10% from 1990 to 2010. Some of the human activities that result in a majority of GHG emissions include burning fossil fuels to produce energy, generating solid waste, industrial activities, transportation, livestock and agricultural practices, deforestation and soil degradation (EPA, 2014).

As emissions of GHG from human activities increase, the effects of these gases on the earth's atmosphere increase, with potential to cause significant changes in the climate. Climate change refers to any major change in the 'measures of climate' such as temperature, wind patterns, precipitations etc. that lasts for a long period of time. In a recently published report on climate change, "The National Climate Assessment," it was mentioned "climate change once considered an issue for a distant future, has moved firmly into the present," (Melillo, Richmond, & Yohe, 2014, p. 1). The report further stated that,

> Americans are noticing changes all around them. Summers are longer and hotter, and periods of extreme heat last longer than any living American has ever experienced. Winters are generally shorter and warmer. Rain comes in heavier downpours, though in many regions there are longer dry spells in between. (p. 1)

Over the past century, Earth's average temperature on an average has risen by 1.4°F and is projected to increase another 2 to 11.5°F over the next 100 years (EPA, 2014). While the average temperature in the US since 1895 has increased by around 1.5°F (0.8C), about 80% of that increase have taken place since 1980 (Melillo, Richmond, & Yohe, 2014). Although this increase seems small, these changes in average temperature can result in potentially large and dangerous alterations in global climate and weather patterns such as record high temperatures, shift in rain and snowfall patterns and heavy rainstorms that are already being experienced by communities, national economies and ecosystems (EPA, 2014).

While the change in climate is unavoidable and will not be easily reversed, altering human activities by making choices resulting in reduced GHG emissions are in the best interest of human beings within the current situation. One method of reducing GHG emissions is by choosing low-levels of resource consumption while reducing the levels of solid waste generation.

To alter human activities to such an extent people have to take extreme measures that can bring a change in their customary life-styles while adopting conservation practices. People have to develop patterns of consumption that would reduce resource consumption as well as solid waste generated compared to what is being practiced today. For the people to bring about this change in their life-style, they have to make wise decisions about the products they consume and consumer behavior practices they adopt. One such product, apparel, is among the three basic needs, for the very existence of human beings and also has a significant impact on environmental degradation.

Increasing population coupled with quick changing fashions resulted in a greater demand for apparel products. While apparel industry is growing, the environmental damage created by the industry is also growing. The damage created by materials and processes used in the apparel industry includes, but is not limited to, climate change, pollution of air and water, chemical pollution decreasing the quality of soil and biodiversity, depletion of natural, renewable and nonrenewable resources, waste generation and adverse effects on the health of human beings (Allwood, Laursen, De Rodriguez, & Bocken, 2006; Fletcher, Grose, & Hawken, 2012, Tortoral, 1992). The general stages involved in the apparel value chain include, fiber and yarn production and processing, textile production and processing, apparel production and processing, end-product distribution, consumption, and disposal (Draper, Murrau, & Weissbrod, 2007). At each stage, there is a substantial amount of environmental damage created (Fletcher, 2008) which is discussed in detail in Chapter 2. Considering the negative impacts of apparel and textile manufacturing processes on the environment, the apparel industry is coming up with innovative manufacturing processes and eco-conscious materials to replace some of the materials, hazardous chemicals and manufacturing techniques being used. One such innovation the apparel industry

has come up with is eco-conscious apparel. Eco-conscious apparel for this study refers to clothing manufactured using materials that are safe to the environment and the production, consumption and disposal of which has minimal negative impact on the environment. Eco-conscious apparel has been termed as green clothing, ethical fashion, eco-fashion and sustainable fashion in various studies that addressed the growing environmental issues pertaining to the apparel and textile industry (Crawford, 2008).

The unsustainable methods of production, consumption and disposal of products and practices, specifically, those related to apparel products are significant contributors to various environmental problems. However, putting the entire blame on production processes does not generate a solution to environmental problems. A certain amount of responsibility also falls on people, the end users of products in the role of consumers. However, it is difficult for the consumers to consume products, specifically apparel without contributing towards environmental degradation. On the other hand, minimizing the consumption of apparel products does not bring a permanent solution to the environmental problems created by apparel products throughout their life-cycle. Therefore, if consumers are made aware of the impacts on the environment of their everyday consumption of apparel products and educated about better alternatives, such as eco-conscious apparel, then negative effects caused by apparel products may be reduced. However, the market for eco-conscious apparel is still very small with only a niche consumer group adopting them on a continuous basis (Lipson, 2008; Nasser, 2013). Past studies that researched the adoption of eco-conscious apparel also yielded inconsistent results. Hence, this study was undertaken to further the understanding of consumer's decision-making process while purchasing eco-conscious apparel.

Problem Statement

As the impact of apparel products on the environment is increasing, so has the awareness of eco-conscious apparel products. Supporters of eco-friendly products and executives in the apparel industry believe that eco-conscious apparel products will follow a similar path of organic foods and beauty products which have overcome the niche market and entered the mainstream consumer market (Cervellon & Wernerfelt, 2012). However, the real picture is not supporting this belief. The global market for eco-conscious apparel products is still relatively small with a share of only 1% in the total apparel market but is expected to increase over the next 5-10 years (Lipson, 2008). Similarly, the market for eco-conscious apparel products in the US have barely reached 2%, making up only around $5 billion of the total $200 billion fashion business (Nasser, 2013, April 28).

For marketers of eco-conscious apparel to make sure the product extends beyond a niche market with few people who are fully committed to eco-conscious life-styles and instead penetrate the mainstream market with a wide variety of consumers, it is important for them to understand which variables or factors may influence consumers in their decision-making process when purchasing eco-conscious apparel. However, studies attempting to understand influences on eco-conscious behaviors and barriers impeding consumers to adopt eco-conscious behaviors did not find a definitive answer and results thus far have been inconsistent (Kollmuss & Agyeman, 2002).

There has been a significant group of studies investigating consumers' eco-conscious behaviors that have found eco-conscious knowledge and eco-conscious attitudes to be significant factors influencing eco-conscious behaviors (Chan, 2001; Ellen, Wiener, & Cobb-Walgren, 1991; Kim & Damhorst, 1998; Lee, 2011; Meinhold, & Malkus, 2005; Tan, 2011). While some researchers investigated the hierarchical relationships pertaining to eco-conscious knowledge-

eco-conscious attitudes-eco-conscious behaviors, others were more interested in the bivariate relationships between each of the variables than causal relationships (Tan, 2011). However, there has been a growing criticism regarding the links between eco-conscious knowledge, eco-conscious attitude and eco-conscious behavior as research conducted to understand relationships among these variables for the past 40 years have been inconsistent and inconclusive (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen 2003; Fraj-Andres & Martinez-Salinas 2007; Ivy, Road, Lee, & Chuan, 1998; Kaiser, Wolfing, & Fuhrer 1999; Maloney, Ward & Braucht 1975; Schlegelmilch, Bohlen, & Diamantopoulos 1996).

While some studies found a positive relationship between eco-conscious knowledge, eco-conscious attitudes and eco-conscious behaviors (Kaiser et al., 1999; Kollmuss, & Agyeman, 2002; Lynne, & Rola 1988; Meinhold & Malkus, 2005; Maloney, & Ward 1973) other studies did not find any relationship or found a weak relationship (Ajzen, 2001; Antil, 1984; Dunlap, Van liere & Dillman, 1979; Gatersleben, Steg, & Vlek, 2002; Gutfeld, 1991; Hughner, McDonagh, Prothero, Shultz, & Stanton, 2007; Hwang, Kim, & Jeng, 2000; Kinnear, Taylor, & Ahmen, 1974; Kraus, 1995; Laroche, Nergeron, Tomiuk and Barbaro-Forleo, 2002; Niinimäki, 2010; Niva & Timonen, 2001). Studies have also found that people with a high-level of eco-conscious knowledge display greater level of pro-eco-conscious behaviors compared to people with a low-level of eco-conscious knowledge (Chan, 1999; Kim & Damhorst, 1998).

Studies have also indicated that concern for the environment and eco-conscious attitudes do not always lead to eco-conscious behaviors (Gutfeld, 1991; Hughner, McDonagh, Prothero, Shultz, & Stanton, 2007; Niva & Timonen, 2001) and that, though there is an association between environmentally-concerned attitudes and eco-conscious behavior, they are not highly

correlated (Ajzen, 2001; Antil, 1984; Dunlap, Van liere & Dillman, 1979; Gatersleben, Steg, & Vlek, 2002; Kinnear, Taylor, & Ahmen, 1974; Kraus, 1995; Niinimäki, 2010).

Similar inconsistent relationships were found in studies that focused on eco-conscious products (Auger & Devinney, 2007; Carrigan, Szmigin, & Wright, 2004; Eckhardt, Devinney, & Belk, 2006; Fan, 2005; Do Paço & Raposo, 2009; Rahbar, 2008; Roberts, 1996; Schlegelmilch, Bohlen, & Diamantopoulos, 1996; Tadajewski & Tsukamoto, 2006; Uusitalo & Oksanen, 2004). When it comes to eco-conscious apparel, the results were not any different. There have been very few studies that have explored the relationships with regard to eco-conscious knowledge, eco-conscious attitudes and purchase behavior towards eco-conscious apparel products and results from those studies so far have also been inconsistent and inconclusive (Carrigan & Attalla, 2001; Favier, 2013; Kim and Damhorst, 1998; Kozar, & Connell, 2013; Solomon and Rabolt, 2004; Wong, Turner and Stoneman, 1996; Synodinos, 2013). While some studies found a significant relationship between eco-conscious knowledge, eco-conscious attitudes and eco-conscious apparel purchase behavior (Kozar & Connell, 2013), other studies found no such relationship between these variables (Kim & Damhorst, 1998; Lee, 2011).

Another set of studies found that to understand specific behaviors, general eco-conscious knowledge and attitudes are not as helpful as knowledge and attitudes related to specific behavior (Hustvedt & Dickson, 2009; Kim & Damhorst, 1998). Ajzen and Fishbein (1980) pointed out that, to find correlation between attitudes and behavior, researchers have to measure attitudes specific to that particular behavior in question. For example, in general, no correlation will be found between attitude towards climate change and a person's driving behavior because even those who are highly concerned about climate change are also inclined to drive. This suggests that instead of using general eco-conscious knowledge and general eco-conscious

attitudes, it would be more helpful to use product specific eco-conscious knowledge and product specific eco-conscious attitudes to predict product or situation specific eco-conscious behaviors.

Additionally, studies attempting to predict eco-conscious behavior from demographic variables have also yielded inconsistent results (Anderson & Cunningham, 1972; Balderjahn, 1988). For example, while, some studies found women to be more eco-conscious (Granzin & Olsen, 1991; Roberts, 1996; Shrum, McCarty, & Lowry, 1995; Webster, 1975) other studies did not find any significant relationship between gender and eco-conscious behaviors (Antil, 1984; Balderjahn, 1988; Oom do Valle, Reis, Menzes, & Rebelo, 2004). Similarly, while one study found consumers with a high-level of education and above average socio-economic status to be highly socially conscious (Anderson & Cunningham, 1972), another study found less educated consumers with lower income levels to be displaying greater eco-conscious behaviors (Sandahl & Robertson, 1989).

Despite a wealth of existing knowledge, no definitive answer has been found yet regarding which variable or variables in particular have a substantial influence on consumers' eco-conscious behaviors. Particularly, previous studies have used variables such as general eco-conscious knowledge, general eco-conscious attitudes, product/behavior specific eco-conscious knowledge, product/behavior specific eco-conscious attitudes and demographic variables to understand consumers' eco-conscious purchase behaviors. However, the results of those studies have been inconsistent and could not aid in furthering the understanding of factors that may be significantly influencing the eco-conscious purchase behavior in general as well as eco-conscious apparel purchase behavior in particular. Additionally, Kollmuss and Agyeman (2002) have expressed concern over the hierarchical relationship regarding eco-conscious knowledge, eco-conscious attitudes and eco-conscious behavior as, such linear progression models proposed

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in previous studies have been proven wrong. They suggested researchers need to consider investigating other internal and external factors that may explain the eco-conscious behaviors more clearly.

While the inconsistency prevails, on the other hand, an important body of literature indicates that perceived characteristics of the product have a significant influence on consumer's eco-conscious purchase behaviors (Beard, 2008; Joergens, 2006; Solomon & Rabolt 2004; Thøgersen, 1999). For example, Kashmanian, Kuusinen, and Stoeckle (1990) found that consumers evaluate product's environmental attributes concurrently with other product attributes like price, quality, performance and availability during the process of purchasing environmentally correct product. Further, Berchicci & Bodewes (2005) highlighted that, for green products to be successful, they must not only meet environmental demands, but also fulfill market requirements by understanding consumer preferences regarding the product. Extensive research by Rogers (1976, 1983, 1995, 2003) regarding the adoption of innovative products also indicates that perceived characteristics of an innovation significantly influence consumers' adoption of such products. In other words, studies have found that perceived characteristics of the product have a significant influence on consumers' decision to adopt or not to adopt the product (Agarwal & Prasad, 1997; Ostlund, 1974; Strutton, Lumpkin, & Vitell, 2011). These studies suggest that, if the influence of perceived characteristics of an innovative product (i.e., eco-conscious apparel) is taken into consideration, it may aid in better understanding the consumer's decision-making process towards eco-conscious apparel.

Purpose of the Study

Literature suggests that, thus far, no study has been undertaken to further the understanding of a consumer's decision-making process toward eco-conscious apparel by

investigating the relationship among eco-conscious knowledge, eco-conscious attitudes and eco-conscious apparel purchase behavior and including perceived characteristics of an innovation (i.e., eco-conscious apparel). Therefore, due to the inconsistent findings regarding the influence of eco-conscious knowledge and attitudes, on eco-conscious behavior, this study investigated whether including consumers' perceived characteristics of innovation (i.e., eco-conscious product) enhanced the ability to predict eco-conscious behavior (i.e., intention to purchase eco-conscious apparel) as well as strengthened the link between knowledge, attitudes and behavior towards eco-conscious apparel.

Study Objectives

Based on the purpose of this study, the study's research objectives were as follows:

1. To investigate the influence of perceived characteristics of innovation on the relationship between a consumer's eco-conscious knowledge, eco-conscious attitude and eco-conscious behavior.

2. To investigate the relationship between a consumer's characteristics (i.e., demographic variables and level of innovativeness) and his/her eco-conscious knowledge, eco-conscious attitude, perceived characteristics of innovation, and eco-conscious behavior.

Significance of the Study

Extensive research on consumers' eco-conscious behaviors, thus far have not come up with a definitive answer regarding which variables in particular influence consumers in their decision-making process toward purchasing eco-conscious apparel. Hence, in the current global scenario where environmental issues pertaining to apparel industry continues to be a challenge, this study aids stakeholders in the apparel industry, as well as educators in the apparel field to better understand the consumer's decision-making process toward eco-conscious apparel.

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The apparel industry has often been criticized for not engaging in eco-conscious practices and thus contributing to the challenges faced by the global environment. The challenges include, but not limited to: air and water pollution, erosion of soil through chemical pollution, depletion of natural, renewable and nonrenewable resources and waste generation (Allwood et.al., 2006; Fletcher, Grose, & Hawken, 2012, Kim, 1995; Tortoral, 1992). One of the innovative products that apparel industry developed to mitigate its impact on the environment is eco-conscious apparel. Although apparel does not directly contribute to global warming, consuming eco-conscious apparel contributes to a much larger issue of conserving the global environment (Crawford, 2008). However, the market for eco-conscious apparel is not increasing as rapidly as expected and they still need to be adopted by a wide range of consumers so as to reduce the impact of apparel industry in the global environment. Therefore, it is imperative for the companies that currently offer eco-conscious products or ones that are transitioning to a more environmentally sustainable product strategies to understand what drives consumers' eco-conscious apparel purchase behavior so that they will be better able to cater to those consumer needs and thus increase the market share of eco-conscious apparel.

Sooner or later, the increasing problems associated with climate change and other environmental and social issues related to current consumerist society will require companies in the apparel industry to adopt sustainable processes and products. While initially, adopting environmentally safe products and practices will allow the companies to stand apart from the rest of its competitors by creating a competitive advantage, in the long run, the environmental initiatives adopted by the apparel companies will collectively help in reducing the overall carbon footprint generated by the apparel industry. The sooner that more apparel companies join this bandwagon of adopting sustainable market initiatives, the greater and faster will be the effect of

apparel industry in reducing its impact on the environment. For that to happen, however, companies have to invest their resources in better understanding eco-conscious consumers', preferences and the factors influencing adoption of eco-conscious apparel products. Companies can then develop marketing strategies that suit the consumers' demand and preferences for eco-conscious apparel. Hence, this study aids such stakeholders in the apparel industry in better understanding the factors that drive consumer's eco-conscious apparel purchase behavior.

The educators in the apparel field on the other hand, are faced with challenges in educating the students on global environmental issues to prepare them to be change agents for a better future. As educators become more informed about the environmental issues associated with apparel industry, they will be better equipped in educating the future generations in not just understanding but also finding a better solution to the problem. While inconsistency and confusion persists about the variables influencing consumers' eco-conscious apparel purchase behavior, this study helps educators in the apparel field to further their understanding of the variables that help in better predicting the consumer's eco-conscious apparel purchase decision-making.

Specifically, the current study makes a positive contribution toward extending the existing literature base by addressing inconsistencies found in extant literature regarding relationships between eco-conscious apparel knowledge, eco-conscious apparel attitudes and consumer's eco-conscious apparel purchase behavior by including an additional variable – perceived characteristics of an innovation (i.e., eco-conscious apparel). Until now, no research in the past has investigated the relationship with regard to eco-conscious apparel knowledge, eco-conscious apparel attitudes and eco-conscious apparel purchase behavior as a linear progression relationship. Hence, this study, by adding the variable "perceived characteristics of an

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innovation" into such linear relationship is expected to contribute an important piece to the literature focused on strengthening the weak and inconsistent relationship between knowledge, attitude and behavior.

Definition of Terms

Attitude: "...a mental and neutral state of readiness, organized through experience, exerting a directive or dynamic influence on individual's response to all objects and situations with which it is related" Allport (1935, p . 810).

Complexity: "… the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers, 1983, p. 230).

Compatibility: "… the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 1983, p. 223).

Eco-conscious apparel: Clothing manufactured using materials that are safe to the environment with production, consumption and disposal processes contributing to minimal negative impact on the environment.

Eco-conscious apparel attitude: A positive or negative perception of or belief toward eco-conscious apparel products.

Eco-conscious apparel knowledge: Knowledge of the environmental impact of apparel products throughout their life-cycle right from fiber production till the discard of apparel products.

Eco-conscious attitudes: "… a psychological tendency that is expressed by evaluating perceptions of or beliefs regarding the natural environment, including factors affecting its quality, with some degree of favor or disfavor" (Milfont, 2007, p. 12).

Eco-conscious behavior: "… behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world (e g. minimize resource and energy consumption, use of non-toxic substances, reduce waste production)" (Kollmuss & Agyeman, 2002. P. 240).

Eco-conscious consumers: Individuals who support environmental issues by demonstrating a relatively consistent and conscious environmental concern through adopting behaviors related to purchasing, owning, using and disposing products and/or services that have least environmental impacts (Barnes & Bourgeois, 1979; Henion, 1976).

Eco-conscious knowledge: "Factual information that individuals understand about the environment, the ecology of the planet, and the influence of human actions on the environment/ecology" (Arcury & Johnson, 1987, p. 32).

Eco-conscious product: A product whose production, processing, consumption, and disposal results in minimal environmental damage.

Eco-conscious purchase behavior: A tendency to purchase products that reduce impact on the environment.

Innovation: "… an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation" (Rogers, 1983, p. 11).

Innovativeness: "… the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system" (Rogers, 1983, p. 242).

Perceived characteristics of innovation: are the characteristics by which an innovation may be described and the way they are perceived by people aids in predicting the innovations' rate of adoption (Rogers, 1983 p. 210).

Relative advantage: "… the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 1983 p. 213).

Organization of the Study

The research study is presented in six chapters: 1) introduction, 2) Review of envrionmental impacts of apparel industry 3) review of literature, 4) methodology, 5) presentation and analysis of data, and 6) summary, discussion, imlications,limitations and recommendations for future research. While, Chapter 1 introduced the background, statement of problem, purpose, significance, and limitations of the study, Chapter 2 elaborates on the environmental impacts of apparel industry. Chpter 3 describes the theoretical framework guiding the study, followed by a thorough review of relevant literature along with research questions and statements of hypotheses. Chapter 4 outlines the research methods used to both collect and analyze the data. Chapter 5 explains the analysis and presents the results. And lastly, Chapter 6 discusses the research findings, provides key implications of the study along with limitations of the study and recommendations for future research.

Chapter 2 – Review of Environmental Impacts of Apparel Industry

People adorn themselves in apparel from the time they are born until the end of their life: not just to protect themselves from atmospheric conditions, but also for several reasons such as to reveal their personal identity, self-expression, uphold tradition, etc. Therefore, apparel products are considered to be among one of the basic essentials of life without which, human survival is problematic. As population grows, so does the demand for essential products of life, including the demand for apparel products. Exponential technological advancements over the past century have improved quality of life in many respects. They have changed how we live, what we wear, the choices we make and apparel products we use on a daily basis. These technological advancements have significantly influenced the structure and functioning of apparel industry right from fiber production through the final disposal of apparel products. Growing population and increasing demand for apparel products, coupled with technological advancements led to an enormous growth in the apparel industry. The apparel industry includes a wide range of products and processes throughout the supply chain from fiber, yarn, textile and apparel production and processing to retail distribution.

The apparel industry generated approximately $502.4 billion of retail sales in clothing and accessories during 2011 in the US alone (Apparel, Textiles & Fashion Industry, n.d.). According to the World Trade Organization (WTO), global apparel exports grew 14.6% from $525 billion in 2009 to $602 billion in 2010 (Apparel, Textiles & Fashion Industry, n.d.) while also employing approximately 26 million people (Draper, Murrau, & Weissbrod, 2007). The development of the apparel industry has been greatly dependent on "skills, craftsmanship, groundbreaking technologies, and ingenious use of natural resources" (Sanfilippo, 2007. p. 2).

Considering the importance of apparel products in our daily lives, although growth of the apparel industry is inevitable, the environmental concerns that the industry is associated with, is certainly an issue worth pondering upon.

Impact of Apparel Product Life-cycle on Environment

The apparel industry is one of the major industrial polluters, causing serious damage to both human health and the environment. According to a United States Environmental Protection Agency report (2011), in 2010, around 13.1 million tons of textile waste were generated in the US, with only a 15% recovery rate for the purpose of recycling or reuse. Moreover, although the environmental cost of landfills at the end of the apparel life-cycle is highly damaging, the procedures and processes in production, usage, care and disposal stages are generating no less harm to human health and the environment. The next section reviews key environmental impacts of apparel at each stage of its life-cycle: from fiber production to consumer disposal.

Environmental Impacts of Fiber and Yarn Production and Processing

The fibers that are widely used in the apparel industry can be classified under natural fibers and man-made fibers. While natural fibers, including fibers such as cotton, wool and silk are extracted from animal or plant sources, man-made fibers include fibers like rayon are regenerated from natural raw materials and synthetic fibers like polyester and nylon are made out of petrochemical-based polymers. According to the world apparel fiber consumption survey conducted in 2010 by the Food and Agriculture Organization of the United Nations and International Cotton Advisory Committee, cotton represents 33% of total apparel fiber consumption worldwide while synthetic fiber consumption represents 60% (Plastina, 2011).

Cotton is one of the most important and widely used natural fibers in the production of apparel products worldwide. However, it is also one of the most chemically intensive crops.

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Being a natural fiber with biodegradable properties, consumers generally assume cotton to be the most environmentally friendly fiber (Nam, 2012). However, it may prove to be less sustainable choice among other specific fibers because of its high dependence on toxic chemicals and energy and water demands while growing, washing and drying (Nam, 2012). For example, the cotton fiber required to make just one pair of jeans needs over 10 tons of water to grow. Inefficient use of water in cotton production can lead to water scarcity. Additionally, the amount of pesticides used in cotton cultivation can lead to various environmental issues while also proving hazardous to the health of cotton growers. For example, every year around $2 billion worth chemicals are sprayed on cotton grown worldwide (Fletcher & Grose, & Hawken, 2012) which is not only destroying farmland, but also finding its way into food and cattle feed causing dangerous health and environmental hazards (Seglin, 1999). Though cotton occupies only 3% of the world's farmland, the total amount of chemicals used during cultivation accounts for nearly 24%, of all insecticides and 11% of pesticides applied worldwide annually Draper et al., 2007; Lewis & Gertsakis, 2001; Needles, 1986). Chemicals are also used during the scouring and mercerizing processes of cotton fiber and yarn production processes, which have proven to be detrimental to the environment (Lewis & Gertsakis, 2001; Needles, 1986). While cotton is the most talked about when it comes to environmental impacts, other fibers are not an exception in creating damage to the environment. For example, although wool represents only 2.6% in the world apparel fiber consumption in 2010 (Plastina, 2011), production and processing of wool do pose a threat to the environment with regard to the amount of GHG emitted specifically during the production stage. Biswas, Graham, Kelly and John (2010) conducted a study in Victoria, Australia to compare life-cycle global warming potential of three important agricultural activities of Australia (i.e., wheat, sheep meat and wool production). They concluded that GHG emissions

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of methane (CH_4) and nitrous oxide (N_2O) from production of 1kg of wool was about three times higher than the GHG emissions of wheat and sheep meat production.

Apart from natural fibers, regenerated fibers like rayon and Tencel® and synthetic fibers like nylon and polyester are also the fibers that are widely used in the apparel industry that have a negative impact on the environment. Although, production and processing of these fibers require little to no water, these activities utilize high-levels of energy and a significant amount of chemicals while emitting substances detrimental to the environment (Fletcher, 2008). For example, air emissions like heavy metals, sodium bromide, antimony oxide, manganese salts and titanium dioxide arise from the production of polyester and seem to have a medium to high effect on the environment if discharged untreated (Fletcher, 2008). Similarly, to manufacture 1kg of synthetic fiber such as nylon, a significant amount (150MJ) of energy was consumed (compared to 109MJ per kg for polyester and 50MJ per kg for cotton) while emitting nitrous oxide - a potent GHG (Fletcher, 2008).

As the negative effects of conventional fiber production and processing methods on the environment and human health are becoming more obvious, efforts to produce and process natural and man-made fibers under environmentally sustainable conditions have increased. For example, organic cotton is grown without using any synthetic fertilizers, pesticides, and herbicides. Due to the benefits of organic cotton to both environment and human health, demand for such cotton is increasing continuously (Organic Cotton Facts, 2012). According to the 2011 Textile Exchange Organic Cotton Farm & Fiber Report, around 151,079 metric tons (MT) of organic cotton were produced globally on 324,577 hectares of land in 2010-2011. Companies that become certified to traceability standards like the Organic Exchange (OE) Blended or OE 100 standard that help trace the organic fiber from field to finished product is increasing. To

further the use of organic cotton, apparel companies are also involved in developing programs that can utilize either 100% of organically grown cotton, or blend a small amount of organic cotton with conventionally grown cotton in their products (Organic Cotton Facts, 2012). Companies have reported that there has been a significant increase in the adoption of an organic cotton program and usage of the standards to address traceability of the product and sustainable textile processing (Organic Cotton Facts, 2012). In spite of the measures taken to increase the production of organic cotton worldwide, the total production of organic cotton still represents a mere 0.7% of the global market for cotton for the years 2010-2011 (Organic Cotton Facts, 2012).

Due to recent technological advancements, new sustainable methods of producing polyester fibers that biodegrade have also been developed. These polylactic acid (PLA) fibers are made from sugars derived from agricultural crops, generally corn. Though, these fibers seem promising, they have certain issues with regard to slow degradability and mechanical ductility (ability to deform under tensile stress) because of which their success seems problematic (Xiao, Wang, Yang, & Gauthier, 2012). Adding to the barriers towards the introduction of biodegradable polymers is the issue related to potential cross-contamination of various waste streams with fibers that have different classes of degradability that may compromise with final product's quality. Hence, innovating fibers while considering issues with their biodegradability pose significant number of challenges to the apparel industry that may require new ways of thinking (Fletcher & Grose, & Hawken, 2012).

Production and processing of both natural and man-made fibers significantly contribute to environmental degradation. Though technological advancements have made it possible to come up with more eco-conscious materials and production processes, further development is still needed to implement at a large enough scale for their effect to become more prominent.

Environment Impacts of Textile Production and Processing

The significant environmental impacts of textile production and processing stage relates to the amount of water, chemicals and energy used at this stage. For example, textile wet processing not only uses copious amounts of water, chemicals and energy depleting natural resources, but also contaminates water, soil and air through discharging the residues from such activities (Arya, & Kohli, 2009; Fletcher & Grose, & Hawken, 2012). Textile wet processing has been under continuous environmental scrutiny (Fletcher & Grose, & Hawken, 2012) not only because some of the dyes and chemicals used during such processes have been proven to be toxic and cause health issues when in direct contact with the skin; but also because the amount of dyes and chemicals used burden the environment (Arya, & Kohli, 2009; Fletcher & Grose, & Hawken, 2012; Walters, Santillo, & Johnston, 2005). For example, a large amount of surfactants is used to remove the spinning lubricants such as mineral oils that are applied during the spinning process. During such cleaning process, quite a high percentage (approximately 40%) of chemicals still remains in the fiber after washing which are emitted into the air during subsequent treatments involving high-temperatures (European Commission, 2001). In another example, conventional dyeing methods that use reactive dyes to dye cellulosic fibers such as cotton result in very low dye fixation rates with only 65% of the dye fixing to the fabric while the remaining 35% flushes away after dyeing. Although, new developments in dyeing chemistry and dyeing techniques have increased the dye fixation rate to as high as 95%, there are still many chemicals used in a dye bath that increase the issues pertaining to pollution (Fletcher & Grose, & Hawken, 2012).

Although technological developments have made it possible to replace some of the toxic chemicals used during textile wet processing with non-toxic and environmentally safe materials, there continues to be problems associated with using large amounts of water and auxiliary

chemicals, as well as the availability of environmentally safe materials and correct use of those

materials to obtain uniform results across the industry (Fletcher & Grose, & Hawken, 2012;

Walters, Santillo, & Johnston, 2005). For example, though interest in coloring the fabric with

natural dyes has been increasing, due to the problems associated with limited supply of raw

materials, repeatability, scalability and long-term color fastness, natural dyes have been often

criticized by the industry, limiting their usage at the commercial level (Fletcher, & Grose, &

Hawken, 2012).

Environmental Impacts of Apparel Production and Processing

One of the environmental issues associated with apparel production stage is the fabric

wastage created during the process of cutting the fabric into patterns to be sewn together. Among

all the processes of apparel production, fabric cutting is the process during which majority of

fabric waste is generated (Fabric Usage, 2008, July). According to apparel industry

professionals, approximately 15 to 20% of the fabric are left unused during the production

process and is thrown away (Rissanen, 2005), which eventually ends up in landfills. While

considering the wastage, it is not just the physical fabric yardage that is being wasted, but the

natural resources used as raw materials and the human labor that went into turning raw materials

into textile is also being wasted.

Another environmental concern associated with apparel production is with regard to the

dyes used to dye the apparel products. Apparel products can be dyed during any stage of apparel

production such as fiber, yarn stage, fabric stage or after apparel products are manufactured.

While color is one of the most important factors that enhances the appeal of apparel product on

the sales floor, the type and amount of dyes that are used to color the fabrics as well as the

amount of water and auxiliary chemicals used to fix the dye to the fabric significantly adds up to

the environmental damage caused by the apparel industry. Some of the dyes used in the apparel industry and their byproducts have been identified as carcinogenic, skin sensitizers and reproductive toxins. Although some of those dyes are not directly linked to cancer, they are considered to break down into dangerous byproducts when apparel products are washed after the dyeing process (Chequer e al., 2013; Cobbing, & Ruffinengo, 2013; Kant, 2012). Recently, more than 120,000 apparel and bedding products were recalled from major Australian retailers after they were discovered to have been dyed with hazardous azo dye. Azo dyes were found to contain carcinogenic chemicals that can transfer to the skin of the wearer posing threat to their health. These azo dyes are classified as synthetic dyes covering more than half of the commercial dyes used in a wide range of consumer products such as food, carpets, cosmetics, clothes, leather and textiles (Myer, Just Jeans and Target, 2014).

After apparel products are manufactured, certain apparel products such as jeans require further chemicals for washing and applying finishes like resistance to crease and wrinkles. Washing of finished products is also a water intensive process during which large amounts of water and detergents are used and released into water streams. All of these processes add up, polluting water, land and air, while creating solid waste (Fletcher, 2008).

Considering the wastage created during apparel production, zero-waste design techniques are being developed in the apparel industry to reduce the fabric waste generated while cutting and sewing processes. Through zero-waste design, fabric patterns are created in such a way that leaves minimum scraps of fabric on the cutting room floor (Rosenbloom, 2010; The ecochic, 2013). However, these zero-waste techniques have not made their headway with large manufacturers as they find it hard to commit partly because of their existing infrastructures and

cost associated with re-engineering the supply line and overhauling the factory (Rosenbloom, 2010).

Environmental Impacts of End-Product Distribution, Consumption, and Disposition

An important aspect to consider about the end-product distribution is the environmental impact created through transportation of apparel products. However, as the impact of transportation is distributed throughout all the phases of apparel product life-cycle right from transportation of raw material, such as fiber, to disposing the used product it is important to understand the overall impact of transportation throughout the supply chain on the environment. For example, an average t-shirt is thought to travel almost a distance equal to once around the globe throughout its production process (Fletcher, 2008). This adds up to the transportation costs while also depleting non-renewable resources in the form of energy required for transportation and creating GHG emissions and other forms of air pollution (Romm, 2007). Allwood, Laursen, De Rodriguez, & Bocken (2006) conducted a study in which transportation costs associated with a cotton t-shirt that moved between various processing units within the US was assessed. The results indicate that the environmental cost of transporting the t-shirt was significant amounting to around half the price of growing the cotton and 16 times of its processing cost. This cost will further increase if outsourcing of the t-shirt production is taken into consideration during which t-shirt travels between different countries or continents increasing its carbon footprint (Fletcher, 2008).

In another study conducted by Bevilacqua, Ciarapica, Giacchetta, & Marchetti (2011), the carbon footprint of a wool sweater manufactured by a leading company in the textile sector was analyzed using life-cycle assessment methodology. The research showed that production of CO_2 for the garment studied depends on the complexity of the supply chain as well as on the

distribution system. The results indicated transportation as the main contributor towards CO_2 emissions in the sweater production process and that the carbon footprint produced through transportation of final products to stores alone is about 34% of the total CO_2 emissions throughout the production process.

One of the ways to reduce the impact of transportation on the environment is to reduce the emission of CO_2 by 20-30% by changing the transportation modality from road to rail and from flight to the boat (Bevilacqua et l., 2011). However, owing to fast fashion it is highly difficult to choose those means of transportation that contribute to lower levels of CO_2 emissions because they take more time to bring the product to the sales floor and by the time they are brought to the sales floor new fashion may already be making their way to the sales floor.

After apparel products are purchased, the practices, consumer use to care for apparel plays a significant role in affecting the environment. It was concluded in a study conducted by Franklin Associates (1993) for the American Fiber Manufacturers Association that nearly 80% of energy use (Carbon Trust, 2008), 66% of solid waste, more than half of the emissions to air and huge quantities of waterborne effluents created throughout the product life-cycle are generated during the use phase of the apparel life-cycle, basically due to the laundering methods. However, quantities of these emissions vary significantly from garment to garment. For example, environmental degradation created during laundering of cotton garments or garments that are frequently washed differs compared to the laundering of wool or synthetic garments or garments that are not washed frequently. Another study conducted in the Netherlands showed that on average a garment remains in a Dutch person's wardrobe for around three and half years during which it stays on the body for 44 days and is worn by the person between 2.4 and 3.1 days between each washing. During all this time, though the garment is washed and dried only 20

times, the environmental damage created in the laundering phase is much greater than the damage created during growing, processing and manufacturing or disposing of the garment at the end of its life (Fletcher, 2008). For example, by changing washing temperature from 86˚F to 104˚F the energy consumption increases by 30% and one load of tumble drying can produce up to 2kg of CO_2 (Continental Clothing, 2011).

Adopting certain methods while caring for apparel can significantly reduce environmental damage created during use phase. For example, washing and drying of a synthetic blouse takes up around six times the energy needed to manufacture the blouse at the first place. However, reducing the number of times the garment is washed can reduce energy consumption; this will also reduce air and water pollution and solid waste generation. Additionally, by using concentrated detergents that use less chemicals and packaging and require less water for washing can also reduce the burden on the environment (Fletcher, 2008).

The final stage of apparel product life-cycle, disposal, is no exception to previous stages when environmental impact is considered. Production and consumption of household products including apparel has been growing tremendously. Owing to fast fashion, the rate of purchase and disposal of apparel has increased, reducing the time in between when a t-shirt is on a sales floor to when it is in a landfill. Consultant Oakdene Hollins stated in a September 2006 report-*Recycling of Low Grade Clothing Waste*, once purchased by the consumer, an average of 21% of apparel stays at home annually increasing the total stock of apparel held by consumers. This stockpile was reported as an increase in the "national wardrobe"-"a potentially large quantity of latent waste that will eventually enter the solid waste stream" (Claudio, 2007; Morley, Slater, Russell, Tipper, & Ward, 2006, p. 450 & 451). As per EPA Office of Solid Waste, around 14.3 million tons of textiles waste was generated in 2012 which is around 5.7% of total municipal

solid waste generation with a recovery rate of only 15.7% (i.e., 2.3 million tons) excluding the textiles that was reused (2014). Each person in the US throws away nearly 68 pounds of clothing and textiles, representing 4% of total municipal solid waste. This figure is growing rapidly contributing to environmental degradation.

In summary, each stage of the apparel product life-cycle is creating environmental damage and requires immediate attention. The amount of toxic materials, chemicals, water and energy used during growing, production, processing, manufacturing, transportation, use and disposal stages of apparel product life-cycle is not only contributing towards depletion of renewable and nonrenewable resources at an alarming rate but also creating greater amounts of waste while also polluting water, air and land. In spite of the measures taken by the apparel industry to curtail its negative impacts on the environment, apparel manufacturing still remains detrimental.

Chapter 3 - Review of Literature

The greatest revolution of our generation is the discovery that human beings, by
changing the inner attitudes of their minds, can change the outer aspects of their
lives. - William James

The relationship between knowledge, attitudes and behavior has been a subject of interest
for researchers for several decades in various fields of study such as psychology, marketing, and
consumer behavior. Researchers in the area of consumer behavior have used various
psychological, social and demographic variables, including knowledge, attitudes and behavior to
understand consumer's decision-making process and their purchase behavior towards several
products and services. Researchers have investigated the influence of these variables on the
adoption of products and services in general and when the products are newly introduced in the
market. However, an inconsistency has been found from one study to another with the literature
showing inconclusive results regarding which factor or variables in particular have a significant
influence on consumer's decision-making process toward product adoption.

From the marketer's perspective, it is important to understand how consumers pass
through the process of learning about new products all the way through the decision-making
process to adopt or not to adopt the product because the firm's long-term survival depends on the
success of new products introduced into the market (Nejad, Sherrell, & Babakus, 2014).
According to Barczak, Griffin and Kahn (2009), while an average of 28% of firms' sales and
profits are derived from new products, around 41% of all commercialized new products fail. One
of the significant reasons for this failure rate of new products is due to the 'slow or inadequate'
diffusion and adoption of new products. The diffusion and adoption of new products is often

slow because consumers generally hesitate to adopt new products because they believe that adoption will require behavior change (Castaño, Sujan, Kacker, & Sujan, 2008). Therefore, it is not surprising that the rate of new product failure is high in many industries (Berggren & Nacher, 2001; Cooper, 2000). The cost of failure of new products can be intimidating to many companies as they spend nearly 20% of their total revenue on developing new products (Krishnan & Zhu, 2006). The high failure rate and the cost involved in the failure of new products have called for more studies regarding consumer behavior toward new products (Urban, Weinberg & Hauser, 1996; Wind, & Mahajan 1997). Studies have been conducted in various fields as well as different countries and settings using different individual, social, psychological and demographic variables to identify and understand the relationship between antecedents and new product adoption (e.g., Gatignon & Robertson, 1985; Gielens & Steenkamp, 2007; Kheiry, & Nakhaei, 2012; Rogers, 1983; Wang, Dou, & Zhou, 2008).

Nevertheless, since the introduction of eco-conscious apparel, marketers have been hoping that the product will pass through the niche market and be adopted by a wide range of consumer groups. However, eco-conscious technologies are generally assumed to be expensive, of inferior quality, complex to understand, not performing as expected (Ottman, 1998), not well known and not often meeting the requirements of consumers and therefore need improvement to gain wider acceptance (Ottman, Stafford, & Hartman, 2006; Wong, Turner, & Stoneman, 1996). Additionally, compared to other innovations, the process involved in accepting and adopting eco-conscious innovations is generally less transparent and their market demand is often highly unpredictable (Nijkamp, Rodenburg, & Verhoef, 1999). This is clearly visible in the attitude and behavior displayed by consumers. While responding to surveys, consumers have shown positive attitudes toward and indicated their willingness to adopt eco-conscious products. However, in

reality, a discrepancy has been found between what consumers have reported in surveys to what they actually do while purchasing eco-conscious products (Ottman & Martin, 2009; Hughner et al, 2007; Wong, Turner & Stoneman, 1996; Yates, 2008). Similarly, consumers who were concerned and knowledgeable about environmental impacts and held pro-eco-conscious attitudes were not adopting eco-conscious apparel products, in fact were often choosing non-eco-conscious instead (Joergens, 2006). This is puzzling to researchers as well as marketers of eco-conscious apparel: why does such a discrepancy exist between consumers' attitudes and their purchase behavior? The studies conducted so far to understand such discrepancy have also yielded inconsistent results adding to the confusion.

The theory of diffusion of innovations by Rogers (2003) has been used by several researchers to investigate how new products are introduced, adopted and diffused into the social system. Many studies consistently found the diffusion of innovation theory to be a suitable theory for understanding the diffusion and adoption of new products. The current study utilizes innovation-decision process introduced by Rogers (2003) as part of the innovation diffusion theory, which depicts the process an individual passes through from getting to know about the innovation, until the individual makes a decision to adopt or not adopt. As a departure point from the existing literature on eco-conscious apparel, this study used perceived characteristics of innovation depicted in the innovation-decision process of the diffusion theory as a significant variable to further the understanding between knowledge, attitudes and behavior toward eco-conscious apparel. Additionally, no study to date has included perceived characteristics of innovation to improve the weak link between eco-conscious apparel knowledge, eco-conscious apparel attitudes and eco-conscious apparel purchase behavior. Hence, this study is expected to

add a significant layer of knowledge to the existing literature on eco-conscious apparel purchase behavior that may aid in strengthening the weak link between knowledge, attitude and behavior.

Organization of the Chapter

The next section of the chapter begins with a brief introduction to Roger's (2003) diffusion of innovation theory and the innovation-decision process that depicts the stages in the adoption of an innovation. Then follows an explanation regarding how the innovation-decision process applies to current study regarding innovation-decision process toward eco-conscious apparel. Then, the model of the innovation-decision process for eco-conscious apparel is introduced with a thorough description of each stage (i.e., knowledge, persuasion and decision to purchase eco-conscious apparel) in the innovation-decision process along with relevant literature. The knowledge stage is discussed with regard to eco-conscious knowledge in relation to eco-conscious behavior and eco-conscious apparel purchase behavior. Then, persuasion stage is discussed in terms of the relationship pertaining to eco-conscious knowledge and eco-conscious attitudes with eco-conscious behavior and eco-conscious apparel purchase behavior. The chapter then continues with a thorough discussion on the perceived characteristics of eco-conscious apparel such as complexity, compatibility and relative advantage. Then, the discussion continues about the prior or pre-existing conditions pertaining to innovativeness and personal characteristics of the decision-making unit. Innovativeness was discussed in relationship with perceived characteristics of eco-conscious apparel and demographic characteristics are discussed in relation to consumer innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation and consumers' eco-conscious apparel purchase decision-making. While discussing the literature pertinent to eco-conscious knowledge, eco-conscious attitudes and eco-conscious behavior and linking it to each stage in the innovation-

decision process of eco-conscious apparel, it was deemed appropriate to discuss the decision stage as an intertwined part of knowledge and persuasion stages instead of discussing it as a separate stage.

The Theory of the Diffusion of Innovation

The theoretical framework used in this study was developed based on the innovation-decision process model proposed by Rogers (2003). Research studies from a broad variety of disciplines such as agriculture, sociology, political science, mass media, sociology, history, public health, communications, technology, economics, and education (Dooley, 1999; Stuart, 2000; Smerecnik & Andersen, 2011) have used Roger's diffusion theory as their framework. Rogers (1983), in his innovation-decision process model indicated that perceived characteristics of an innovation could be used to predict the adoption of such innovation. Numerous studies that used diffusion of innovation theory in the past have also found that perceived characteristics of an innovation plays a significant role in the successful adoption of a product, service or an idea. The current study, therefore, used the innovation-decision process model (Rogers, 1983, p. 165) explained in Roger's diffusion of innovation theory as a theoretical base in developing innovation-decision process for eco-conscious apparel to investigate whether including perceived characteristics of innovation would help in strengthening the link between eco-conscious apparel knowledge, eco-conscious apparel attitudes and eco-conscious apparel purchase behavior.

The Innovation-Decision Process

The innovation-decision process (Figure 1) involves the mental process an individual goes through from initial stage of gaining knowledge about the innovation to the stage when the individual makes a decision to adopt or reject the innovation and confirms the decision made (Rogers, 1983). The innovation-decision process consists of five stages. First is the knowledge

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stage during which an individual obtains information about the innovation. Second is the

persuasion stage during which an individual forms an attitude toward the innovation with the

help of knowledge gained in the previous stage. Third is the decision stage, which involves

making a decision to adopt or not to adopt the innovation. Fourth is the implementation stage

during which the new idea or product is implemented into practice. Then finally, fifth is the

confirmation stage, at which an individual confirms the decision made to either adopt or not to

adopt the innovation.

Figure 1 A Model of Stages in the Innovation-Decision Process

PRIOR
CONDITIONS
1. Previous practice
2. Felt needs/problems
3. Innovativeness
4. Norms of the social
systems

COMMUNICATION CHANNELS

| I. KNOWLEDGE | II. PERSUASION | III. DECISION | IV. IMPLEMENTATION | V. CONFIRMATION |

Characteristics of the
Decision-Making Unit

1. Socioeconomic
characteristics
2. Personality variables
3. Communication behavior

Perceived Characteristics of
the Innovation

1. Relative advantage
2. Compatibility
3. Complexity
4. Trialability
5. Observability

1. Adoption → Continued Adoption
Later Adoption
Discontinuance
2. Rejection → Continued Rejection

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During the innovation-decision process, the individual passes through a series of choices and actions evaluating a new idea, product, etc. over a period of time and making an informed decision of whether to incorporate that innovation or not into an ongoing practice. The process consumers go through from learning about eco-conscious apparel to decision making may be described as an innovation-decision process in which the final stage is reflected in a potential adoption of apparel products that are less damaging to the environment. During each stage of the decision-making process, the individual tries to obtain information from various sources that may reduce the risk and uncertainty associated with the product and aids them in making an informed decision. Henceforth, the innovation-decision process is defined as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (Rogers, 2003, p. 172). The process involves a certain amount of uncertainty because the individual has to alter his/her behavior while deciding to adopt the new alternative in place of the idea that is already in existence and therefore, the innovation-decision process was described by Rogers (2003) as "an uncertainty reduction process" (p. 232). The perceived newness of the innovation and the uncertainty associated with it makes the innovation-decision process distinctive from other types of decision-making models (Rogers, 2003).

With regard to the sequence of stages, there is a usual implicit assumption in diffusion research that the stages in the innovation-decision process follow a linear sequential order. However, this actual sequence of stages does not necessarily follow the same order in all types of innovations, nor does the process always ends up at the confirmation stage. For example, the order may change instead to knowledge, decision and persuasion depending on the type of innovation and how it diffuses into the social system and the process may also stop at any stage

of the decision process such as the knowledge stage or the persuasion stage etc. While the innovation-decision process explained by Rogers (1983) included five stages, the innovation-decision process for eco-conscious apparel proposed in this study included only the first three stages; knowledge, persuasion and decision. The reason being, as the study aimed to explore consumer's purchase intentions and not the actual adoption behavior or consequences of adopting an innovation (i.e., eco-conscious apparel), the implementation and confirmation stages that follow the decision stage are beyond the scope of this study. Hence, the theoretical model developed for the current study included knowledge, persuasion and decision stages as depicted in the innovation-decision process model for eco-conscious apparel.

Eco-conscious Apparel: An Innovation

The innovation-decision process discussed so far forms the foundation in developing the innovation-decision process model specific to eco-conscious apparel. To better understand how the innovation-decision process for eco-conscious apparel works, it is important to understand how, eco-conscious apparel fits into the definition of an innovation and the diffusion process. As mentioned by Rogers (1983) in diffusion theory, an innovation is something that may be pre-existing but is new to the individual when he first learns about it. In other words, for the product to be called an innovation, it does not have to be relatively new, but just needs to be introduced newly to the individual (Rogers, & Shoemaker, 1971). Eco-conscious apparel as innovation is supported by diffusion theory; specifically the S-shaped curve depicted for the rate of adoption during the introduction, growth, maturity and decline stages identified in a typical product life-cycle (Rogers, 1976). The adoption of eco-conscious apparel when measured in total sales is still relatively very small (1% of the total apparel market) (Lipson, 2008) indicating the introduction stage in a product life-cycle. However, the market share of eco-conscious apparel is predicted to

double in the next five to ten years (Lipson, 2008) indicating that the increasing sales will represent the growth stage. For example, when the number of people adopting eco-conscious apparel is plotted on a cumulative frequency, taking into consideration overall sales over the period of time, then, the adoption curve may be seen as taking an S-shaped curve. While the beginning of this curve currently represents the introduction stage with only few individuals that adopted eco-conscious apparel slowly, as more and more consumers adopt eco-conscious apparel over time in five to ten years, the diffusion curve will start to climb and will level off when the majority of consumers have adopted the product representing the growth stage. Hence, after considering the current and projected market share of eco-conscious apparel and comparing it with S-curve in the diffusion theory, classifying eco-conscious apparel as an innovation is deemed appropriate for this study. Hence, for this study, eco-conscious apparel was considered to be an innovation newly introduced to the consumer to understand the innovation-decision process through which an individual goes through learning about an innovation till he makes a decision to adopt or not adopt eco-conscious apparel.

Another explanation of how eco-conscious apparel can be considered an innovation is offered. An innovation as explained by Nijkamp et al., (1999) "is only a stage of technological change, and can practically be considered as a new or improved product, process or the use of a new or different material" (p. 424). Further, Kemp (1995) defined eco-conscious innovation as one emitting less pollution and waste than products or processes of similar kind or processes causing less environmental degradation. Hence, eco-conscious apparel may not be relatively new, but considering how well an eco-conscious apparel fits into to the definitions of an innovation provided by Rogers (1983) and Nijkamp et al, (1999) and eco-conscious innovation definition provided by Kemp (1995), eco-conscious apparel is considered to be an innovation for

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this study. Hence, using innovation-decision process explained by Rogers (2003) in the diffusion of innovation theory as a point of departure in developing the model of innovation-decision process for eco-conscious apparel was deemed appropriate.

Innovation-Decision Process for Eco-conscious Apparel

As discussed earlier, Roger's innovation-decision process model (Figure 1) served as the foundation for the proposed model in this study. However, to align with the purpose of the current study, the first three stages were included in the Innovation-Decision for Eco-conscious Apparel model (Figure 2). Hence, the model proposed differs from Rogers's innovation-decision process model in order to depict variables that may aid in better understanding the innovation-decision process specifically for eco-conscious apparel products.

Figure 2 A Model of Stages in the Innovation-Decision Process for Eco-Conscious Apparel
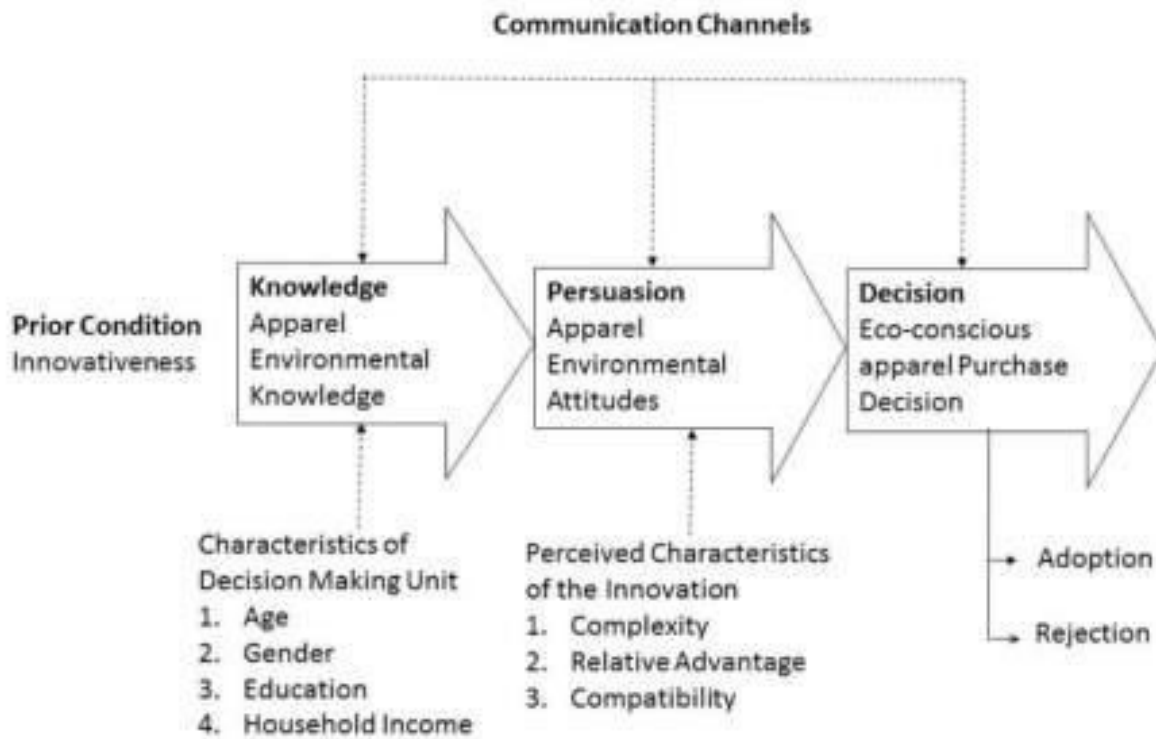
By adopting the innovation-decision process as a theoretical model for this study, it is assumed that each stage of the innovation-decision process applies to the purchase decision process toward eco-conscious apparel. As such, during the knowledge stage, consumers will become aware of and knowledgeable about eco-conscious apparel. Then, during the persuasion stage, based on the knowledge obtained about eco-conscious apparel, consumers search for more information about eco-conscious apparel to reduce the uncertainty and develop a favorable or unfavorable attitude toward eco-conscious apparel. During such uncertainty reduction process, attitudes are influenced by perceived characteristics of the innovation (i.e., eco-conscious apparel), specifically its complexity, compatibility and relative advantage. The attitudes such formed during the persuasion stage influences consumers in making a decision to either adopt or not adopt eco-conscious apparel at the decision stage. In this innovation-decision process for eco-conscious apparel, certain pre-existing conditions related to innovativeness and demographic characteristics of the decision making unit also play a significant role influencing consumers during each of the stages. In the following sections, each variable included in the innovation-decision model for eco-conscious apparel is explained using pertinent literature.

Knowledge Stage

The innovation-decision process commences with knowledge stage where an individual is exposed to the existence of an innovation and gains information regarding how the innovation functions (Rogers, 1983). According to Kaplan (1991), a person's state of knowledge about an issue significantly influences his/her decision-making. Knowledge is an important and significant construct that influences the way consumers acquire and synthesize information (Alba & Hutchinson, 1987), use the information in making decisions (Brucks, 1985) and evaluate products and services (Murray & Schlachter, 1990). As such, numerous consumer research

studies have identified knowledge as an important characteristic influencing all the stages in consumer decision-making.

Knowledge can be defined as "the amount of information held in one's memory that affects the way in which consumers interpret and assess the available choices" (Tan, 2011, p. 18). Consumers' knowledge can be divided into subjective knowledge and objective knowledge. While subjective knowledge refers to a person's perception or assessment of what and how much of the information they know about a product, an issue or an object, objective knowledge refers to factual knowledge (content and organization) that is stored in a person's memory that they actually know about a product, an issue or an object (Brucks, 1985; Tan, 2001; Dodd, Laverie, Wilcox & Duhan, 2005). Knowledge about environmental impacts has been used in many studies to understand consumer's eco-conscious behaviors.

Eco-conscious Knowledge and Eco-conscious Behavior

Arcury and Johnson (1987) defined eco-conscious knowledge as "factual information that individuals have about the environment, the ecology of the planet, and the influence of human actions on the environment/ecology" (p. 32). According to Tan (2011), eco-conscious knowledge refers to "one's ability to understand and evaluate the impact of ecosystem on the society, and the amount of knowledge he or she has about environmental issues" (p. 18). Laroche et al, (1996) measured eco-conscious knowledge of respondents by testing their ability to define or identify ecologically-related symbols, concepts and behaviors. Eco-conscious behavior relates to "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world (e g. minimize resource and energy consumption, use of non-toxic substances, reduce waste production)" (Kollmuss & Agyeman, 2002. p. 240). To understand eco-conscious behavior, Schahn and Holzer (1990) in their study identified two types of eco-conscious

knowledge; abstract knowledge and concrete behavioral knowledge. While abstract knowledge refers to knowledge about environmental problems, their causes and solutions, concrete behavioral knowledge refers to factual knowledge. According to the authors, consumers' self-reported behaviors are affected by concrete behavioral knowledge rather than abstract knowledge.

Studies in the past that investigated eco-conscious knowledge and eco-conscious behaviors have yielded inconsistent results. While some studies found a significant relationship between eco-conscious knowledge and eco-conscious behavior, other studies found no or low correlation between these variables. On the other hand, while some studies found that consumers need more knowledge about the environment to adopt eco-conscious behaviors other studies found no such relationship. As such, empirical results about the relationship between eco-conscious knowledge and eco-conscious behavior have been far from clear (Martin & Simintiras, 1995).

According to Kaiser and Fuhrer (2003), though knowledge is not a sufficient condition, it is necessary for the behavior to follow. For consumers to perform behaviors that have a reduced effect on the environment, it is important for them to have prior knowledge about environmental issues (Hines, Hungerford, & Tomera 1987; Maloney & Ward 1973). In other words, consumers need a certain level of knowledge about the environmental impact of their consumption practices for them to adopt eco-conscious products and practices to keep such impacts at minimum levels. As such, possessing appropriate knowledge is important for the individual to take steps that are right for action (Schahn, 1993). This indicates that, an appropriate level of knowledge is necessary for an appropriate behavior to occur (Spada & Ernst, 1992).

On the other hand, another group of studies did not find any association between eco-conscious knowledge and eco-conscious behavior (Maloney & Ward 1973; Schahn & Holzer, 1990), while some found a low correlation (Sia, Hungerford, & Tomera, 1985/86). Other studies found that eco-conscious knowledge is not directly linked to eco-conscious behavior, but acts as a moderating variable between eco-conscious attitudes and eco-conscious behavior (Arbuthnot, & Lingg, 1975; Grunert & Kristensen, 1992; Martin, & Simintrias, 1995; Schahn & Holzer, 1990).

Another body of literature found eco-conscious responsible behavior to be highly effective when people are more knowledgeable about environmental issues (Schahn & Holzer, 1990; Synodinos, 1990). For example, Fraj-Andrés and Martínez-Salinas, (2007) found that, the relationship between individuals' affective ecological behavior and verbal ecological behavior is higher among those individuals with higher levels of ecological knowledge. Research further indicated that consumers with greater knowledge were more likely to act positively (Hines, et al. 1987; Pickett-Baker & Ozaki 2008; Thøgersen 2000) and environmental protection activities were generally effective when consumers possessed an appropriate level of eco-conscious knowledge. It was evident from previous studies that consumers involved in environmental protection activities differed from those who were not involved (Barreiro, Lopez, Losada, & Ruzo, 2002) and differed in their level of knowledge about environmental activity and how that knowledge was acquired (Vining & Ebreo, 1990). For example, in a study by Granzin and Olsen (1991), it was found that individuals who recycle devoted more time in learning about the environment. Additionally, it was found that individuals who use less polluting means of transportation possessed wider knowledge towards recycling methods.

Studies found a direct positive relationship between eco-conscious knowledge and eco-conscious behaviors (Hines, et al., 1987; Pickett-Baker & Ozaki 2008; Thøgersen 2000) suggesting that eco-conscious knowledge must be present for environmentally responsible consumer behavior to occur (Hines et al., 1987; Maloney & Ward, 1973). Consumers with greater eco-conscious knowledge were more likely to act in a more positive way (Hines et al., 1987; Pickett-Baker, & Ozaki, 2008; Thøgersen, 2000), however, other studies found eco-conscious knowledge to be very low in consumers (Arcury & Johnson, 1987; Haron, Paim, & Yahaya 2005; Kaplowitz, & Levine, 2005). For example, Arcury & Johnson (1987) conducted a statewide survey and compared its results to a nationwide survey administered earlier to understand consumers' general eco-conscious knowledge. Results indicated there was no increase in levels of eco-conscious knowledge during the five years separating the national and statewide surveys. The researchers further indicated that, despite environmental movement being highly publicized over the past two decades, the publics' eco-conscious knowledge remained at "alarmingly low-levels". Similarly, Hwang, Kim and Jeng, (2000) also found that higher eco-conscious knowledge does not always lead to pro-environmental behaviors.

Haron, Paim and Yahaya, (2005) conducted a study to examine householders eco-conscious knowledge in Malaysia. Even though results revealed respondents have a general understanding of eco-conscious knowledge, it was found that they have very low-levels of eco-conscious knowledge related to scientific environmental terms. The study results indicated that possessing low-levels of complex eco-conscious knowledge might deter consumers to actively participate in activities related to the environment. Similarly, a study was conducted to examine the level of eco-conscious knowledge possessed by students at a reputed American university and compared the study results to the results of a biannual national study conducted to examine

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the level of eco-conscious knowledge possessed by the general population in the US The comparison indicated that students have a significantly higher knowledge about environmental issues than an average American adult. However, overall eco-conscious knowledge of students was still relatively low with only 66% of them obtaining a passing grade (Kaplowitz & Levine, 2005). Studies indicate that, when people have insufficient knowledge to guide their behavior and expect a possibility of greater amounts of confusion, they tend to dislike and avoid such situations (Kaplan, 1991). Therefore, in the absence of sufficient knowledge about environmental issues that motivate individuals to perform eco-conscious behaviors, it is likely in such situations for consumers to hesitate in adopting eco-conscious behaviors.

One of the eco-conscious behaviors relevant to this study is the eco-conscious purchase behavior. As environmental concern is becoming more prominent, companies that are profit driven as well as those with social responsibility values are adopting the concept of eco-conscious marketing and addressing issues related to the environment as a source of gaining competitive advantage through developing and promoting eco-conscious products. While companies are busy promoting eco-conscious products and product strategies, the number of studies that are investigating behaviors pertaining to eco-conscious product purchase are increasing. However, similar inconsistent relationships found between knowledge and eco-conscious behavior were also found in studies that specifically focused on eco-conscious purchase behavior (Auger & Devinney, 2007; Carrigan, Szmigin, & Wright, 2004; Eckhardt, Devinney & Belk, 2006; Fan, 2005; Roberts, 1996; Uusitalo & Oksanen, 2004).

According to Shamdasani, Chon-Lin, and Richmond (1993), an eco-conscious product is an ecological or an environmentally friendly product. As such, the terms "green", "environmentally friendly", "pro-environmental", "environmental", or "ecological conscious"

were used interchangeably in the literature (Mostafa, 2007; Shamdasani, et al, 1993; Shrum, et al, 1995). In a broader context, eco-conscious product was defined as one "that will not pollute the earth or deplete natural resources, and can be recycled or conserved" (Klein, 1990, p. 30). According to Elkington and Makower (1988) and Wasik (1996) the content of a green product or the packaging of it is such that it contributes in reducing the impact on the environment. The Eco-products directory (2008) defined eco-conscious product as one that reduces the environmental impact through one or more of its characteristics with regard to recyclability, reusability, refillability, longevity, degradability or compostability, greater quality in terms of its green performance, energy saving, using recycled materials and less toxic materials. However, for this study, an eco-conscious product is defined as the one whose production, processing, consumption, and disposal is carried out in such a way that results in minimal environmental damage than other similar products.

Eco-conscious marketing, according to Polonsky (1995), refers to green or environmental marketing that "consists of all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment" (p. 31). Eco-conscious marketing integrates a wide range of activities such as redesigning the product, modifying the production processes, changing the methods of packaging as well as advertising. According to a company's perspective eco-conscious marketing refers to "a supporting tool for monitoring, seeking, and fulfilling consumer needs and desires in the context of environmental responsibility" (Lee et al., 2013, p. 513; Akehurst, Afonso, & Gonçalves, 2012). On the other hand, according to the consumer's perspective, eco-conscious marketing refers to "a convenient and effective way to contribute to the environmental preservation cause through purchasing

green products" (Lee et al., 2013). Companies use eco-conscious advertising claims such as "eco-friendly', "environmentally safe", "recyclable", "biodegradable", and "ozone friendly" to promote their eco-conscious products (Tan, 2011).

Eco-conscious purchase behavior for this study refers to acquiring of products and/or practices that benefit or cause less harm to the environment than other similar ones (Ebreo, Hershey, & Vining, 1999; Haron, Paim, & Yahaya, 2005; Pieters, 1991). The results from studies that investigated the relationship between eco-conscious knowledge and eco-conscious purchase behavior have also yielded inconsistent results from one study to another. For example, in a study by Flamm (2006) on vehicle ownership and use, it was found that households knowledgeable of the environmental impacts of owning and using a vehicle own fewer and more fuel-efficient vehicles, drive them less and consume less fuel. Furthermore, in a study by Schlegelmich, et al., (1996) who constructed three components of environmental consciousness (i.e., eco-conscious knowledge, eco-conscious attitude and eco-conscious behavior) indicated that consumers who display higher environmental consciousness exhibit greater frequency of eco-conscious purchases. The results also indicated that perceived eco-conscious knowledge was related to general eco-conscious purchase behaviors as well as purchase of recycled paper products.

On the other hand, another group of studies did not find a significant relationship with regard to eco-conscious knowledge and eco-conscious purchase behavior (Do Paço & Raposo, 2009; Tadajewski & Tsukamoto, 2006; Rahbar, 2008). For example, Laroche et al. (2001) conducted a study to investigate demographic, psychological and behavioral profile of consumers who are willing to pay more for eco-conscious products. The authors did not find eco-conscious knowledge to be a good predictor of consumers' willingness to pay more for eco-

conscious products and indicated that the average eco-conscious knowledge score of those who

indicated their willingness to pay more for eco-conscious products was same as those who were

not willing to pay more. Similarly, in a qualitative study conducted by Tadajewski and

Tsukamoto (2006) to understand eco-conscious purchase behavior, it was found that

respondents, despite possessing knowledge about life-cycle analysis failed to translate such

knowledge into everyday shopping and consumption behavior. Do Paço, Raposo and Filho

(2009) who used demographic and environmental variables to segment eco-conscious consumers

have also concluded that even though respondents were found to be knowledgeable about

environmental problems, it was not always translated into their eco-conscious purchase

behaviors.

Eco-conscious Apparel Knowledge and Eco-conscious Apparel Purchase Behavior

The inconsistent results from one study to another with regard to the relationship between

eco-conscious knowledge and eco-conscious behavior suggests that rather than looking at

general eco-conscious knowledge, looking at product specific eco-conscious knowledge may

yield consistent results. Therefore, looking at product specific eco-conscious knowledge

pertaining to eco-conscious apparel may aid in better understanding the relationship between

eco-conscious apparel knowledge and eco-conscious apparel purchase behavior. However, very

few studies have been found that investigated eco-conscious apparel knowledge and eco-

conscious apparel purchase behavior, which are discussed in the following section.

Although findings from a group of studies indicated that individual's concern for the

environment may influence their decision toward apparel consumption pertaining to purchase

and disposal, and store patronage (Birtwistle & Moore, 2007; Butler & Francis, 1997; Hawley

2006; Ogle, Hyllegard, & Dunbar, 2004; Staikos & Rahimifard, 2007) research related to eco-

conscious apparel product consumption is not an area extensively investigated by researchers. The group of studies that have been conducted are scattered investigating social, environmental and psychological aspects of clothing such as, knowledge, attitudes and purchase behavior, social responsibility, environmental responsibility, fair trade clothing, clothing produced in sweatshops, ethical clothing, second-hand clothing, recycled clothing and labeling issues related to fiber origin, barriers toward eco-conscious apparel consumption, and segmentation of eco-conscious consumers using demographic and psychographic variables (Birtwistle & Moore, 2007; Bostic, 2008; Connell, 2008/2010; Gam, 2011; Ha-Brookshire & Norum, 2011; Hustvedt & Bernard, 2008; Hustvedt & Dickson, 2009; Kozar, & Connell, 2013; Kozar & Hiller Connell, 2011; Niinimäki, 2010; Yan, Hyllegard, & Blaesi, 2012).

Similar to the findings from studies that investigated the relationship between eco-conscious knowledge and eco-conscious purchase behavior, results from studies investigating the relationship between eco-conscious apparel knowledge and eco-conscious apparel purchase behavior have been inconsistent. For example, a study by Kim and Damhorst (1998) indicate that, consumers possess very low-levels of knowledge related to environmental issues in apparel and textile industries and were not highly involved in general pro-environmental behaviors with regard to other areas of their life.

In another study by Hines and Swinker (1996) it was found that, consumers are more likely to select apparel made out of recycled fibers if they are knowledgeable about recycling. Similarly, a study by Stephens (1985) on the relationship between ecological issues and apparel consumption sought to investigate consumer's attitudes and behaviors related to eco-conscious clothing consumption and characteristics of eco-conscious apparel consumers. The study results indicate that consumers who are knowledgeable about the impact of apparel consumption on the

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environment try to reduce their apparel consumption through exhibiting eco-conscious behaviors such as buying second-hand clothing and/or classically styled garments and apparel recycling. However, studies indicate that eco-conscious apparel knowledge does not necessarily influence consumer's eco-conscious apparel purchase decision. The reason according to Crawford (2008) is that consumers view apparel products as being manufactured in different countries and hence consumers believe that apparel-manufacturing process is too large and fragmented that their individual behavior will not make an impact on the environment. Hence, consumers indicate that they are mostly concerned about the issues that have a direct impact on the consumers such as organic foods (Joergens, 2006).

Hiller Connell (2010) in her study indicated that, for consumers to engage in eco-conscious purchase behavior, they need more information about various processes throughout the apparel supply chain. Similar results were found in other studies indicating that, consumers possess a limited amount of knowledge with regard to the factors associated with eco-conscious apparel, and hence they need a greater amount of knowledge to become more eco-conscious (Dickson, 2000; Joergens, 2006).

In summary, Rogers (2003) indicated knowledge as the first stage in the innovation-decision process during which individuals get to know about the existence of an innovation. From the body of literature pertaining to the link between knowledge and behavior, an inconsistency was found from one study to another. While some studies indicated knowledge influences behavior, others stated that knowledge is necessary but not sufficient for the behavior to occur (Kaiser & Fuhrer, 2003). On the other hand, studies have found that people with a high-level of eco-conscious knowledge display greater level of eco-conscious behaviors compared to people with a low-level of eco-conscious knowledge (Chan, 1999; Kim & Damhorst, 1998). The

literature also indicates that consumers needed more eco-conscious knowledge to be able to make purchase decisions about eco-conscious apparel (Joergens, 2006). Hence, it was hypothesized that

> *H1a: Eco-conscious apparel knowledge has a statistically significant influence on the*
> *intention to purchase eco-conscious apparel.*

Knowledge, although important to learn about the existence of an innovation may not in itself be sufficient motivation to adopt such an innovation. Furthermore, according to Hassinger (1959), unless an individual feels a need for an innovation, they will seldom expose themselves to messages about such innovations. Hence, if such individuals are even exposed to those innovations, it may not be adopted unless individuals perceive innovation to be relevant to his needs and consistent with pre-existing attitudes and beliefs. As such persuasion stage in the innovation decision-making process plays a significant role during which an individual forms an attitude, either positive or negative about the innovation.

Persuasion Stage

Persuasion stage is the second stage in the innovation-decision process during which, an individual forms either a favorable or an unfavorable attitude towards the innovation (Rogers, 1983). As the individual forms a favorable or unfavorable attitude towards the innovation, he/she is more psychologically involved at the persuasion stage. As such, while the knowledge stage is more of cognitive or knowing centered, persuasion stage is more affective or feeling centered (Rogers, 1983). At this persuasion stage, attitudes play a significant role in influencing the individual to form a positive or a negative attitude towards the innovation which in turn influences their decision to adopt or not to adopt the innovation.

Considering a new idea may not pass beyond knowledge stage if an individual does not see the information to be relevant to his situation or if the individual does not obtain sufficient knowledge to be better informed for the persuasion to first take place (Rogers, 2003). The individual actively seeks information and forms a general perception of the innovation. While developing a favorable or unfavorable attitude towards the innovation, an individual may relate it to his/her personal situation to see how well it fits in and decides on whether or not to try the new idea or product. The individual tries to think forward about what will happen if he/she adopts the innovation (Rogers, 2003). The outcome of this persuasion stage is generally a change in the behavior leading to adoption or rejection of the innovation. However, as expected, attitudes formed about the innovation may not be consistent with the actions of the individuals in many situations and thus a favorable or an unfavorable attitude formed about the innovation may not always lead to the adoption or rejection of an innovation (Rogers, 2003).

Eco-conscious Knowledge, Eco-conscious Attitudes and Eco-conscious Behavior

Due to their importance exerted on eco-conscious behaviors, the relationships between eco-conscious knowledge, eco-conscious attitudes and eco-conscious behaviors have been researched in several studies (Hines, Hungerford & Tomera, 1987; Maloney & Ward 1973; Tikka, Kuitunen, & Tynys, 2000; Weaver, 2002). Rogers (1983) also indicated that attitudes toward an innovation "frequently intervene between the knowledge and decision functions" (p. 169). However, there exists an inconsistency with regard to the link between knowledge, attitude and behavior, which was identified in many studies in general, as well as with regard to eco-conscious behavior. Some studies indicate that knowledge about the environment influences eco-conscious behaviors and an appropriate level of knowledge is necessary for an appropriate behavior to occur (Spada & Ernst, 1992). However, other studies found that eco-conscious

knowledge does not always influence behavior directly. The studies found eco-conscious knowledge to be a precondition for attitude formation (Kaiser, Wolfing, & Fuhrer 1999), which in turn influences behavior. DiEnno and Hilton (2005) asserted that individuals must be aware of and possess certain amount of knowledge related to an environmental issue to form an opinion pertaining to that issue. Attitudes such formed influence consumers' decision toward eco-conscious behaviors.

Attitude, as stated by Allport (1935) is "a mental and neutral state of readiness, organized through experience, exerting a directive or dynamic influence on individual's response to all objects and situations with which it is related" (p. 810). Environmental or eco-conscious attitude as such "is a psychological tendency that is expressed by evaluating perceptions of or beliefs regarding the natural environment, including factors affecting its quality, with some degree of favor or disfavor" (Milfont, 2007, p. 12). Attitude towards the environment was also termed as "environmental concern" in various research studies (Dunlap & Jones, 2002; Vining & Ebreo, 1992; Fransson & Gärling, 1999). Environmental concern as explained by Dunlap and Michelson (2002) is "the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution" (p. 485).

While some studies have used both the terms, environmental concern and environmental or eco-conscious attitudes as synonyms (Dunlap & Jones, 2003; Van Liere & Dunlap, 1981) other studies differentiated them (Heberlein, 1981; Schultz t al., 2005; Schultz, Shriver, Tabanico, & Khazian, 2004; Stern & Dietz, 1994). In this study, however, the term "eco-conscious attitude" was used for two reasons. First, eco-conscious attitude seems to be the best psychological index term generally used (Gallagher, 2005) and also is the term preferred in

studies related to environmental issues (Dunlap & Jones, 2002). Second and most important, researchers are now viewing "environmental concern" as just one of the aspects of eco-conscious attitude (Bamberg, 2003; Schultz et at., 2005; Schultz et al, 2004) and hence, using the term "eco-conscious attitude" over "environmental concern" was deemed appropriate for this study.

Many studies argue that there is a relationship between knowledge and behavior and that people who are involved in eco-conscious behavior possess greater eco-conscious knowledge (Fraj-Andrés and Martínez-Salinas, 2007; Hines, et al. 1987; Pickett-Baker & Ozaki 2008; Spada & Ernst, 1992; Thøgersen 2000). However, other studies did not find a direct relationship between eco-conscious knowledge and eco-conscious behaviors (Maloney & Ward 1973; Schahn & Holzer, 1990). Rather, researchers such as Schahn & Holzer (1990) proposed that applicable knowledge should have a moderating influence on the relationship between attitudes and behavior. In congruence with their statement, studies have found that knowledge influences eco-conscious attitudes, which in turn, motivates consumers to engage in eco-conscious behaviors (Moisander, 2000). In other studies attitude served as a mediating variable (Davies, Foxall, & Pallister 2002) to measure the relationship between knowledge and behavior. As such, in some studies, eco-conscious attitude was influenced by eco-conscious knowledge, which in turn influenced eco-conscious behavior (Kaiser, Wolfing & Fuhrer 1999; Lynne & Rola 1988; Maloney & Ward 1973).

Knowledge was also found to be a moderating variable between eco-conscious attitudes and eco-conscious behavior by Arbuthnot, & Lingg (1975), Grunert & Kristensen (1992) and Martin, & Simintrias (1995). For example, Laroche, Toffoli, Kim and Muller (1996) examined the impact of knowledge on the relationship between ecological attitude and behavior. The authors concluded that individuals' eco-conscious knowledge provided them with necessary

action strategies to protect the environment and such value system also shapes their attitudes and intentions. Furthermore, a study by Meinhold and Malkus (2005) examined the relationships among adolescent eco-conscious behaviors and self-efficacy, knowledge and attitudes found that eco-conscious attitudes significantly predict eco-conscious behaviors and that eco-conscious knowledge plays a significant role in moderating the relationship between eco-conscious attitudes and eco-conscious behaviors. Similarly, Barreiro, Lopez, Losada, & Ruzo (2002) in their study also indicated that individuals that have a higher concern towards the environment are those that have higher levels of ecological knowledge.

A change in an individual's attitude is an important and necessary prerequisite in many cases for a change to occur in their behaviors. Though, we do not at all times act according to our existing attitudes and beliefs, changing attitudes does sometimes influence individuals to alter their behaviors (Nickerson, 2003). However, such attitudes should be strong enough to bring a change in behaviors. For example, the results from a meta-analysis of fifty-one outcome measures not only indicated the existence of an attitude-behavior relationship, but also found that, individuals who are likely to have reported engaging in eco-conscious behaviors are those with higher positive attitudes than those with less positive attitudes (Hines, et al., 1987). Similarly, Do Paço, and Raposo, (2009) indicated that attitudes can have a strong influence on eco-conscious purchases and consumers who are more closely involved with the environment are the ones who are more likely to purchase eco-conscious products.

Contrary to these studies, eco-conscious attitude was not found to be a strong determinant of consumer's eco-conscious behaviors. For example, Gatersleben et al. (2002) compared eco-conscious behaviors with energy use and found that though consumers report greater pro-environmental behaviors they do not necessarily involve using less energy. Similarly, Barr,

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Shaw, Coles, and Prillwitz (2010) found eco-conscious attitude to be a significant factor in choosing everyday traveling modes, but not for vacation travel. They indicated that, when opting for holiday travel it is an individual's socio-economic condition which influences behavior, thus, creating a conflict between an individual's personal values and societal expectations in which consumers personal values win over societal norms and expectations.

There are also studies that did not find significant relationships between eco-conscious knowledge, eco-conscious attitude and eco-conscious behavior. For example, in a study by Laroche, Tomiuk, Bergeron, and Barbaro-Forleo, (2002) investigating the influence of eco-conscious knowledge on eco-conscious attitude and behavior among Canadians, the findings could not confirm the hierarchical relationship of eco-conscious knowledge-eco-conscious attitude-environmental behavior. The researchers indicated eco-conscious knowledge to be a poor predictor of eco-conscious attitude or behavior between English Canadians and French-Canadians. Similarly, studies have also indicated that concern for the environment and pro-eco-conscious attitudes do not always lead to pro-environmental behaviors (Gutfeld, 1991; Hughner etal., 2007; Niva & Timonen, 2001).

Studies have also found inconsistencies with regard to the link between eco-conscious knowledge, eco-conscious attitudes and eco-conscious purchase behavior. The research identified that consumer's positive intentions and attitude towards eco-conscious products does not necessarily translate into actual purchase behaviors (Joergens, 2006). For example, Fraj-Andrés and Martínez-Salinas, (2007) in their study examined the relationship between individuals' attitude and ecological behavior and the role of eco-conscious knowledge as a moderating variable between the two. The study results indicated attitude as a significant preceding factor to the behavior. Further, study results found people who were willing to follow

ecological life-styles were more likely to consider products that were less harmful to the environment. However, such relationship was found to be very weak. The results found that though people feel strongly about environmental problems, they do not consider environmental issues seriously while involving in shopping behaviors and daily customs.

Another study was conducted by Eckhardt, Devinney, & Belk, (2006) to understand the consumers' justification for not adopting ethical behaviors, such as buying non-ecological products having a negative impact on the environment. Other unethical behaviors studied included buying counterfeit products and buying products made by underpaid workers. The study was conducted to understand such unethical behaviors among consumers from various countries. Researchers confirmed that consumers are not yet ready to forego their comforts and life-styles for societal causes. Though, consumers say they care for the environment, they still are not able to translate those attitudes into purchase behaviors because they continue to believe that they need to forego certain comforts and compromise with their life-styles if they were to adopt such eco-conscious behaviors.

Researchers have identified a weak relationship between possession of eco-conscious knowledge and eco-conscious attitudes and exhibiting eco-conscious behaviors by consumers for a wide range of eco-conscious products (Kollmus, Agyeman, 2002; Padel, Foster, 2005; Vermeir & Verbeke, 2006). Literature reveals that, though there is an association between eco-conscious attitudes and behavior, they are not highly correlated and attitudes if taken alone are poor indicators of predicting the behavioral intentions (Ajzen, 2001; Antil, 1984; Dunlap et al., 1979; Kinnear, Taylor, & Ahmen, 1974; Kraus, 1995). For example, in a large-scale study by Cowe and Williams (2000), they found that even though more than one third of consumers in the UK claim to be 'ethical purchasers' only 1-3% of the market share was occupied by ethical products,

which confirms the weak relationship between attitudes and behavior. The authors called this phenomenon as '30:3', where 30% of the population claim to care about ethical standards, but only 3% of the purchases reflect those standards. Although, the study is related to ethical products, it was used as an example to understand the weak relationship between attitudes and behavior.

Another group of literature examined the type of attitudes affecting behavior and found that attitudes have to be more specific than general to have a greater influence on behavior. In other words, it is the concrete behavioral intention towards a particular object or situation that is more likely to lead toward behavioral change than more general attitudes. For example, behaviors occur in a specific context and hence, attitudes should also be more specific within the same context for behaviors to follow. In other words, a stronger relationship can be found between attitude and behavior when both of these constructs are measured through similar level of abstraction (Ajzen, & Fishbein, 1977; Fishbein & Ajzen, 1975; Fisherbein & Middlestadt, 1995).

Supporting this assumption, Bamberg (2003) asserted that general attitudes like concern for environment are poor predictors of specific behaviors because general attitudes cannot directly influence behaviors. He further states that, while general attitudes may not predict specific behaviors, situation specific attitudes can be effective in determining specific behaviors. For example, the attitude towards recycling was found to be predictive of recycling behaviors more effectively than attitude towards environmentalism (Vining & Ebreo, 1992). Further, it is the belief of individuals regarding impact of cars on environment that predicts their use of public transportation more effectively than attitudes on social values (Joireman, Van Lange, & Van Vugt, 2004). Alwitt and Pitts (1996) in their study examined the influence of environmental

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concern on consumers purchase intentions for environmentally sensitive product: disposable diapers. They hypothesized that environmental concern has an indirect influence on consumers' purchase intentions for disposable diapers. The results from the study supported and confirmed that the stronger the consumer's attitudes toward the environmental consequences of using a particular product such as disposable diapers, the lesser were consumer's intention to purchase disposable diapers.

Eco-conscious Apparel Knowledge, Eco-conscious Apparel Attitudes and Eco-conscious Apparel Purchase Behavior

Research indicated that in order to find a high correlation between attitude and behavior the researchers have to measure the attitude toward that particular behavior (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). However, very few studies have been carried out to understand eco-conscious apparel purchase behavior. Among those, very few studies have included knowledge and attitudes to understand eco-conscious apparel purchase behavior and results from those studies have also been inconclusive. The following section is dedicated toward review of these studies.

A study was conducted by Kim and Damhorst (1998) who examined the relationship between eco-conscious attitudes and apparel consumption behavior by focusing on the level of consumer's knowledge about environmental issues pertaining to apparel and textile production and relationship between general environmental concern, eco-conscious apparel product knowledge, general environmentally responsible behavior and environmentally responsible apparel consumption behaviors (acquisition of second-hand clothing, environmentally preferable clothing and avoiding apparel products for reasons related to environment). The results found very limited degree of behavior among respondents with regard to eco-conscious apparel consumption. The only relationship found in this study was with regard to general eco-conscious

behavior and eco-conscious apparel consumption behaviors. It was concluded in the study that

no strong relationship exists between environmental concern, eco-conscious knowledge and

specific environmental behaviors related to apparel consumption and hence, there are many

intervening factors affecting consumers' attitudes and behaviors. As this study was conducted a

few years ago when eco-conscious apparel was still at the initial stage, it can be thought that the

results would be different now. However, similar results were found from a recent study

conducted by Hiller Connell (2010).

Hiller Connell (2010) in her qualitative study conducted semi-structured interviews

among 26 eco-conscious consumers desiring to engage in "eco-conscious apparel acquisition

behaviors" to investigate the barriers they face in acquiring eco-conscious apparel. Results from

the study indicate that consumers face several barriers that stand in their way of engaging in eco-

conscious apparel acquisition behaviors on a consistent basis. The barriers identified include

internal barriers related to knowledge and attitudes and external barriers related to availability of

environmentally preferable apparel, economic resources, societal norms and retail environments.

With regard to knowledge, Connell's study results indicate that, for consumers to engage in eco-

conscious apparel acquisition behaviors they needed more information about manufacturing

processes involved, the distance apparel product traveled throughout the supply chain and the

associated carbon footprint, environmental effects of apparel products specifically with regard to

environmental impacts of fibers and finishes and where to acquire environmentally preferable

apparel. Regarding attitudes, for consumers to shift their attitudes and consistently engage in

eco-conscious apparel acquisition behaviors, the attributes and characteristics of environmentally

preferable apparel needs to be modified to better able to meet consumer's needs and wants and

companies selling environmentally preferable apparel needs to improve their marketing

strategies to make consumers aware of the range of environmentally preferable apparel already available to them that fit their style.

Study results further suggest that, for companies to remove the barrier of limited availability of environmentally preferable apparel, they have to concentrate on developing more product categories that suits the needs of a variety of consumers. For reducing the higher price barrier associated with environmentally preferable apparel, results indicate that consumers need to be made aware of other affordable alternatives of engaging in eco-conscious apparel acquisition behaviors like apparel acquisition through second-hand sources. The study results indicate that there is not much that can be done to mitigate the barrier related to societal norms. However, as consumers become more aware of environmentally preferable apparel and as more people engage in adopting eco-conscious approach of acquiring apparel, the societal norms of appearance might change making it appropriate for people to wear environmentally preferable apparel in different environments. Though results from this study are significant in understanding the barriers consumers face in acquiring eco-conscious apparel, the limitation of being a qualitative study with such a small sample limits its generalizability to a much broader consumer group.

In another study, Gam (2011) investigated to understand if consumers' fashion orientation, shopping orientation, environmental concern and eco-conscious behavior predicts consumer's purchase intention toward environmentally friendly clothing (EFC). Results from the study identified a positive effect of environmental concern and eco-friendly behavior on environmental consumption implying that the consumer's purchase of environmentally friendly clothing is a sign of their recognition of environmental impacts they have. However, it was revealed in the study that even though consumers have a concern for the environment and

indicated an intention to purchase environmentally friendly clothing, they have a very limited

experience of purchasing environmentally friendly clothing because of their limited availability.

In summary, Rogers (2003) identified knowledge and attitudes as playing an important

role in influencing the individual's decision to adopt or not to adopt an innovation. Although the

literature suggests that there exists a relationship between knowledge, attitudes and behavior

(Ajzen, & Fishbein, 1977; Fishbein & Ajzen, 1975; Rogers 2003), the studies have so far been

inconsistent in their findings about the link. While some studies indicated that attitudes do

influence behavior (Nickerson, 2003), others stated that, knowledge has a moderating influence

on the link between attitudes and behavior (Meinhold and Malkus, 2005). On the other hand,

studies have also indicated that even though consumers possess positive attitudes toward the

environment, it does not always lead to eco-conscious behavior in general (Barr et al. 2010;

Gatersleben et al. 2002) as well as purchase behavior in particular (Cowe & Williams, 2000).

The literature pertaining to eco-conscious apparel knowledge, eco-conscious apparel attitudes

and eco-conscious behavior is very limited and thus far inconsistent with no definitive answer on

the exact relationship between knowledge, attitudes and behavior. Therefore, delving further into

the link seems necessary to understand if knowledge and attitudes together influences behavior

with regard to eco-conscious apparel. Hence, it was hypothesized that:

> *H1b: Eco-conscious apparel knowledge and eco-conscious apparel attitudes together*
> *have a statistically significant influence on the intention to purchase eco-conscious*
> *apparel.*

Perceived Characteristics of an Innovation

According to Rogers (2003), individuals are more psychologically involved with the

innovation during the persuasion stage. At this stage, they actively try to seek more information

about the innovation. The important questions to understand here about individual's behavior are related to, from where does the individual seek information? What kind of information does he or she receive? And, how does that individual interpret the information he or she received? As a general perception of the innovation is developed at persuasion stage, the selective perception of information received by the individual is important in determining his or her behavior toward the innovation. Hence, such selective perception of information, in the form of perceived attributes of an innovation, specifically its complexity, compatibility and relative advantage, is important at this persuasion stage (Rogers, 2003).

All innovations carry a certain amount of risk and as such, individuals sometimes may not be sure of how an innovation functions. Hence, individuals seek information to evaluate the innovation that aids in reducing the uncertainty associated with it. One evaluates the information to understand the advantages and disadvantages of the innovation from own personal perspective. Seeking information from other members in the society about their attitude towards the innovation to make sure his/her attitude is similar to the opinion of peers and to reduce the uncertainty associated with the innovation (Rogers, 2003).

During such uncertainty reduction process at the persuasion stage, certain factors such as perceived characteristics of an innovation significantly influence an individual's attitude toward the innovation (Rogers, 1983). Studies found that adoption of an innovation can often be better explained by differences in how a potential adopter perceives these characteristics of an innovation (Atkinson, 2007). Barnett (1953) was one of the first to propose that "the character of the new idea itself is an important determinant of the nature of the reception to the idea" (p. 313). Later, Rogers & Shoemaker (1971) categorized these product characteristics in the evaluation of an innovation. Since then, it has been suggested by various researchers that these characteristics

of innovation influences the rate and likelihood of its diffusion through a social system and its consequent adoption among the members in such social system (Arnould 1989; Gatignon & Robertson, 1985; Rogers, 1983). Similarly, it was found in a study that adoption of an innovation is highly determined and based on consumers' perception of the product and its attributes (Robertson, 1971).

These characteristics of innovation are complexity, compatibility, relative advantage, trialability and observability. Complexity is the degree of difficulty using or understanding the innovation. Compatibility is related to, how well an innovation fits into the adopter's life-style, their norms and values. Relative advantage is the degree to which current innovation is advantageous compared to other products of similar kind. Trialability refers to the ability of an individual to try out the product before making an adoption decision. Observability refers to the degree to which an innovation is visible and conveys exactly what it is and what it does. The results from past research suggest perceived characteristics of innovation significantly influence behavior and can explain about 49-87% of variance in the adoption of an innovation (Rogers, 2003).

Even though all of the perceived characteristics are conceptually distinct, they are somewhat interrelated empirically. It is not the objective classification of the attributes made by the experts or change agents that affect the adoption of an innovation, but the individual's perception of these attributes of an innovation (Rogers, 2003). For example, an innovation may cost (a primary attribute) a certain fixed amount. However, a potential adopter evaluates the cost attribute based on a variety of personal factors, such as financial resources and capabilities. Hence, while one individual perceives price to be expensive and as such perceives price as a barrier towards adopting the innovation, another individual may not perceive price as a barrier to

the adoption of an innovation. This could be because for those individuals price may not seem expensive, or they may overlook the price attribute because of the other aspects of the product, such as the environmental aspect, may seem more important to them.

While a body of literature indicated an inconsistency with regard to which variable(s) in particular influenced the weak relationship between knowledge, attitude and behavior, other studies show that attitudes are more likely to result in behavior when such behaviors fulfill individual's personal needs or benefit them directly than behaviors that benefit the society. In other words, attitudes are more likely to be consistent with behaviors when such behaviors result in a personal benefit to individuals performing the behavior. For example, in studies conducted with organic food consumers, it was revealed that almost 93% of the consumers were motivated to purchase organic foods because consumption of organic foods were felt to affect consumer's health directly and not primarily because of the environment (Hutchins & Greenhalgh, 1997; Squires, Juric, & Cornwell, 2001). These studies indicated that, such product characteristics as perceived by the individual directly influence his or her attitude towards that product and aids in the product's adoption or rejection.

Furthermore, there is very limited research that has examined the influence of these perceived characteristics within consumer behavior studies (Dickerson & Gentry, 1983; Goslar, 1987; LaBay & Kinnear, 1983; Ostlund, 1972; 1974). Specifically, there is no empirical study that researched the link between knowledge, attitudes and behavior by including perceived characteristics of an innovation. Hence, it seems appropriate and important to look at the relationship between eco-conscious apparel knowledge, eco-conscious apparel attitudes and eco-conscious apparel purchase behavior by including perceived characteristics of innovation to see if it can aid in strengthening the weak and the inconsistent link between knowledge, attitudes and

behavior. Therefore, this study aims at answering the research question; do eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation together have a stronger influence on intention to purchase eco-conscious apparel?

Although, perceived characteristics of an innovation were found to be significant in understanding adoption of the innovation, the research that investigated how perceived characteristics influence the adoption of an innovation is very limited. For example, according to Rogers and Shoemaker (1971), among 6811 studies collected by Michigan State University's Diffusion Documents Center, only 82 or 1.2% of studies have examined the effect of perceived characteristics on the adoption of an innovation. Studies in the past that have used perceived characteristics of innovation have used them to understand the intention, adoption and diffusion of products, services and technologies in the fields of computer technology, e-business, e-health and other technological products (Agarwal & Prasad, 1997; Black, Lockett, Winlhofer, & Ennew, 2001; Chen 2003; Di Gangi & Wasko, 2009; Holak & Lehmann, 1990; Hsu, Lu, & Hsu; 2006). These studies have also indicated that perceived characteristics of innovation have a significant influence on the decision to adopt or not to adopt a product (Agarwal & Prasad, 1997; Black et al., 2001; Di Gangi & Wasko, 2009; Ostlund, 1974). Irrespective of the amount of behavioral change demanded by an innovation, these characteristics were found to be highly desirable in a product for it to be adopted by a wide range of consumers (Solomon & Rabolt, 2004). However, there is very limited research that has examined the influence of these perceived characteristics on adoption of innovation within consumer behavior studies (Dickerson & Gentry, 1983; Goslar, 1987; LaBay & Kinnear, 1983; Ostlund, 1972). Research has also been very limited with regard to how these perceived characteristics of the product actually operate to affect intentions and final adoption (Holak, & Lehmann, 1990).

Even though, studies in the past have identified a significant relationship between perceived characteristics and adoption of innovation, there still exists a discrepancy with regard to which perceived characteristics have a higher degree of influence on the adoption of an innovation. While some studies found a significant relationship between all of the five perceived characteristics and adoption of an innovation, other studies found only certain perceived characteristics to be significantly related to innovation adoption (Rogers, 2003). Rogers (1983) also indicated that among the five perceived characteristics of innovation; complexity, compatibility and relative advantage are the ones that significantly influence the adoption of an innovation. Similarly, Tornatzky, and Klein (1982) reviewed 75 articles that have examined the perceived characteristics of innovation and their relationship to innovation adoption and implementation. They found that only three among ten of the perceived characteristics of innovation they identified from these studies, that is, complexity, compatibility and relative advantage as having the most consistent significant relationship with adoption of an innovation. Hence, this study focused only on the three perceived characteristics of innovation; complexity, compatibility and relative advantage in better understanding the link between eco-conscious apparel knowledge, eco-conscious apparel attitudes and eco-conscious apparel purchase behavior. Therefore, it was hypothesized that,

> *H1c: Eco-conscious apparel knowledge, Eco-conscious apparel attitudes, and perceived characteristics of innovation (i.e. complexity, compatibility and relative advantage) with regard to eco-conscious apparel have a statistically significant influence on the intention to purchase eco-conscious apparel.*

It was indicated in a previous section of this chapter that consumer's eco-conscious apparel knowledge was found to be very limited from studies in the past (Butler & Francis, 1997;

Joergens, 2006; Kim & Damhorst, 1998). This indicates that, for consumers to make informed decisions and engage in eco-conscious apparel purchase behaviors, they need more information about eco-attributes of apparel. For example, a study by Hiller Connell (2010) showed that people need more information about the manufacturing processes involved, the distance apparel product traveled throughout the supply chain and the associated carbon footprint, environmental effects of apparel products specifically with regard to environmental impacts of fibers and finishes and where to acquire environmentally preferable apparel (EPA) to engage in eco-conscious apparel consumption behaviors. Similarly, studies by Dickson, (2000) and Joergens, (2006) have also indicated that consumers need more information about the eco-conscious attributes of apparel products to become more eco-conscious. Hence, it was hypothesized that,

> *H1d: There will be greater influence of eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation on intention to purchase eco-conscious apparel when more information about eco-attributes of the innovation is provided than less information.*

These studies indicate that, the amount of information provided about the eco-attributes of innovation is significant in influencing consumers purchase decision toward eco-conscious apparel. However, no study has been carried out to understand if the amount of information provided about eco-conscious attributes of the innovation (i.e., eco-conscious apparel) influences how consumers perceive innovation characteristics and how does it influence consumers' purchase behavior toward eco-conscious apparel. Therefore, this study aims to understand the following questions: Does amount of information reported about the eco-conscious attributes of the innovation influence consumers' perception of innovation characteristics? And, does

consumers' perception of the eco-conscious attributes of the innovation makes a difference in consumers' intention to purchase eco-conscious apparel?

Research suggests that individuals' attitudes will greatly influence their purchase behaviors when such behaviors have a direct impact on their personal interests rather than societal interests. This indicates that, adoption of eco-conscious behaviors may be highly favored when consumers perceive such behaviors to be positively benefiting them personally. In other words, when consumers perceive product attributes to be yielding a direct positive benefit to them personally, then in such instances, consumers will exhibit greater interest in transforming their eco-conscious attitudes into eco-conscious purchase behaviors (Hutchins & Greenhalgh, 1997; Squires et al., 2001). While studies do prominently suggest that perceived characteristics of innovation significantly influence an innovation's adoption, they also indicate that not all perceived characteristics of innovation affect the innovation's adoption similarly. According to Rogers (1995), while compatibility and relative advantage were positively related, complexity was negatively related to adoption of an innovation. The next section of the chapter discusses each of the three perceived characteristics; complexity, compatibility and relative advantage in relation to their influence on the relationship between knowledge, attitudes and purchase decision-process of eco-conscious apparel.

Perceived Complexity of Eco-conscious Apparel

Complexity is "the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers, 2003, p. 257). Complexity was perceived to be negatively associated with innovation adoption and hence, it can be inferred that the higher the complexity related to innovation as perceived by potential adopter the lower will be the rate of its adoption and vice-versa (Rogers, 2003). Any innovation carries with itself a complexity-simplicity

continuum. Complexity for some innovations that are simple to understand and use may not be as relevant as relative advantage and compatibility. However, for certain innovations complexity may become an important barrier in adopting the innovation. For example, studies reveal that awareness of eco-conscious apparel purchase behavior is less pervasive than for other eco-conscious products (Joergens, 2006). This could be because adoption of eco-conscious behaviors such as recycling, energy-use reduction and adoption of eco-conscious products like organic foods are less complex compared to adoption of eco-conscious apparel. For example, in a survey conducted with organic food consumers in Britain, it was revealed that almost 93% of the consumers are motivated to purchase organic foods because of health reasons and/or because organic foods are good for their children (Hutchins & Greenhalgh, 1997; Squires et al., 2001). A study by Joergens (2006) provided additional support, finding that consumers in general display their ethical commitment more often only when they see a direct positive influence of the product purchase on their own health and wellbeing. Therefore, it is easier for consumers to rationalize purchasing organic foods rather than eco-conscious apparel because, food directly affects individual's own health and consumers believe that the choice of organic food reflects the direct health benefit to them. However, with a fashion apparel product purchase, an eco-conscious choice does not as obviously or directly affect one's own health, perhaps resulting in poor intentions to engage in purchase of eco-conscious apparel. These health benefits from the adoption of organic foods or organic cosmetics can be directly felt by the consumers and adoption of such products is also not only fairly easy to understand, but there is no complexity involved in using such products (Gam, 2011) and therefore the process involved in making a decision to adopt or not to adopt those organic foods is perceived to be less complex by the consumers. However, with regard to eco-conscious apparel, it is hard for the consumers to relate

any immediate direct health benefit to the adoption of eco-conscious apparel (Joergens, 2006). Hence, this may explain why the adoption of eco-conscious apparel is not diffusing as rapidly as the adoption of other eco-conscious products such as organic foods.

The complexity associated with eco-conscious apparel purchase behavior is evident in various stages of the apparel life-cycle. Unlike other products, understanding the effect of the processes associated with production, purchase, usage and discard of eco-conscious apparel on the environment is highly complex and confusing in nature (Kashmanian, Kuusinen, & Stoeckle, 1990), which may decelerate the adoption of eco-conscious apparel. For example, if we take organic fruits and vegetables, it is relatively easy to understand the conditions under which they are grown and packed and the effect of such sustainable practices on the environment as there are very few processes involved from growing the product to consumption, these processes are fairly transparent. However, with apparel products and industry, the supply chain is highly fragmented and distributed all over the globe. While fiber is manufactured or grown in one country, fabric is produced in another. Then, the product is assembled in some other country with environmental impacts at each stage, making it hard to understand the overall effect of the product on the environment. Hence, when the final product is purchased by consumers, it is difficult for them to understand how much impact that product has created on the environment throughout its production process as there are many factors involved all through the products' life-cycle that adds up to the complexity of comprehending the environmental impact of those apparel products and their direct benefit to the consumer. For example, at the initial stage of fiber production if organic farming methods are used, then such fiber is called organic fiber that has less environmental impact compared to conventionally grown fibers. However, at the dyeing stage, if for example, toxic dyes, or dyeing methods are used or at the finishing stage, if finishing

methods that need a greater amount of chemicals and huge volumes of water and/or energy are used, then, such processes may nullify the positive impacts created by the organic fibers at the fiber production stage on the environment. Due to such complexity associated with eco-conscious apparel, consumers may feel confused while making a decision to purchase eco-conscious apparel because they may not exactly know if the decision they are making to adopt eco-conscious apparel is really contributing toward betterment of the environment as well as their own good.

The argument made about the complexity associated with apparel supply chain can further be understood through the statements made by authors in the following studies. Butler and Francis (1997) in their study stated that the social and psychological dimensions of clothing and the other criteria used by consumers while making purchase decisions suggest that the relationship between possessing eco-conscious attitudes and exhibiting eco-conscious apparel purchase behaviors may be rather more complex than it is for non-apparel products. Similarly, Niinimäki (2010) mentioned that, "the sustainable issues in clothing production are very complex because the supply chain in the clothing industry is fragmented, complicated and global. The manufacturing processes are less transparent than in food production" (p. 152). This could be because there is less awareness among consumers with regard to environmental impacts associated with apparel products compared to other products like gasoline and soft drink bottles (Stephens, 1985) or because of the very nature of the global supply chain of the apparel industry, which is highly complex and opaque. The complexity is involved in every process of the eco-conscious apparel life-cycle because of which, it is rather difficult to decipher the level of final product impacts on the environment. It is also mentioned by Fletcher (2008) that, other phases of the product life-cycle that includes manufacturing, usage and disposal consume greater amounts

of resources and produce wastes and in many cases these environmental impacts dwarf the effects that are associated with fiber cultivation and production.

The complexity is not only associated with various processes involved in the apparel product life-cycle, but also with the type of material used. For example, while there is no doubt in saying that life-cycle of synthetic fibers have an impact on people and the environment, natural fibers are no exception. Specifically cotton fiber cultivation is associated with high use of toxic chemicals and pesticides and greater amount of water usage. For example, while no or very little amount of water is required to produce one kg of polyester, it consumes twice the amount of energy required to produce the same amount of cotton. Similarly, though cotton cultivation does not require much energy, it requires as much as 8000 liters of water on an average to cultivate one kg of cotton (Fletcher, 2008). However, a majority of consumers assumes that natural fibers are less harmful because they are called "natural" and hence are safe to the environment. As such, the key challenges related to the environmental impact of fiber production vary depending on the material, which is highly complex to understand. This was articulated well by a passage from "Sustainable fashion and textiles-Design journeys" by Fletcher (2008):

> Surveys repeatedly show that there has been-and indeed continues to be - tremendous confusion over the sustainability impacts of producing textile materials. Synthetic fibers are commonly seen as 'bad' and natural fibers as 'good'. This preconception is influenced by a complex set of factors including raw material renewability, biodegradability and stereotyped associations made with chemicals, factories and pollution. (p. 6)

The complexity issue with regard to understanding the effect of eco-conscious apparel production on the environment was also confirmed by Richard Leeds, chairman of Richard

Leeds International that produces Wal-Mart's Mutts line of sleepwear. According to Richard

Leeds, currently there is no way to test if finished yarn or specifically an unfinished fabric is of

100% organic. This is because though SKAL, a Netherland-based international inspection body

certifies all the steps involved in the production of sustainable yarn, there is no such process in

place at the facility to which these yarns are then shipped to be knitted and woven into fabrics.

He defined 100% organic cotton fabrics as those that "are knitted or woven from yarns that are

spun from natural fibers grown in eco-friendly farming systems" (Monget, 2007, p. 50S).

Therefore, although the fiber is certified as organic or eco-friendly, once the fiber leaves the

production facility to the place where the fiber is converted into fabric and finally into a garment,

it is difficult to determine if the fabric produced using such organic fibers still holds its eco-

conscious attributes and as such, how far the apparel made out of such fabrics are eco-conscious.

Additionally, due to the complex supply chain of the apparel industry, skepticism with

regard to authenticity of eco-consciousness of the final product as well as the standards and

claims used to authenticate those products arise creating confusion in the minds of consumers.

For example, retailers purchase clothing either directly from a known supplier or through an

agent or vendor. The fabrics that are used in the production of these clothing are purchased in the

global commodity markets. As such, it is hard to keep track of the origin of the materials and

final apparel products. If the brands and retailers are not aware of the origins of their materials or

stock, it is almost impossible to identify and make sure of the sustainability standards all through

the supply chain (Draper et al., 2007). This complex supply chain creates more confusion among

the consumers while making their purchases. If consumers are not aware of the origins of

products they purchase and are not able to convince themselves of the environmental standards

and messages claimed by the retailers, it further adds-up to the complexity of the supply chain

and creates confusion and skepticism among consumers with regard to the environmental impacts of the eco-conscious apparel they intend to purchase.

The existing complexity and confusion with regard to the environmental impact of eco-conscious apparel may also be attributable to a certain extent to companies that are producing eco-conscious apparel. Companies have been modifying their marketing strategies to better inform the consumers about eco-conscious qualities of their products and brands by including terms such as, eco, green, natural, sustainable and organic in their promotional messages: on the logos, over product labels, in the advertisements and on the company websites. However, such promotional messages frequently lack explicit information with regard to specific type of fibers or materials and manufacturing processes used to produce their so called eco-conscious apparel which leaves consumers perplexed and uncertain about the validity of such marketing claims by the companies. As companies use vague terms and lack clarity in their environmental claims of eco-conscious products, it adds up to the already existing perceived complexity by the consumers. This puts more responsibility on the shoulders of consumer to raise their own environmental awareness and knowledge about available options regarding eco-conscious products, brands and how to take proper care of such products which is a task that may be felt too complex for many consumers. The majority of consumers may not want to take this additional step of acquiring information as they need to invest more time and energy in such processes and hence, will continue purchasing products that they are more familiar with and do not require consumers to invest any additional time and energy. This, in turn, may inhibit consumers' intentions to adopt eco-conscious apparel in spite of possessing eco-conscious attitudes. (Cotton Incorporated, 2008; Cotton Incorporated 2009; Moisander, 2007).

Similarly, Kim and Damhorst (1999) in their study found that consumers do not respond more positively to advertisements containing environmental messages for apparel products. It could be either because consumers do not think about environmental issues related to apparel products or they might have found the environmental ad messages used in the study unconvincing. The study also revealed that consumers found the advertisements that contained messages about environmental correctness of the product characteristics, such as organic material used in the apparel product or recycled material used in the hangtag to be less credible. However, it is hard for the consumers to differentiate between eco-conscious apparel and other apparel products unless and until a consumer looks at the hangtags and product labels. When consumers lack technical knowledge about the organic cotton used in the product or the recycling material used in the hangtag, it limits the consumers' ability to comprehend the environmental impact of those products. It was confirmed by Carole Hochman, the designer of sleepwear or loungewear who added eco-friendly components to her collection that consumers are not fully aware of organic options, their benefits from the green standpoint and their comfort and performance properties (Monget, 2007). It was confirmed in previous studies that for consumers to behave in an environmentally conscious manner they need to possess eco-conscious knowledge relevant to the product. Therefore, when consumers lack such product knowledge, their purchase behavior regarding that product becomes highly limited which, further restricts their behavior towards conserving the environment through the adoption of such products.

In summary, there exists a certain level of complexity throughout the life-cycle of eco-conscious apparel as perceived by consumers, which influence their knowledge, attitudes and purchase behavior towards eco-conscious apparel. It can be inferred from previous research that

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one of the important reasons for the weak relationship between consumer's eco-conscious apparel knowledge, eco-conscious apparel attitudes and their intentions to adopt eco-conscious apparel is that consumers perceive it to be highly complex to understand and authenticate the credibility of environmental attributes associated with eco-conscious apparel. Though consumers have positive attitudes toward eco-conscious apparel, they find it hard to know where to obtain information that will help them in reducing such complexity associated with environmental credibility of apparel products and thus aid them in transforming their eco-conscious attitudes into eco-conscious apparel purchase behaviors. Studies have also indicated that for consumers to engage more in eco-conscious purchase behavior, they need to be provided with more information about various environmental processes involved throughout the apparel supply chain to aid them in better understanding the relationship between their involvement in the purchase behavior of eco-conscious apparel and their contribution toward conserving the environment. Hence, certain responsibility also falls on the companies to provide consumers with as much information as possible regarding environmental impact of their products through proper means of advertising. They may use materials such as hangtags and other means at the point-of-purchase, which may reduce the complexity associated with eco-conscious apparel as perceived by the consumer and thus help them in making a purchase decision toward eco-conscious apparel. Hence, it was hypothesized that,

> *H2a: Perception of complexity will significantly lessen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.*

If consumers perceive eco-conscious apparel to be less complex then they may be more likely to adopt eco-conscious apparel than those who perceive eco-conscious apparel to be more complex. Hence, it was hypothesized that,

H3a: *Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to purchase eco-conscious apparel presented in less information context (i.e., Scenario 1).*

H3b: *Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to purchase eco-conscious apparel presented in more information context (i.e., Scenario 2).*

Perceived Compatibility of Eco-conscious Apparel

Compatibility is "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 240). If the adopter perceives the innovation to be compatible with his/her sociocultural values and beliefs, pre-existing ideas and needs, then such innovation's rate of adoption is much quicker than the innovation that is not compatible (Rogers, 2003). Compatibility of an innovation may be referred to its compatibility with individual's life-styles, values and norms, self-identity or current practices (Connolly and Prothero, 2003; Meyer, 2001; Joergens, 2006; Sontag & Schalter, 1982; Tornatzky & Klein, 1982). Compatibility was found to be one of the characteristics frequently studied in most of the studies examined in a meta-analysis of innovation characteristics and innovation adoption implementation by Tornatzky and Klein (1982).

Perceived compatibility of the product has been found to be positively associated with the adoption of an innovation. Compatibility in previous studies has been studied in relation with individuals' values, norms and/ or current practices. Though research found perceived

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compatibility to be highly associated with the adoption of an innovation, there is no research available to date examining how consumers' perception of compatibility of eco-conscious apparel product with their values, norms and current practices add to the predictive influence of eco-conscious apparel knowledge, eco-conscious apparel attitudes on decision-making processes to adopt eco-conscious apparel.

When considering eco-conscious apparel, consumers are generally concerned about how eco-conscious apparel would fit into their life-style. While some of the consumers believe eco-conscious apparel to be overpriced, unfashionable and dowdy (Meyer, 2001) others are highly concerned about the compatibility of product features like style and fit to their wardrobe needs rather than environmental issues (Joergens, 2006) and as such, their attitudes about eco-conscious clothing may be negative because of their previous perceptions. Unless and until eco-conscious clothing becomes more comparable and compatible with current fashions, these consumers may not likely become involved in purchasing eco-conscious apparel (Joergens, 2006).

Clothing is seen as a representation of oneself. People believe that their dress communicates who they are and their character. It was stated by a respondent in a qualitative study that "My dress is me: It (clothing) fits my character" (Sontage & Schalter, 1982). Connolly and Prothero, (2003) also linked identity to purchases and stated that the products we choose and what we wear give an indication of who we are, whether that is extravagant, minimalist, eco-conscious or more. Consumers' consumption patterns reflect their own identity, image, self-esteem and their own perception of environmental impact. As such, in an exploratory research Connolly and Prothero, (2003) concluded that an individual will only purchase products that communicates their identity that is congruent with their green consumer life-style. According to

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Kaiser (1990), while consumers make clothing purchase decisions, they undergo a silent dialogue, deep within their 'I' and 'me' aspects where, 'I' is involved in discovering, feeling and interpreting the subjective aspect of the apparel product, 'me' evaluates the style options and its implications for the self and ponders about how others may react to their new look. While 'I' is related to the creative side of the person, 'me' is related to evaluating and judging which together represent the self. Clothing as a representation of oneself was best explained by Kaiser (1990) as:

> The concept of the self is thereby a process. Clothes must express one's own self: the consumer wants to feel 'this garment expresses my inner mood and identity, me'. Clothes are closest to our body and they are therefore very intimate; at the same time it seems that they are also closest to our inner self and values, which we can express or hide with clothes. (p. 148)

According to Mosiander and Pesonen (2002), eco-conscious consumers represent certain life-styles or aspire to be a certain kind of person and try to actualize such representation through a certain way of thinking and acting. As Uotila (1995) argues, clothes are not just objects, but are acts. In an ongoing process of constructing oneself through self-reflection an individual constantly builds and rebuilds one's own identity (Niinimaki, 2010) and one way of doing this could be through an act of choosing eco-conscious apparel that better expresses one's own identity, whom the consumer is or desires to be. It is also supported through Kaiser's (1995) argument that while consumers weigh their ethical clothing purchase decision, they always try to balance such decision with their inner values: 'me'. Hence, consumers make a decision to purchase eco-conscious apparel if they feel that they can satisfy their inner values with such purchase decisions.

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In a study by Gam (2011) regarding the consumers' likelihood of adopting eco-conscious apparel, it was found that around 13% of the respondents did not purchase eco-conscious apparel because they did not like available designs. It was also found that respondents perceive clothing to represent who they are and eco-conscious apparel are not perceived to be fashionable yet to suit their fashion orientation. Hence, the researchers state that fashionability of eco-conscious apparel as perceived by consumers should be compatible with their expectations toward current fashion trends for them to adopt such products. However, for consumers to perceive greater relative compatibility of and adopt eco-conscious apparel products, they require more information about eco-conscious apparel.

Companies that are marketing eco-conscious apparel have been modifying their marketing strategies such that they can better communicate the eco-conscious attributes of their products and brands to consumers. While promoting their products and brands, companies are using terms like green, eco, organic, natural and sustainable in or on their logos, brand names, product labels, advertisements and company websites (Yan, et al., 2012). However, often, such promotional messages do not provide precise information regarding materials and processes used in manufacturing eco-conscious apparel or the eco-conscious standards used by such companies. This lack of information and use of vague terms leaves consumers perplexed about the credibility of such marketing claims leading to an increased concern about eco-conscious attributes of the product that may negatively influence consumers' purchase decision (Cotton Incorporated 2008/2009; Tompkins 2008; Yan et al., 2012). The lack of credible and clear information in promotional messages burdens consumers as they have to invest in seeking more information on their own to increase their knowledge about eco-conscious apparel and eco-conscious brand options available which according to Moisander (2007), a task that may be deemed by many

consumers as highly complex and may result in a slower growth of eco-conscious apparel market (Yan et al., 2012). This lack of information also leaves consumers confused in understanding how eco-conscious apparel would be compatible with their life-style, self-identity, or values and norms. This finding suggests that if consumers were provided more information about eco-conscious attributes of apparel products in promotional messages by marketers of eco-conscious apparel, then such information might increase the perceived compatibility toward eco-conscious apparel. Hence, it was hypothesized that,

> *H2b: Perception of compatibility will significantly strengthen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.*

If consumers perceive eco-conscious apparel to be more compatible then they may be more likely to adopt eco-conscious apparel than those who perceive eco-conscious apparel to be less compatible. Hence, it was hypothesized that,

> *H3c: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in less information context (i.e., Scenario 1).*
>
> *H3d: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in more information context (i.e., Scenario 2).*

Perceived Relative Advantage of Eco-conscious Apparel

Relative advantage as defined by Rogers (2003) is "the degree to which an innovation is perceived as being better than the idea it supersedes (p. 229). Relative advantage was found to be the best predictor of the adoption of an innovation and is generally expressed in terms of

economic profitability (Esty & Winston, 2009), decrease in discomfort, savings in time and effort, or obtaining immediate reward (Rogers, 2003). Economic profitability, for example, can be measured in terms of the price of the product. For example, consumers relate price of the product to understand if adoption of the new product gives them a cost advantage. If consumers find that the price of the new product does not provide them with any cost advantage, then the relative advantage is said to be negative and the rate of adoption of such products becomes much slower. The specific type of the relative advantage that is important to the adopter depends and varies according to the nature of the innovation. Additionally, the characteristics of potential adopters may also affect what other sub-dimensions of relative advantage are important. The researchers found relative advantage as one of the strongest predictors of the rate of adoption of an innovation (Rogers, 2003). The perceived relative advantage of product characteristics deemed to be relevant for this study are price, availability, search convenience, search time and product interaction as these were found to be significant in eco-conscious apparel studies and is explained in the subsequent paragraphs.

A significant amount of literature that researched the influence of price on eco-conscious apparel purchase behavior indicated price to be an important factor in making a purchase decision (Joergens, 2006; Swinker & Hines, 1997; Umberson, 2008). However, if the price of eco-conscious apparel is perceived to be higher than the price of similar non eco-conscious apparel, then it would decrease the perceived relative advantage of eco-conscious apparel resulting in non-adoption contributing to a slower market growth. In general, studies found eco-conscious products to be higher in price compared to other products (Joergens, 2006; Tran, 2007; Umberson, 2008). For example, the price of organic cotton includes a premium anywhere between 50-100% of raw cotton prices (U.S. cotton & the environment, 2006). Hence,

consumers are expected and should be willing to pay a higher price for eco-conscious apparel to compensate sellers and benefit environment (Laroche et al., 2001). However, various studies indicate that consumers are not willing to pay such higher prices and stated higher prices as the reason for avoiding purchase of eco-conscious products. Even, those consumers that say they are willing to pay slightly higher prices for eco-conscious products do not behave consistently for the most part (Lampe & Gazda, 1995), resulting in a weak relationship between attitudes and behavior.

Similar results were found in a study conducted by Swinker and Hines (1997) in which researchers examined selection patterns of consumers with regard to textile products made out of recycled fibers. The results indicate that when price and fiber content were manipulated, more than half of the respondents chose lower priced sweatshirt irrespective of the fiber content. However, when price and fiber content were controlled, around 66% of the participants selected the sweatshirt that was labeled to have been manufactured using recycled polyester. Hence, study results indicate that price is an important factor that influence consumers purchase decision towards eco-conscious apparel and a large segment of consumers are willing to purchase recycled textile products if the products are priced competitively with products manufactured from virgin fibers. These results correspond with the results from previous studies that indicate price as a barrier towards purchase of eco-conscious apparel even though consumers state that they are willing to pay higher prices.

Nimon and Beghin (1999) investigated the market valuation of the environmental claims made by the apparel manufacturers and price premium estimation for the "organic-cotton apparel," "environmentally friendly dyes," and "no-dyes" appellations. Results from the study showed that there was a significant price premium for organic cotton with an average markup of

about 33.8% of the apparel price. They also found that apparel products without dyes were sold at a substantial price discount of about 15%. However, they did not find much evidence for price premium with regard to eco-conscious or low-impact dyes. Though, this study was conducted in the late 1990's, eco-conscious apparel are still to date associated with higher costs.

Joergens (2006) from his study also concluded that participants found eco-conscious apparel products to be highly expensive and hence preferred non eco-conscious apparel products at lower prices than eco-conscious apparel at relatively higher prices. The study results further indicate that participants showed favorable attitudes toward purchasing eco-conscious apparel only when their price and fashion becomes similar to that of current appealing brands. In another study by Umberson (2008), it was concluded that consumers with greater intentions to purchase eco-conscious apparel are willing to spend more money on eco-conscious apparel. However, consumers who are opposed to purchasing eco-conscious apparel indicated that they are not willing to engage in such behaviors mostly because of the price issue.

Even though, many consumers show a positive attitude toward adoption of eco-conscious apparel, actual purchase behavior does not reflect such attitudes in many cases because of the perception of higher prices associated with eco-conscious apparel. As price is the most important factor determining the apparel purchase decision (Cotton Incorporated 1999; Cotton Incorporated, 2008; Eckman, Damhorst, & Kadolph, 1990; Iwanow, McEachern, & Jeffrey, 2005; Garlick, & Langley 2007; McEachern, & Jeffrey, 2005; Meyer 2001), until the price of eco-conscious apparel becomes more comparable to similar non-eco-conscious apparel, consumers may not come forward to engage in eco-conscious apparel purchase behaviors.

When it comes to availability and accessibility, there exist very limited research providing input with regard to availability and accessibility of eco-conscious apparel. Joergens in

his study (2006) found that consumers were not aware of where they can find eco-conscious apparel. During the study, when participants were shown catalogs and internet pages of the eco-conscious apparel items they responded by saying that they still would not purchase eco-conscious apparel because they find it inconvenient to search for the product despite the fashionability of the items shown. Laroche et al., (2001) also noted similar results where attitudes of inconvenience and purchasing of eco-conscious products were found to have a direct correlation. Similarly, in a study by Gam (2011) regarding the consumers' likelihood of adopting eco-conscious apparel, it was found that consumers had a limited experience with purchasing eco-conscious apparel because they find the product availability to be very low.

Similar results were found by Pickett-Baker and Ozarki (2008) who found that despite the consumers' willingness and feeling good about purchasing green products, they are not able to engage in eco-conscious apparel purchase behaviors as consumers often find it difficult to identify brands and products that are truly eco-conscious as well as perform effectively according to their expectations. Hence, it is important for the eco-conscious apparel to become available easily for the consumers to adopt those products.

Though consumers are aware of the environmental benefits of eco-conscious products, they feel that the supply is not enough to locate the product easily in the brick-and-mortar environment. When it is not easy to find eco-conscious apparel in a traditional brick-and-mortar setting consumers may not be able to experience the product personally. Generally, consumers want to feel and touch the product before becoming persuaded to purchase and in the absence of such option there has to be a satisfactory product benefit for the consumer to warrant their purchase and trial of the product. If consumers do not see any product benefits as such linked to

eco-conscious apparel when they are not able to experience the product personally then, it may result in non-adoption of the product (Joergens, 2006).

Consumers are better informed through various marketing messages to behave in a certain way that is in the best interest of the environment. They are inundated with messages to conserve water, energy, and the natural environment through engaging in eco-conscious purchase behaviors. However, for the most part, they are not informed about where to shop for eco-conscious apparel. The availability of eco-conscious apparel in traditional brick-and-mortar stores is very limited and therefore, consumers have to know where to find such products. Compared to retail outlets, the options of eco-conscious apparel availability is higher in online stores. However, consumers need to be better informed about the availability of eco-conscious apparel online (Umberson, 2008) and online stores that carry eco-conscious apparel. Additionally, consumers who are informed may also find it difficult to browse through the click-and-mortar stores for eco-conscious apparel because for some consumers, tactile sense; the ability to see and touch the product before making a purchase decision may be important which is not possible through internet shopping (Umberson, 2008). It was found in a study that apparel purchase process is sensory and interactive in nature. Therefore, while purchasing apparel, consumers would like to physically examine the product to judge the design, fabric, color, size and hence they consider purchasing apparel products over the internet to be risky (Bhatnagar, Misra & Rao, 2000; Kwon, Paek & Arzeni, 1991). In such instances, consumers, even though knowledgeable about and possess eco-conscious attitudes may not be willing to engage in purchase behaviors toward eco-conscious apparel.

For consumers to perceive eco-conscious apparel as possessing greater relative advantage that can encourage them to engage in eco-conscious apparel purchase behavior, a certain amount

of responsibility does fall on retailers of eco-conscious apparel in the form of developing suitable marketing strategies. One way of doing so is by providing information that consumers believe to be sufficient in understanding the relative advantage of eco-conscious apparel with regard to price, availability, search convenience, search time and product interaction which may influence and accelerate their purchase decision. Retailers, including those that sell fashion apparel typically use implicit messages such as brand name or a logo to communicate product information to the consumers (Yan et al., 2011). For typical apparel products, which does not need much information to understand the product, using such implicit messages may be more desirable because it is highly effective and less distracting (Feng & Burleson, 2008; Lorek & Lucas, 2003). However, for innovative products like eco-conscious apparel that is often associated with complexity, specifically with regard to eco-conscious marketing claims (Mosiander, 2007), using messages with explicit information may be more desirable if apparel companies wish to reduce the confusion and increase the understanding of eco-conscious apparel among the consumers. Research suggests that messages with explicit information may influence consumer's attitude toward advertisement, brand name and purchase intention (Sawyer & Howard, 1991; Ahearne, Gruen, & Saxton, 2000). Research also indicates that if eco-conscious marketing claims for apparel products provide more information about the product with better clarity, then consumers will respond more positively to such claims (Cotton Incorporated 2008/2009) which may strengthen the consumers' perception of relative advantage toward eco-conscious apparel influencing their intention to purchase eco-conscious apparel. Hence, it was hypothesized that,

H2c: Perception of relative advantage will significantly strengthen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.

If consumers perceive eco-conscious apparel to be providing greater relative advantage, then they may be more likely to adopt eco-conscious apparel than those who perceive eco-conscious apparel to be providing less relative advantage. Hence, it was hypothesized that,

H3e: Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in less information context (i.e., Scenario 1).

H3f: Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in more information context (i.e., Scenario 2).

Prior Condition: Innovativeness

Diffusion and adoption research indicated that not all products introduced into the market will be adopted by prospective consumers, because they may not be inclined to adopt products that require a change in their behavior (Castaño et al, 2008). Therefore, it is not surprising that the rate of new product failure is high in many industries (Berggren & Nacher, 2001; Cooper, 2000). The issues companies face is not with regard to developing an innovative product, but it is with regard to influencing consumers to adopt the products because a company's success is based upon the successful adoption of those products. With regard to the apparel industry, new fashions are being introduced increasingly at a faster pace. Hence, it becomes a challenging task for apparel companies to thrive and achieve success in such a competitive atmosphere by successfully positioning their products in the minds of their consumers (Rahman, Saleem,

Akhtar, Ali, & Khan, 2014). The situation is not any different for marketers of eco-conscious apparel as success and sales of eco-conscious apparel is not increasing as expected. As such, one of the factors that were found to be influencing successful adoption of an innovation was consumer innovativeness (Rogers, 1995).

According to Rogers (2003), while an individual passes through the innovation-decision process during which he or she becomes knowledgeable about, forms an attitude toward and makes a decision to adopt or not to adopt the innovation, there are many factors throughout the process that influence the individual in their decision making process. During such process, factors such as the consumer's level of innovativeness had also been found to influence their decision to adopt or not to adopt the innovation (Goldsmith & Flynn, 1992). Various studies have used innovativeness to understand the influence on consumers' purchase behavior toward innovative products (Rogers, 2003).

Innovativeness, as defined by Rogers (1995), is "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system" (p. 22). According to Im, Bayus and Mason (2003), consumer innovativeness refers to "the predisposition to buy new and different products and brands rather than remain with previous choices and consumption patterns" (p. 62). Several studies have measured consumer innovativeness based on the time the innovation is adopted, which segments adopters into different categories (Goldsmith & Flynn, 1992). Based on the level of innovativeness, an individual can be categorized into an innovator, early adopter, early majority, late majority or laggard. Depending on which category among the adopter categories an individual can be classified under, he or she can be one of the first or last consumer groups adopting the innovation. For example, if an individual's level of innovativeness is high, then he or she is

categorized as an innovator and hence will be one of the first to adopt an innovation. Whereas, if an individual's level of innovativeness is at the lowest level, then he is classified as a laggard and hence will be one of the last to adopt an innovation. The majority of studies on diffusion theory were conducted to understand these five segments of adopter categories and their influence on the product's success (Rogers, 1995). Studies that investigated the relationship between innovativeness and new product adoption indicate that innovativeness is related to adoption of new products (Chau & Lung Hui, 1998; Leung, 1998; Pepermans, Verleye & Cappellen, 1996; Rogers, 1995). Goldsmith, Freiden and Eastman (1995) have also indicated consumer innovativeness to be significantly related to new apparel purchase.

Literature on consumer innovativeness indicates that each adopter category has certain characteristics. Among these adopter categories, innovators are the first group to adopt an innovation and constitute 2.5% of the population (Beaudion, Lachance & Robitaille, 2003; Rogers, 1995). Innovators are basically venturesome, cosmopolites, take more risk, possess higher opinion leadership skills, are socially active, highly knowledgeable about new products, eager to try new products, highly involved in the product category, have more media exposure and generally are great users of the product category (Chau & Lung Hui, 1998; Goldsmith, Stith, & White, 1987; Pastore, 1999). As innovators are the first to adopt an innovation, many of the studies have focused on understanding the demographic and psychological aspects of these innovators as the success or failure of an innovation is highly dependent on the adoption of the innovation by these innovators (Rogers, 2003). According to McCarthy, O'Sullivan, and O'Reilly (1999), the success or failure of new products greatly depends upon the marketers' ability to identify innovators. This could be because consumer innovators who are first in purchasing new products within a community display more favorable attitudes toward new

products and are highly influenced by the newness than late adopters (Robertson, 1971) and thus initiating the diffusion process of new products. Consumer fashion innovators for example, are an important segment because they not only provide a greater amount of revenue required to meet the developmental costs in introducing a new fashion to the market, but also play a significant role in influencing the adoption and diffusion of new fashions within a social system (Jordaan & Simpson, 2006).

Early adopters on the other hand, form the next 13.5% of the population. They are localites and have the greatest degree of opinion leadership than any other segment in most of the social systems. Early adopters in general appear to be more venturesome, give more importance to their personal needs, have higher aspirational levels, are more active in searching for information and are better at coping with uncertainties. They are looked up as "the man to check with" before adopting the innovation by potential adopters (Rogers, 2003). Roger's stated that, once the innovation is adopted by a certain "critical mass" of adopters, then onwards the innovation will diffuse without much stimulation (Rogers, 1995). Therefore, early adopters are critical in the successful adoption and diffusion of an innovation.

Early majority adopts innovation just before an average individual adopts the innovation in the social system. They rarely hold any leadership position, but interact frequently with their peer group. As they are in between early and late adopters, they act as an important link in spreading the innovation. Also with 34% of the population, late majority adopts the innovation just after the average individual in the social system. They adopt the innovation with skepticism, mainly out of economic necessity and social pressure, holding out to adopt until most of the individuals in the social system have adopted it (Rogers, 2003).

Laggards, with 16% of the population are the last segment to adopt the innovation. They are traditional in their outlook and interacts with people who have traditional values. They refer to their past experiences and what has been done in previous generations as a point of reference. Late adopters give more weightage to their social needs, have lower aspirational levels and search less for information. They are often unable to take risks on new ideas because of their economic condition and by the time they adopt the innovation it might have already been superseded by another new idea in which innovators have begun to use (Rogers, 2003).

The amount of time it takes for an individual to gain knowledge about the innovation, till he or she makes a decision to adopt or reject the innovation not only depends on the type of innovation and the process in which the innovation gets diffused, but also on the adopter categories and how they perceive the product characteristics. For example, for high risk products or products that require additional skills to use it, an innovator, who in general is a risk taker, will adopt the product immediately compared to a person categorized as an early majority or a laggard. Similarly, for eco-conscious apparel, if an individual is an innovator, then he or she may not consider the complexity associated with eco-conscious apparel and may consider it highly compatible with his or her life-style, self-image or personal taste and relatively advantageous over other similar non eco-conscious apparel products and therefore adopt the product sooner than any individual in the adopter categories. However, no study has been found in support of the relationship between level of innovativeness and perceived characteristics of innovation with regard to eco-conscious apparel. Similarly, no study has investigated the relationship between level of innovativeness and consumer's intention to purchase eco-conscious apparel. Therefore, it was deemed important to investigate the research questions: Is there a relationship between a consumers' level of innovativeness and his/her perception of innovation characteristics of eco-

conscious apparel products? And, is there a relationship between a consumers' level of innovativeness and his/her intention to purchase the innovation (i.e., eco-conscious apparel)?

Hence, it was hypothesized regarding the relationship between innovativeness and perceived characteristics of innovation (eco-conscious apparel) that,

H4a: Consumer's level of innovativeness will have a statistically significant inverse relationship to his/her perception of the complexity of an innovation (i.e. eco-conscious apparel).

H4b: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the compatibility of an innovation (i.e. eco-conscious apparel).

H4c: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the relative advantage of an innovation (i.e. eco-conscious apparel).

Then, regarding the relationship between level of innovativeness and consumers' intention to purchase eco-conscious apparel, it was hypothesized that,

H5: consumers' level of innovativeness will be significantly positively related to their intention to purchase the innovation (i.e., eco-conscious apparel).

Demographic Characteristics of the Decision-making Unit

According to Rogers (1995), consumers in general possess certain demographic characteristics that influence the innovation decision process. For example, Gam (2011) mentioned that consumer identity variables such as age, sex, socioeconomic characteristics and physical profile are indicators that help in identifying potential fashion adopters. As such, these consumer characteristics have also been studied to better understand the consumers' purchase

decision toward eco-conscious apparel. These demographic characteristics have been found to significantly influence consumers' purchase decision toward an innovation in many studies. However, there has been a discrepancy from one study to another with regard to which demographic characteristics in particular influence consumers decision to purchase eco-conscious apparel.

Numerous research studies have concentrated on exploring demographic characteristics that define eco-conscious consumers and whether these characteristics influence consumer's eco-conscious attitudes and purchase behaviors. The demographic variables frequently researched are gender, age, education, socio-economic status, income and occupational status (Antil, 1984; Balderjahn, 1988; Oom do Valle et al., 2004; Tanner and Kast, 2003). Though there are a number of studies that focused on demographic variables of eco-conscious consumers, there still exists confusion with regard to which demographic variables have a greater relationship with the consumer's eco-conscious knowledge, eco-conscious attitudes and eco-conscious behaviors (Connell, 2008).

Among all of the demographic variables, one of the frequently researched demographic variables is gender. While results from some studies support the notion that women are more environmentally conscious and are more likely than men to exhibit and engage in pro-environmental behaviors like purchasing environmentally safe products and recycling (Berkowitz & Lutterman, 1968; Blake, 2001; Granzin & Olsen, 1991; Roberts, 1996; Shrum et al., 1995; Webster, 1975) other studies found no significant relationship between gender and eco-conscious behaviors (Antil, 1984; Balderjahn, 1988; Oom do Valle et al., 2004). Further, in a study by Arcury and Johnson (1987) being female was found to be strongly and negatively associated with eco-conscious knowledge.

Age is another demographic variable researched most often, after gender, in relation to ecologically conscious consumer behavior. Similar to gender there are mixed results in various studies with regard to the relationship between age and ecologically conscious consumer behavior. Some studies found that eco-conscious consumption behavior increases along with the age of the consumer (Balderjahn, 1988; Beckowitz & Lutterman, 1968; Roberts, 1996). This means that older consumers exhibit greater amounts of eco-conscious consumption behaviors than younger consumers. While other studies found exactly the opposite relationship that identified younger consumers to be more environmentally conscious than the older consumers (Anderson & Cunningham, 1972; Anderson, Henion, & Cox, 1974; Granzin & Olsen, 1991). Additionally, there are also studies that found no significant relationship between age and consumer's eco-conscious consumption behaviors (Oom do Valle, et al., 2004; Tucker, 1980).

Similar to gender and age, there has been variance from one study to another that examined the relationship between environmentally conscious consumption behavior and demographic variables like socio-economic status, education, occupational level and income. For example, Tanner and Kast (2003) conducted a study on Swiss consumers to identify personal and contextual barriers toward the purchase of eco-conscious products and to strengthen consumer's knowledge about fostering eco-conscious product purchases. The results revealed that socio-economic factors like education, occupational level, employment status, household income, place of residence and household size were not significantly correlated with the extent of green behaviors of consumers. Similarly, studies by Antil (1984), Balderjahn (1988) and Brooker (1976), found no significant relationship between eco-conscious consumer behavior and their socio-economic status. However, studies by Anderson and Cunningham (1972), Anderson et al., (1974), Berkowitz and Lutterman (1968), Granzin and Olsen (1991) and Tucker (1980) found a

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positive relationship between those two variables. Studies by Anderson and Cunningham (1972), Anderson et al., (1974) and Granzin and Olsen (1991) found a positive relationship between occupational status and environmentally conscious consumption behavior. However, studies by Antil (1984), Balderjahn (1988), Kinnear et al., (1974), Roberts (1996) and Webster (1975), found no significant relationship. With regard to the relationship between income and eco-conscious consumption behavior, many studies found a positive relationship (Balderjahn, 1988; Berkowitz & Lutterman, 1968; Granzin & Olsen, 1991; Kinnear et al., 1974; Webster, 1975). Arcury & Johnson (1987) also found socio-demographic characteristics like education and income to be positively associated with eco-conscious knowledge. Nevertheless, other studies by Anderson and Cunningham (1972), Anderson et al., (1974), Antil (1984), and Tucker (1980) found no significant relationship between income and eco-conscious behavior. Surprisingly, in one of the studies, even a negative relationship was found between income and environmentally conscious consumer behaviors (Roberts, 1996).

Results from these studies show a discrepancy with regard to the relationship of various demographic variables with eco-conscious knowledge, eco-conscious attitudes and eco-conscious consumption behaviors. While some studies show a positive relationship, others show meager or no significant relationship. Even those studies that showed a positive relationship, it is negligible and not sufficient to understand the relationship better. There are many reasons that contribute to this lack of empirical consistency. One reason could be attributed to the lack of uniformity from study to study with regard to the type of behaviors studied, differences in the population included and the type of indicators selected for the dependent variables (Connell, 2008). Black, Stern and Elworth, (1985) stated that inconsistency among these studies with regard to demographic variables and behavior is because, the influence of demographic variables

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on behaviors is often very indirect and do not directly determines consumers' choice. These results clearly show that demographic variables may not significantly predict consumer's behavior with any reliability when looked at the relationship directly, but aid in predicting the behavior indirectly through other variables. As such, current study investigated the research question: Are certain demographic characteristics (i.e., age, education, household income, and gender) of consumers related to their level of innovativeness, knowledge about apparel environmental impacts, eco-conscious apparel attitudes, perception of product characteristics, and intention to purchase eco-conscious apparel products?

 Hence, it was hypothesized that,

> *H6a: There will be a statistically significant positive relationship between a consumer's age and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.*
>
> *H6b: There will be a statistically significant positive relationship between a consumer's education and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.*
>
> *H6c: There will be a statistically significant positive relationship between a consumer's household income and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.*
>
> *H6d: There will be a statistically significant difference between men and women in their level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel*

attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and

relative advantage) and intention to purchase eco-conscious apparel.

Chapter 4 - Methodology

In Chapter 2, a thorough review of literature revealed a weak and inconsistent relationship between eco-conscious knowledge, eco-conscious attitudes and eco-conscious consumer behavior particularly with regard to eco-conscious apparel. The literature also suggests that perceived product characteristics have an influence on consumers' adoption of innovative products. The purpose of this study, therefore, is to understand if eco-conscious knowledge, eco-conscious attitudes and perceived characteristics of innovation together enhances the ability to predict eco-conscious behavior. To accomplish this goal, the study intended to reach the objectives set forth in Chapter 1 through answering research questions and testing the hypotheses stated in Chapter 2 by utilizing a quantitative research methodology. Data were collected using a survey instrument, which was developed as a three stage process. First, an initial questionnaire was developed which was then pilot tested and later revised based on the results from the pilot study. This chapter presents the methodology that was employed to meet the research objective set forth in this study. The chapter was organized into four sections: research design, sampling procedure and data collection, survey instrument and data analysis procedures.

Research Design

This study utilized quantitative research methods to achieve the research objectives set forth in Chapter 1. Survey methodology that aids in quantifying the results of numerical data obtained through a survey instrument was employed to collect the data. Researchers generally use survey research when they are interested in gaining insight regarding knowledge, opinions, attitudes and beliefs of people about a particular topic, product or practice (Fraenkel & Wallen, 2006; Crawford, 2008). This method was deemed to be the best method when describing the

characteristics of a population, which might be too large for direct observation (Fraenkel & Wallen, 2006; Crawford, 2008). Therefore, survey research was well suited for understanding consumers' knowledge, attitudes and behavior toward eco-conscious apparel. Additionally, as it was not economical and practical to survey the entire population of interest, survey research design was believed to be best suitable for this study and hence was used to aid in collecting the data from a sample that closely represents the population of interest so that study results can be generalized.

Sampling Procedure and Data Collection

The population of interest for this study included consumers in the United States (US). As the study explored the influence of product-specific perceived characteristics on product-specific eco-conscious knowledge, attitudes and purchase behaviors of the US general population, data were collected from a sample that closely represents the demographic characteristics of such population. The sample was selected based on the representativeness of basic demographics from the most recent 2010 US census. This method of quota sampling was deemed suitable when representativeness is to be achieved in the sample distribution similar to the distribution in the population of interest (Quota sampling in online research, n.d.).

Data were collected by administering an online survey through a web-based market research firm that has been compiling and carefully managing numerous panels carefully since 1999 (Thomas, 2010). Administering the survey through a web-based market research firm may limit the researcher in collecting data only from the consumers who are members of that particular research firm. However, being a nationally renowned market research firm, the company maintains a database of more than 2.6 million registered participants to serve as "panelists" in survey research who fit into a wide range of demographic profiles (Horvath, et al.,

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2009). Therefore, it was assumed that a good representation of the general population in the US could be obtained by administering surveys through this market research firm. Additionally, the quality of survey panels was also ensured throughout the recruitment and retention process by the firm by undertaking various steps. First, panelists were recruited only by using a "closed" or "by-invitation" process. The invitations were sent to either pre-validated individuals or to those who share known characteristics for participating in market research panels. Second, the research firm ensures panel quality by asking the panelist's to complete more than three hundred segmentation questions to make sure surveys will be sent to correct panelists. The panel quality was also ensured by the fact that the average tenure of each member was more than three years with an annual retention rate of 89% (Thomas, 2010). The survey administration is based on an incentive system in which panelists completing the survey will be awarded e-reward currency that can be accumulated and used to redeem for things such as gift cards, flight miles and reward points from various partners of the research firm (Kim, 2012). Hence, this market research firm's extensive database, a wide variety of survey panelists and the quality of its panels' seemed appropriate to administer the study's survey instrument through this firm.

For this study, the survey was developed in an online survey system. Once the survey was developed, the link to the survey was generated and sent to the market research firm by the researcher. The firm then sent the survey link to its members with an invitation to participate. The survey was automatically pre-set to close once five hundred responses were received. The sample size of 500 was decided based on the recommendations from the literature as well as budget constraints. Literature indicates that, beyond a certain point the sample size becomes irrelevant and during such situations a sample size of 400 is adequate (Gay, Mills & Airasian, 2009) specifically, when the population of interest is large or unknown (Sample Size

Methodology, n.d.). Additionally, for the population size of a million or more with 95% confidence level and a 5% margin of error which is commonly used in survey research, a sample of 400 was found to be adequate (Dierckx, 2013). Tabachnick and Fidell (2007) also indicate that "it is comforting to have at least 300 cases for factor analysis" (p. 613) while comrey and Lee (1992) also stated 300 as good, 100 as poor and 1000 as an excellent sample size (see, Field, 2009, p. 647). Hence, based on the literature as well as the limited budget, a sample size of 500 was deemed to be appropriate for this study. The researcher was not involved in any compensation process of survey participants or in collecting any personally identifiable data to use in the research; the firm was paid for services and the firm in turn was responsible for compensating its members for their participation in the survey.

Survey Instrument

The survey instrument was constructed to test the relationship between dependent and independent variables illustrated in the innovation-decision process for eco-conscious apparel model developed in Chapter 2 (see Figure 2). While intention to purchase eco-conscious apparel (IPEA) was the dependent variable, consumer characteristics (i.e., age, gender education and household income), consumer innovativeness (CI), eco-conscious apparel knowledge (EAK), eco-conscious apparel attitudes (EAA) and perceived characteristics of innovation (PCI) (i.e., complexity, compatibility and relative advantage) were the independent variables that either directly or indirectly influence consumers' intention to purchase eco-conscious apparel (IPEA).

The initial instrument was developed, comprising of five sections; demographic profile, CI scale, PCI scale, EAK scale and EAA scale. The Section 1 included demographic characteristics pertaining to gender, age, education and household income followed by Section 2 with consumer innovativeness (CI) scale that measured respondents' level of innovativeness.

Then Section 3 included four online shopping Scenarios followed by perceived characteristics of innovation (PCI) scale. Section 4 consisted of eco-conscious apparel knowledge (EAK) scale and finally, Section 5 included the eco-conscious apparel attitudes (EAA) scale. While PCI, EAK and EAA scales were developed by the researcher specifically for this study, CI scale was a pre-existing scale adopted from a previous study. The following part of the survey instrument section presents a thorough discussion of the process involved in the development of the instrument, including results from the pilot study, followed by a detailed analysis of the refined instrument used for collecting the data in this study with all five of its components.

Consumer Innovativeness Scale

CI was measured using the innovativeness scale for product purchase that was comprised of three statements. The scale was used to measure the degree to which a consumer engages in exploratory behaviors regarding trying new and different products. The scale used was adopted from a previous study by Ailawadi, Neslin and Gedenk (2001). Ailawadi et al, (2001) developed one item and adopted two of the innovativeness items from a study by Darden and Perreault (1976). A composite reliability of the scale was reported to be .81 by Ailawadi, Neslin and Gedenk (2001). While two of the items were adopted as is, based on the suggestion by a statistician, a word, "items" from the third item was replaced by "products" to have a consistency with the words in the remaining two items. The CI scale used a five-point Likert response category ranging from "*strongly agree*" to "*strongly disagree*" with statements such as "when I see a product somewhat different from the usual, I check it out."

Eco-conscious Apparel Knowledge Scale

The EAK scale used in this study to measure consumers' knowledge about environmental impacts of apparel products throughout the life-cycle was developed particularly for this study.

As a starting point, a pre-existing "environmental apparel product knowledge" scale developed by Kim & Damhorst (1998) was used as a departing point to guide the development of EAK scale for this study. A thorough review of academic and trade publications helped in building the EAK scale further. As the scale was intended to measure respondent's knowledge of apparel impacts on the environment through the products' life-cycle, care was taken to expand Kim and Damhorst's (1998) "environmental apparel product knowledge" scale to include at least one item each related to the processes involved in the apparel products' life-cycle. Items were developed from scientific and current apparel and textile literature base such that, they will assess the respondent's level of knowledge pertaining to apparel products and their impact on the environment. The response categories for this scale included a dichotomous choice response category with "*true*" or "*false*" to statements such as "all natural fibers are easily biodegradable". The items that are negatively worded were reverse-coded before any analysis was conducted.

Eco-conscious Apparel Attitude Scale

The instrument comprised an EAA scale developed for this particular study to measure respondents' attitudes pertaining to eco-conscious apparel (see survey instrument in Appendix A). Literature pertaining to eco-conscious apparel in general and consumer behavior towards eco-conscious apparel in particular guided the EAA scale development process. The items were developed to measure respondents' attitudes towards eco-conscious apparel. The response category included a five-point Likert scale that ranged from "*strongly agree*" to "*strongly disagree*" to statements such as "in general, I believe that eco-conscious apparel products (merchandise) are of poor quality." Care was taken to reverse-code the items that were negatively worded before any analysis was conducted. Many researchers believe that including negatively-worded items in the instrument will encourage respondents to process the item

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content more carefully while also reducing non-attending behaviors such as acquiescence; a tendency of respondents to simply agree with the items in the survey, satisfying a response set (Cronbach, 1946, 1950; Weems, Onwuegbuzie, Schreiber, & Eggers, 2003).

Perceived Characteristics of Innovation Scale

Four Scenarios/vignettes were introduced in Section 3 of the instrument, each being presented with the image of a t-shirt along with the product information about the t-shirt generally provided in a simulated online apparel retail store. The section started with the introduction of Scenario 1 to the respondents. After reading the Scenario, respondents were asked to respond to a 16-item PCI scale. Then, respondents purchase intentions were measured by asking them to indicate the intention to purchase the t-shirt shown in the Scenario. This was followed by an open-ended question asking respondents to provide any additional information that may have influenced their intention to purchase the t-shirt. A similar pattern was used in all Scenarios: presenting the Scenario information, then the PCI scale, followed by the likelihood question and finally an open-ended question. The following part of this section presents a thorough discussion on the development process of the Scenarios, the PCI scale, the likelihood question and the open-ended question.

Development of Scenarios

Scenarios or vignettes are short stories in written or pictorial form presented to participants to explore their subjective belief systems (Renold, 2002). Finch (1987) described vignettes as "short stories about hypothetical characters in specified circumstances, to whose situation the interviewee is invited to respond" (p. 105). The technique of using Scenarios as a method can elicit perceptions, beliefs, opinions and attitudes of the respondents about the stories describing Scenarios and situations (Barter, & Renold, 1999). Therefore, using a Scenario in this

study seemed appropriate because perceptions of the respondents with regard to product attributes and their influence on purchase behavior can be better explained through such Scenarios which are an integral part of this study.

Each Scenario consisted of information about the product, mimicking details presented at the point of purchase in an online apparel store. The four Scenarios presented similar t-shirts manufactured using environmentally conscious processes (eco-conscious t-shirt). The primary difference between all four Scenarios was the level of information (least, some, medium and most) provided about eco-attributes of the t-shirt. There was a transition from least amount of information in the first Scenario to the most amount of information in the fourth Scenario. Two versions of the instrument were developed, one for males and another for females. While the male version of the instrument had an image of a man's t-shirt, the female version of the instrument had an image of a woman's t-shirt. Other than that, everything else in the instrument was the same in both the versions.

In each Scenario, along with the t-shirt image, basic product information was provided, such as a brief description about the t-shirt, price, sizes and colors available and the country of origin etc. While the first Scenario had no substantial eco-conscious product information (perhaps not sufficient to judge the eco-consciousness of the t-shirt), the last Scenario had the most amount of information sufficiently explaining the eco-consciousness of the t-shirt. The Scenarios were arranged in such a way to examine two things: first, whether consumers, given the most amount of information about eco-consciousness of an apparel product in the last Scenario felt that such information was sufficient enough to influence their intention to purchase the eco-conscious t-shirt compared to the first Scenario where sufficient information was not provided to reveal the eco-consciousness of the t-shirt prominently. The second objective was to

understand as to what level of information among the four Scenarios with least, some, medium and most, had most likely influenced the majority of the respondent's intention to purchase the eco-conscious T-shirt. In other words, which Scenario did the respondent feel carried sufficient information to exert maximum influence on their purchase decision? After they had read the information provided in each Scenario, respondents were to provide their level of agreement to a set of items (PCI scale) measuring consumer's perception toward product characteristics (i.e., complexity, relative advantage and compatibility) for that particular t-shirt shown in the Scenario.

The decision to gradually increase the amount of information presented in each Scenario from the least amount of information in the first Scenario to the most amount of information about eco-conscious t-shirt in the last Scenario was based on the premise that consumers need more information to reduce the perceived complexity and encourage the adoption of eco-conscious apparel; an innovation. It was mentioned by Rogers (1995) that the way consumers perceive the complexity of an innovation is negatively associated with the rate of its adoption. In other words, if consumers perceive an innovation to be more complex then the rate of adoption of such innovation is slow compared to innovations that are perceived to be less complex by the individual. For such complex innovations, if consumers are provided with more information that would enable them to understand the product better, it may reduce the perceived complexity and increase perceived compatibility and relative advantage of the product aiding the individual in their decision-making process.

Since the processes involved in each stage of the apparel product life-cycle and the related environmental impacts are complex, research suggests that consumers need more information with regard to manufacturing processes involved, environmental impacts of fibers

and finishes used in manufacturing the product, the distance eco-conscious apparel traveled throughout its supply chain and the carbon footprint associated with it for them to involve in eco-conscious apparel acquisition behavior (Hiller Connell, 2010). Therefore, when consumers are presented with more information pertaining to the processes involved in the product supply-chain and more knowledge regarding the environmental impacts associated with production, then they may be in a better position to engage in eco-conscious apparel purchase behaviors. By providing more information, it was assumed that for products like eco-conscious apparel for which the production and processing methods are assumed to be complex, respondents' perception of relative advantage and compatibility towards the product might continue to increase while decreasing the associated perceived complexity, which in turn may increase their intention to purchase the t-shirt. In other words, as the level of information provided increases, respondents will be better able to determine the relative advantage and compatibility of the product while reducing their perception of complexity associated with eco-conscious apparel, which may positively influence their intention to purchase the t-shirt. Based on this presumption, the information provided about product characteristics was slowly increased from one Scenario to another such that least amount of information was provided in Scenario 1 and in-depth information was provided about eco-attributes of the t-shirt in Scenario 4.

There was a reason for choosing an online shopping Scenario for this study. Increasingly, companies are selling eco-conscious apparel through online retailing. Previous studies have shown that availability of eco-conscious apparel in brick-and-mortar stores to be poor (Joergens, 2006). Additionally, respondents in these studies stated that they were not able to purchase eco-conscious apparel as the products were not widely available in the stores and also, it was inconvenient to search for the products (Gam, 2011; Joergens, 2006; Laroche et al., 2001) and

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ordering apparel from catalogues involve an extra cost of purchasing the catalogue (Joergens, 2006). Therefore, an online shopping environment was created as a shopping Scenario in order to align with typical product distribution patterns.

On the other hand, the decision to use a basic t-shirt in the shopping Scenario was made because a basic t-shirt with solid color and no design will have the least amount of stylistic features which otherwise may interfere with the respondents' response patterns. For example, if a fashion shirt, jeans or other apparel product were used, respondents may have various preferences for stylistic features in such products, which may influence their responses and interfere or deviate from what researcher was actually intending to investigate. Therefore, after analyzing different apparel products, a basic fitted t-shirt with short sleeves and solid color was assumed to be most suitable and therefore used for this study.

Before developing the survey instrument, a thorough review of current online retail websites was made to understand how to best present information in the Scenarios to mimic information provided in an online apparel store. A search was also made to understand how the information was provided in online stores that sell general apparel merchandise and also the stores that specialized in selling eco-conscious apparel. A thorough review was also made to examine how apparel products were displayed in an online apparel store and the type and level of information provided for a basic t-shirt made out of organic cotton using eco-conscious processes.

There was not much difference in the level of information provided in online stores that sell non eco-conscious apparel merchandise except for how the information was provided. For example, regarding how the merchandise was displayed; some online stores used live male/female models to display the merchandise, while others used mannequins or laid the

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products flat on a surface. Similarly, while some stores displayed both front and back views of the merchandise, others displayed only front view while some other stores displayed multiple views of both front and back of the products. However, due to the limitations pertaining to an online survey system used for this study, only front view of the t-shirt worn by a male model for male version and female model for female version of the shirt was displayed.

Regarding online stores that sell eco-conscious apparel, a difference was found in the level of information provided. Apart from price, sizes and colors available and country of origin, some stores provided just basic details about fiber content (i.e., 100% organic cotton or 60% rayon from sustainable bamboo, etc.) and fabric characteristics (i.e., pre-shrunk, eco-sheer, low-impact dyes, etc.) to disclose the eco-conscious attributes of the product. While some other stores provided detailed description about how they manufacture their products and the processes they follow right from choosing the materials to shipping their products to the store including information on organic certification to enable their consumers to understand more about how their company and their products are exerting a minimum impact on the environment.

Finally, as price was found to be an important factor influencing consumer's purchase decision, a search was also made to find out the price of a basic conventional t-shirt in online apparel stores. The search revealed that on an average, a conventional basic cotton t-shirt was priced around $20-$25. A search was also made to determine whether past studies investigated organic cotton t-shirt prices. Only one study was found researching price premiums for eco-conscious apparel. Results suggested that on average eco-conscious apparel has a mark-up of 33% (Nimon & Beghin, 1999). This mark-up was utilized to price the eco-conscious t-shirt in this study. Therefore, the average price of $22.50 from the online search was marked up by 33%,

which when rounded came to $30. As such, the t-shirt shown in all the Scenarios was priced at $30.

PCI Scale Development

The PCI scale was developed for this study to measure consumer's perception toward product characteristics and their purchase behavior in terms of their intention to purchase the t-shirt shown in four Scenarios presented as a part of the instrument. The scale was developed after performing a thorough review of academic and trade publications pertaining to product characteristics of eco-conscious apparel as well as perceived characteristics of an innovation as explained by Rogers (1995) in the diffusion of innovation theory. The PCI scale consisted of 16 items that utilized a five-point Likert scale ranging from "*strongly disagree*" to "*strongly agree*". The respondents were asked to provide their agreement to statements such as "it is evident that the processes (e.g., dyeing, finishing, construction) used in manufacturing this t-shirt are less harmful to the environment." The PCI scale was presented after each Scenario was introduced to the respondents. Therefore, respondents were to answer PCI scale four times, once after the presentation of each Scenario. The set of statements provided were similar in all four of the Scenarios.

After presenting statements in the PCI scale, respondents' purchase behavior was measured by asking their intention to purchase the t-shirt shown to them in the Scenario in a percentage (0%, 25%, 50%, 75% and 100%). Then, an open-ended question followed asking the respondents to provide any additional information that may have influenced their intention to purchase that t-shirt. In other words, what are the product characteristics that influenced them to make a decision to purchase or not to purchase that particular t-shirt shown in the Scenario?

Pilot Study

Once the instrument with five sections was developed, the researcher was concerned that the instrument might be too long and hence may negatively influence respondents' answers by either lowering the response rate or getting hurried responses. The concern was specifically regarding reading the information provided in the four Scenarios and responding to similar statements in the PCI scale four times. The literature also suggests that when surveys are long they result in lower response rates (Ben-Nun, 2008; Porter, 2004). Therefore, it was decided that a pilot test be conducted primarily to understand if respondent fatigue was an issue given the length of the instrument. Respondent fatigue, according to Ben-Nun (2008) "is a well-documented phenomenon that occurs when survey participants become tired of the survey task and the quality of the data they provide begins to deteriorate" (p. 2). As the length of the survey increases, the time required to finish the survey also increases, thus resulting in a decline in the motivation and ability of the respondents to answer the survey. In such instances, it is possible for the respondents to answer "don't know" more often, engage in a "straight-line" responding method which means choosing answers that are in the same column on the page, answer in a perfunctory way or stop responding to the survey altogether (Ben-Nun, 2008). Therefore, the author suggests that it is important to take into account the causes and consequences of respondent fatigue while considering the length of the questionnaire, order of the questions and design of the survey. Therefore, conducting a pilot study was deemed appropriate to make sure respondent fatigue was not an issue in the study. The pilot study was also intended for respondents to provide their input about the clarity of statements used in the survey.

The pilot test was conducted by administering the survey in a graduate level statistics class offered within the college of education. Half of the respondents were given the full-length survey consisting of five sections with four Scenarios. The remaining respondents were given the

same survey but with only two Scenarios with the first Scenario showing an eco-conscious t-shirt with minimal amount of product information and the second Scenario showing eco-conscious t-shirt with the most amount of product information. It was decided to administer the survey by splitting the instrument to see if the students who were given a full-length survey with four Scenarios took more time to complete the survey as compared to those who received the survey with two Scenarios. All other aspects of the survey remained the same. The pilot study was timed from the moment respondents began and finished the survey.

The questionnaire was administered to a sample of twenty-four respondents among which four were male and twenty were female. After receiving completed surveys, an analysis was conducted to compare the difference between how much time respondents took to fill in the survey with four Scenarios and the time remaining respondents took to answer the survey with two Scenarios. While respondents who were given the survey with four Scenarios took around twenty to thirty minutes, those who received survey with two Scenarios took around ten to twenty minutes to fill in the whole survey.

After the respondents completed answering the survey, they were asked about their opinion regarding the length of the survey and order of presenting the sections in the instrument. Those who received the survey with four Scenarios stated that it was too long and hence, started feeling tired. Therefore, after responding to the first Scenario in Section 3, two of the respondents skipped answering the rest of the Scenarios, while one respondent skipped fourth Scenario and jumped into responding remaining sections of the survey. They mentioned that they felt it was boring, especially when they had to answer the same set of questions repeatedly after each Scenario for four times. Some of the respondents also mentioned that, as there was very little difference in the level of information provided from one Scenario to another, they could not

recognize the difference until they started answering the third or fourth Scenario. Hence, they began responding to the statements followed by each Scenario similarly. On the other hand, respondents who were given the instrument with two Scenarios did not feel that the length of the survey was too long or boring. They also mentioned that they could easily understand the difference between both the Scenarios as the first one had the least amount of information and the second one had the most information. However, most of the respondents stated that they felt hesitant to answer demographic questions at the beginning of the survey and would get turned off to proceed further into filling out the rest of the survey if they were to answer demographic questions specifically with regard to age and income first.

Final Survey Instrument

Based on the results from the pilot study, changes were made to create the final survey instrument. First, the demographic questions were moved from beginning to the end of the survey and therefore, the instrument began with statement on consumer innovativeness (CI scale) in Section 1. Although, demographic questions were moved towards the end of the survey, a question about the demographic variable-gender was asked after the CI scale so that depending on the respondents answer, the appropriate gender specific version of the survey was generated for the respondent to answer. For example, if a respondent specified "female" as their gender, then the survey with a female model wearing a female version of the t-shirt was automatically generated for the respondent. Similarly, if a respondent specified "male" as their gender, then they received a survey instrument with the male version of the t-shirt. Except for change in the image, the remaining survey instrument was identical in all aspects for both the versions.

Second, the number of Scenarios was reduced from four to two by retaining the first Scenario with the least amount of information and the fourth Scenario with the most amount of

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information about eco-attributes of the t-shirt. Therefore, in Section 2 of the survey, two appropriate online shopping Scenarios were presented with each followed by a question on the intention to purchase the t-shirt and then the PCI scale. The changes that were made to Section 2 were supported by the pilot study results.

In the revised survey instrument, at the beginning of Section 2, respondents were informed that they will be introduced to two online shopping Scenarios and they were to go through the information provided in each Scenario carefully and respond to the statements following the Scenario. While introducing each Scenario, they were asked to assume that they are planning to purchase a t-shirt in their local department store. However, due to lack of time to visit the store, a search for a t-shirt in that department store's online offerings was completed and they had narrowed their selection to the t-shirt shown in the Scenario. Then, they were asked to look at the t-shirt image and go through the product information provided. After reading through the product information, respondents were asked to respond to a set of statements. As discussed earlier, the primary difference between both the Scenarios was, the amount of information provided about eco-attributes of the t-shirt. The information thus provided was different for each t-shirt.

In the first Scenario, very basic information about the t-shirt was provided as would be provided in any other online store. Information included brand name (Green Touch), T-shirt image, short description of the shirt, style number, price, fiber content (100% organic cotton), care information, available colors and sizes and RN number. In the second Scenario, information included brand name (Eco-Wear) with a small caption (making the mark in organic apparel) under it to prominently indicate the organic nature of their products, t-shirt image, short description of the t-shirt, style number, price, fabric content (100% certified organic cotton)

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including certification stamp, available colors and sizes, country of origin (Made in USA) along with RN number and additional product information. The RN number provided can be used to track the t-shirt back to the field if a consumer wants to know more details about the organic certification of the t-shirt by checking the "environmental initiative" page in the company's home page. Under "additional product information" Section, more detailed information regarding how their products were manufactured using eco-conscious processes was provided including environmental initiatives undertaken by the company right from material stage to final discard of the product. Certification information for organic cotton was also provided to make the information more authentic and trustworthy. After respondents read through the information provided about the t-shirt in each Scenario, respondents were provided with the likelihood question followed by the open-ended question.

Third, while answering the EAK scale using a dichotomous response category of "*true*" or "*false*", respondents in the pilot study mentioned that it would be great if there were one more response category "*do not know*" apart from "*true*" or "*false*". Therefore, "*do not know*" category was also added to "*true*" or "*false*" category so that if a respondent cannot determine if the statement was "*true*" or "*false*" then they can chose the "*do not know*" option.

Fourth, the question on intention to purchase the t-shirt based on the information provided in each Scenario was moved from after the PCI scale to before PCI scale and immediately after the Scenario. Such a decision was made to reduce the influence of information provided in the statements while answering to their intention to purchase the t-shirt by respondents. Apart from these changes, the remaining part of the survey was kept the same.

With the new changes, the final instrument was uploaded to an online survey system and the link to participate in the survey was then sent to the market research firm. The link, in turn,

was sent to qualifying members of the market research firm. While uploading the instrument into the online survey system, it was framed in such a way that once respondents answer each section in the survey and click "next" button, they will be unable to go back to previous sections to change responses. This was set up in such a way to minimize the influence of any section of the instrument on its previous sections already answered by the respondents. Additionally, the instrument was set up in such a way that, for the participants to move to the next section, they were required to respond to every item in the current section to ensure surveys were filled in completely.

Before the final survey was administered, an application was submitted to the Internal Review Board (IRB) at Kansas State University for the approval of using human subjects in the study. Upon review, IRB deemed the study as an exempt as there were no known risks to the participants as well as their anonymity was protected because no identifying information was collected. As directed by IRB protocol the researcher included a statement at the beginning of the survey instrument informing the respondents that their participation in the study was voluntary, they give their consent to take part in the research by completing the survey and can withdraw from the study at any point of time. The approximate amount of time it takes to complete the survey was also included in the statement (see survey instrument in Appendix A).

Data Analysis

The data collected through administering an online survey was encoded numerically in Microsoft Excel and statistically analyzed using Statistical Package for the Social Sciences (SPSS) Version 21 Software. The first step prior to conducting any data analysis procedure was to check the data for missing values and outliers, clean and recode the survey data before they were subject to further tests. After downloading the raw data from the online survey into a

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Microsoft Excel file, it was checked for missing data and for any surveys that had at least half of the questions unanswered to be included in the data analysis. Then, the data was cleaned to remove any unwanted data cells and recoded to make the data suitable and easy to carry statistical procedures. After preliminary analysis of survey data, the analytical procedures carried out in this study were mainly focused on descriptive analysis of the respondents as well as predictive analysis to understand the variables influencing the IPEA.

Validity and Reliability of Measurement Scales

Before any analysis was performed, it was important to test the validity and reliability of measurement scales used in the instrument. Validating the measurement scales used in the instrument was necessary to understand if the instrument actually measured what it was intended to measure (Field, 2009). The content validity of the instrument was established by having the "experts" review the instrument to provide expert judgment on how well the instrument measures what it was intended to measure. The instrument was submitted to three professors in the department of apparel and textiles and one professor in the department of statistics. Based on the expert judgment and their input, changes were made to the instrument.

Conducting exploratory factor analysis through promax oblique rotation tested the construct validity of scales developed in this study. Factor analysis is often used to identify the underlying variables or key factors that can explain correlation patterns within an observed set of variables. Additionally, factor analysis is also often used as a data reduction process in which a small number of factors are identified that can explain most of the variance from a much larger number of variables (SPSS 17.0 Help). According to Williams, Brown, & Onsman, (2010), among many, the three uses of factor analysis were noted as:

Firstly, factor analysis reduces a large number of variables into a smaller set of variables (also referred to as factors). Secondly, it establishes underlying dimensions between measured variables and latent constructs, thereby allowing the formation and refinement of theory. Thirdly, it provides construct validity evidence of self-reporting scales (p. 2).

During such process of factor analysis, items with low factor loadings or cross loadings were removed to improve construct validity of the scale. For example, factor analysis would be conducted on responses to the PCI scale to determine whether the 16-items developed to identify three key innovative product characteristics of interest: perceived complexity, perceived compatibility and perceived relative advantage, would load within the expected factor without any cross loadings. Factor analysis also used to confirm factors within the EAA scale developed for this study. The names of resulting factors were selected based on the latent variable the scale was constructed to measure. However, as a first step while performing the factor analysis and before extracting the factors, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (Kaiser, 1970) and Bartlett's Test of Sphericity (Bartlett, 1950) were conducted to assess suitability of the data for performing factor analysis (Williams et al., 2012). While the KMO index ranges from 0 to 1 with a 0.50 considered to be suitable for factor analysis, the Bartlett's Test of Sphericity should be significant with $p< .05$ (Hair, Tatham, Anderson, & Black, 2006; Tabachnick, & Fidell, 2007).

After extracting factors using factor analysis, reliability of items in each scale/subscale retained after factor analysis was tested using the measure of internal consistency. While reliability indicates if the instrument produces the same results over and over again under similar conditions (Field, 2009), the reliability of any measurement procedure consists of estimating how much of a variation is attributable to chance or random errors (Selltiz, Wrightsman, & Cook,

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1976). The reliability of the survey instrument was calculated by estimating the Cronbach's

alpha, a model of internal consistency based on average inter-item correlations. A Cronbach's

alpha value of less than 0.5 is considered to be poor and a value greater than 0.5 is acceptable

(Chakrapani, 2004). The results from the reliability test procedure included a column with name

"Cronbach's alpha if item deleted". The values under this column for each item indicate the

value of the overall alpha if that item was not included in the calculation. In other words, these

values show the change in overall Cronbach's alpha that would result if a particular item were

deleted. A greater value under that column for any item indicates that the overall reliability (i.e.,

Cronbach's alpha) of the scale will increase to that value if that particular item is deleted. Hence,

these values for all the items should be lower than the overall alpha. For example, if overall

Cronbach's alpha (reliability) for a scale is .85, then the individual values under "Cronbach's

alpha if item deleted" column for each item should be around .85 or lower. Any item that has a

value higher than .85 should be deleted to improve overall reliability (Cronbach's alpha) of the

scale. If any item was deleted, then factor analysis was re-computed to see if the structure of the

factors still holds (Field, 2009). After testing the reliability of each scale, a composite mean score

was computed for each scale/subscale to be used while conducting predictive analysis to test the

hypotheses. The mean scores of each of the factors in PCI scale were computed for both the

Scenarios together as well as separately for each Scenario to be used where appropriate while

testing the hypotheses.

Descriptive and Predictive Analysis

The analytical procedure for this study focused mainly on two types of statistical

procedures. The descriptive analysis of the respondents and their IPEA followed by inferential

statistical procedures to test the hypotheses proposed based on the conceptual model developed

in Chapter 2. First, descriptive statistics such as measures of central tendency and measures of variability were computed to describe the demographic characteristics of the respondents pertaining to gender, age, education and household income. Descriptive statistics on CI, EAK, PCI and EAA scales were computed to show means and standard deviations.

Following the descriptive statistical analysis, predictive statistical procedures were performed to examine the ability of the conceptual model to aid in understanding the influence of PCI on EAK, EAA and consumer's decision-making process for eco-conscious apparel. As such, the predictive portion of this study includes analyzing the conceptual model through testing the hypotheses to reach the overall objective of this study: to explore if the influence of perceived characteristics of innovation strengthens the inconsistent relationship found in the literature between eco-conscious knowledge, eco-conscious attitudes and eco-conscious consumer behavior pertaining to eco-conscious apparel. In other words, if adding PCI variables to the model strengthens the linear relationship between EAK, EAA and IPEA. Six research questions with respective hypotheses were formulated.

Research Question 1: Do eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation together have a stronger influence on intention to purchase eco-conscious apparel?

> *H1a: Eco-conscious apparel knowledge has a statistically significant influence on the intention to purchase eco-conscious apparel.*
>
> *H1b: Eco-conscious apparel knowledge and eco-conscious apparel attitudes together have a statistically significant influence on the intention to purchase eco-conscious apparel.*

H1c: Eco-conscious apparel knowledge, Eco-conscious apparel attitudes, and perceived characteristics of innovation (i.e. complexity, compatibility and relative advantage) with regard to eco-conscious apparel have a statistically significant influence on the intention to purchase eco-conscious apparel.

H1d: There will be greater influence of eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation on intention to purchase eco-conscious apparel when more information about eco-attributes of the innovation is provided than less information.

To test these expected relationships, a hierarchical regression analysis was conducted. Hierarchical regression is a sequential process in which predictor variables are entered into the analysis in steps (Lewis, 2007). Hierarchical regression is used to analyze the effect of a predictor variable after controlling for other variables by calculating the change in adjusted R^2 at each step in the analysis which accounts for an increment in the variance after each variable or group of variables are entered into the regression model (Pedhazur, 1997). In this study, the amount of variance explained by the model was examined and significance of the model was determined using the F-test. The difference in R^2 was used to determine if the difference was significant. The significance of regression coefficients was determined using the p-value set at the 5% level ($p < .05$). Before conducting hierarchical regression, a combined composite mean score for both the Scenarios was computed by summing item scores for both Scenarios, then dividing by the number of items in that particular factor to use while testing the Hypotheses 1a-c. For example, a combined composite mean score was computed by adding mean scores for the four perceived complexity items in Scenario 1 and four items in Scenario 2 then dividing by eight. Similarly,

combined composite mean scores for perceived compatibility and perceived relative advantage factors were also computed. Then, a mean score of dependent variable (i.e., IPEA) for both the Scenarios together was also computed to use while testing the Hypotheses 1a-c.

After computing the mean scores, the hierarchical linear regression analysis was computed. While computing the analysis to test Hypotheses 1a-c, the IPEA combined mean scores for both Scenarios was entered under dependent variable. As explained earlier, independent variables are entered stepwise while conducting hierarchical regression analysis. Therefore, in Step 1, EAK composite score was entered (H1a) followed by EAA composite mean score in Step 2 (H1b) and combined composite mean scores of each of the PCI factors in Step 3 (H1c).

A composite mean score for each factor separately for each Scenario was calculated to use while testing the Hypothesis 1d. Summing item scores in each factor of the Scenario and dividing by the number of items computed a composite mean score for each factor in each Scenario. For example, summing up the scores of all the four items in the complexity factor and dividing by four computed a composite mean score for that factor in Scenario 1. Similarly, composite mean scores for perceived compatibility and perceived relative advantage factors were also computed. For testing hypothesis H1d, hierarchical regression analysis was computed twice, once for Scenario 1 and then again for Scenario 2 using individual mean scores for each Scenario and results from both the Scenarios were compared using R^2 and F-ratio.

Research Question 2: Does amount of information reported about eco-conscious attributes of the innovation influence consumer's perception of innovation characteristics?

H2a: Perception of complexity will significantly lessen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.

H2b: Perception of compatibility will significantly strengthen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.

H2c: Perception of relative advantage will significantly strengthen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.

For testing the hypotheses H2a-c dependent-means *t*-tests were computed. The significance of *t*-test was determined using the p-value generally used in social sciences. If p-value was less than .05 then means of the two groups were believed to be significantly different from each other regarding their perception of PCI. The composite mean scores computed for each factor in the PCI variable for each Scenario were used while conducting the *t*-tests.

Research Question 3: Does consumer's perception of the eco-conscious attributes of the innovation makes a difference on intention to purchase eco-conscious apparel?

H3a: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to puchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).

H3b: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).

H3c: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).

H3d: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).

H3e: Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).

H3f: Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).

For testing hypotheses H3a-f independent samples *t*-tests were computed. The composite mean scores of each factor in the PCI variable in each Scenario have a response value ranging from 1 to 5. For computing independent samples *t*-tests, the scores have to be changed from a 5-response category into 3-response category. Therefore, for each factor in each Scenario the response values of 1 and 2 were grouped together as '1' to represent the '*strongly disagree*' and '*disagree*' group. Then response values of 4 and 5 were grouped together as '2' to represent the '*agree*' and '*strongly agree*' group. The response value of 3 was recoded as '0' to represent the '*neither agree nor disagree*' group. While computing *t*-tests, the recoded value '1' was entered under the first grouping variable and the recoded value '2' was entered under the second grouping variable. As recoded value 0 represents a neutral response it was not used in computing the *t*-test. The groups were divided based on a dissertation study by Stachewicz (2011) in which,

the author divided the groups similarly before performing the *t*-test. The significance of *t*-test was determined using the p-value generally used in social sciences. If p-value was less than .05 then means of the two groups were believed to be significantly different from each other regarding their intention to purchase eco-conscious apparel.

Research Question 4: Is there a relationship between a consumers' level of innovativeness and his/her perception of innovation characteristics of eco-conscious apparel products?

> *H4a: Consumer's level of innovativeness will have a statistically significant inverse relationship to his/her perception of the complexity of an innovation (i.e. eco-conscious apparel).*

> *H4b: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the compatibility of an innovation (i.e. eco-conscious apparel).*

> *H4c: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the relative advantage of an innovation (i.e. eco-conscious apparel).*

To test hypotheses H4a-c, a Pearson's bivariate product moment correlation coefficient analysis was performed on the composite mean innovativeness score and combined composite mean scores of each of the three PCI factors calculated using scores from both Scenarios. The significance of the relationship was determined using the p-value. If the p-value was less than .05 then the relationship between variables was believed to be significant.

Research Question 5: Is there a relationship between a consumers' level of innovativeness and his/her intention to purchase the innovation (i.e., eco-conscious apparel)?

H5: Consumers' level of innovativeness will be significantly positively related to their

intention to purchase the innovation (i.e., eco-conscious apparel).

To test the hypothesis H5, a Pearson's bivariate product moment correlation coefficient was computed on the composite mean innovativeness score and combined composite mean score of IPEA from both Scenarios. The relationship was deemed to be significant if the p-value is less than .05.

Research Question 6: Are certain demographic characteristics (i.e., age, education, household income, and gender) of consumers related to their level of innovativeness, knowledge about apparel environmental impacts, eco-conscious apparel attitudes, perception of product characteristics, and intention to purchase eco-conscious apparel products?

H6a: There will be a statistically significant positive relationship between a consumer's

age and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious

apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility

and relative advantage) and intention to purchase eco-conscious apparel.

H6b: There will be a statistically significant positive relationship between a consumer's

education and his/her level of innovativeness, eco-conscious apparel knowledge, eco-

conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity,

compatibility and relative advantage) and intention to purchase eco-conscious apparel.

H6c: There will be a statistically significant positive relationship between a consumer's

household income and his/her level of innovativeness, eco-conscious apparel knowledge,

eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity,

compatibility and relative advantage) and intention to purchase eco-conscious apparel.

H6d: There will be a statistically significant difference between men and women in their level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.

To test the hypotheses H4a-c, a Pearson's bivariate product moment correlation coefficient analysis was performed on demographic characteristics to understand their relationship with other variables in the study. The analysis was performed on demographic characteristics pertaining to age, education and household income in relationship with composite innovativeness mean score, composite EAK score, and composite EAA mean score, combined composite mean scores of each of the PCI factors from both Scenarios and composite mean score of the dependent variable (i.e., intention to purchase eco-conscious apparel) from both Scenarios. The relationship was deemed to be significant if the p-value is less than .05. For testing the hypothesis H6d, an independent-samples *t*-test was computed using a significance of p-level less than .05.

The demographic characteristics specific to gender, age, education and household income used to answer this research question are the characteristics that were frequently researched in previous studies to understand consumer's eco-conscious behaviors (Anderson & Cunningham, 1972; Anderson et al., 1974; Arcury & Johnson, 1987; Balderjahn, 1988; Berkowitz & Lutterman, 1968; Blake, 2001; Granzin & Olsen, 1991; Oom do Valle, et al., 2004; Roberts, 1996; Shrum et al., 1995; Tanner & Kast, 2003; Tucker, 1980; Webster, 1975). Hence, it seemed appropriate to use these demographic characteristics in this study to look at their relationship with the other variables of interest in this study.

The next chapter (Chapter 5) presents results from the data analysis, including a descriptive analysis of demographic characteristics of the sample followed by an in-depth predictive analysis of hypotheses testing and answering research questions. Finally, Chapter 6 includes discussion of findings from statistical analysis of the data, conclusions based on the research questions depicted in Chapter 3, followed by implications including practical suggestions for addressing issues raised in future research studies.

Chapter 5 - Presentation and Analysis of Data

This chapter presents a detailed descriptive analysis of the survey data followed by an in-depth predictive analysis to test the hypotheses and answer research questions. The overall objective of this study was to clarify the link between knowledge, attitudes and behavior through exploring the influence of perceived characteristics of an innovation (PCI) on consumer's decision-making process. Based on this objective, six research questions were formulated. The first research question of this study investigated whether intention to purchase eco-conscious apparel (IPEA) was influenced by eco-conscious apparel knowledge (EAK), eco-conscious apparel attitudes (EAA) and PCI (i.e., complexity, compatibility and relative advantage) together and if such influence was greater when more information about eco-attributes was presented rather than less information. The second research question was to understand if there was an influence of the amount of information reported about eco-conscious attributes of the innovation on consumer's perception of innovation characteristics. The third research question was aimed at understanding if the consumer's perception of eco-conscious attributes of the innovation make a difference in consumer's eco-conscious purchase-decision making. Then, fourth research question pertains to exploring the relationship between the consumers' level of innovativeness and his/her perception of innovation characteristics of eco-conscious apparel products. Fifth research question was developed to understand if there is a relationship between consumers' level of innovativeness and their intention to adopt eco-conscious apparel. Finally, the sixth research question was aimed at investigating the relationship pertaining to demographic characteristics (i.e., gender, age, education and household income) of consumers and their EAK, EAA, perception of product characteristics, level of innovativeness and intention to purchase eco-conscious apparel products. To answer these research questions, pertinent hypothesis were

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developed and tested using relevant statistical procedures, which are presented in the forthcoming sections following the presentation of a descriptive analysis of the data.

The raw data from the online survey was downloaded into a Microsoft Excel file. A total of 593 filled in questionnaires were collected. Although, the contract was made with the online research company to collect data from 500 participants, a total of 593 responses were received by the time the company deactivated the survey to stop data collection. Among those, one respondent did not complete the survey, leaving more than half the questions unanswered. Therefore, this questionnaire was deleted prior to statistical analysis leaving a total of 592 surveys. Then, the data were cleaned to remove any unwanted data cells and recoded to make the data suitable and easy to carry any statistical procedures. For example, when the raw data were downloaded from an online survey system into a Microsoft Excel file it contained columns such as "start date", "end date" and "finished" showing the time and date when the survey was taken and finished by each respondent. The data also contained columns that have instructions between each part of the survey along with product information from each Scenario which were not necessary and may have interfered while conducting statistical procedures. Hence, such unwanted cells were identified and removed.

Once, unwanted data were removed, the responses from survey participants were recoded where necessary to make the data easy to identify while conducting and interpreting the analysis. For example, each of the sixteen items in PCI scale had the full question as the column name when survey data were downloaded from the website. As it is hard to identify the columns while conducting statistical procedures and analyzing the data with such a lengthy name, the column names were recoded as PCI1-1, PCI1-2, and PCI1-3 etc. where, PCI represents the scale name, the first number represents Scenario 1 and the second number represents the question number.

Similarly, the column names were changed for PCI scale in Scenario 2 as well as for remaining scales and demographic variables. Once the survey data were cleaned and recoded, it was exported into the Statistical Package for the Social Sciences (SPSS) software for conducting statistical analysis of the data. The following section is dedicated towards presenting a descriptive analysis of the survey results followed by predictive analysis through hypotheses testing.

Demographic Characteristics of the Sample

The subjects were all residents of the US Table 5.1 provides a comparison of the demographic profile of the sample with demographic characteristics of the US population based on 2010 US census (United States Census Bureau, 2010). This aids in understanding demographics of the sample in comparison with the general population of the US as well as generalizability of survey results.

A majority of respondents was found to be female (67%) in the sample, whereas the difference between male and females was only 1.6% in the US general population. This indicates that sample was more skewed toward females. This was not surprising considering that the focus of the survey was apparel consumer behavior. Men receiving the survey might have been less interested in taking the survey.

The age of participants ranged from 18 to 65 years and above. While the age of most of the respondents was fairly evenly distributed between the remaining age groups; 25-34 (16%), 35-44 (16%), 45-54 (22%), 55-64 (19%) and over 65 years (19%), the age group of 18 to 24 was represented by only 8% of the respondents. Additionally, the number of respondents over the age of 45 was larger (60%) than those under the age group of 44 (40%) resulting in a sample that was skewed toward older respondents.

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Table 5.1 Comparison of Demographic Characteristics

Variable	Description	Sample Demographics		US Demographics
		Frequency	Percentage	Percentage
SEX	Female	397	67.1	50.8
	Male	195	32.9	49.2
AGE	18-24	46	7.8	13.0
	25-34	96	16.2	17.5
	35-44	97	16.4	17.5
	45-54	128	21.6	19.2
	55-64	114	19.3	15.6
	65 and over	111	18.8	17.2
EDUCATION	Some high school	2	0.3	9.4
	High school diploma	56	9.5	32.6
	Some college but no degree	114	19.3	20.3
	Associate/Bachelor's degree	262	44.3	28.0
	Master/Doctorate degree	155	26.2	9.7
	Other	3	0.5	-
HOUSEHOLD INCOME	Less than $15,000	47	7.9	13.7
	$15,000-$24,999	44	7.4	12.0
	$25,000-$34,999	56	9.5	10.8
	$35,000-$49,999	86	14.5	14.0
	$50,000-$74,999	108	18.2	17.7
	$75,000-$99,999	112	18.9	11.4
	$100,000-$149,999	78	13.2	12.0
	$150,000-$199,999	36	6.1	4.4
	$200,000 or more	25	4.2	4.0

When compared, the percentage distribution of the sample between different age groups was fairly similar to the age distribution in the US population. A majority (60%) of the sample and 52% of the US population were 45 years and older. When broken down into categories, the largest age group in the sample was between 45 to 54 (21.6%) age group, which was similar to the US population with 19.2% being in the same age group. Another interesting fact was that the percentage of the population with the age groups between 25 to 34 and 35 to 44 were similar and almost equally distributed in both the sample (16.2% and 16.4%) and the US general population (17.5% & 17.5%).

Regarding the level of education completed, around 262 (44%) respondents held an associate/bachelor's degree while 155 (26%) respondents held a masters/doctoral degree followed by 114 (19%) respondents having at least some college education. Only around 9% (n = 56) of the respondents reported high school as their highest level of education completed. These results indicate a sample skewed towards more educated respondents.

The comparison of education attainment shows that a majority of around 70% of the sample had at least an associate/bachelor's degree compared to only around 38% of the US general population. The largest group (44%) in the sample had an associate/bachelor's degree followed by a masters/doctorate degree (26%). Whereas, the largest group (33%) in the US general population had a high school diploma followed by 28% with an associate/bachelor's degree. The education attainment data suggest that majority of participants in the sample are more highly educated compared to population in the US

When it comes to household income, the range of $75,000-$99,999 was the largest group with around 19% (n = 112) of the respondents selecting this range. Nearly 10% of the respondents had an income of $100,000 and higher. A large group of around 33% of the sample

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had an income ranging between $35,000 and $74,999 while around 15% of the sample has indicated an income below $34,999. The responses to household income indicate that the sample is skewed toward higher income respondents.

When household income was compared, by looking at the Table 5.1, it can be understood that while the largest group (19%) in the sample had an income range of $75,000-$99,999, the largest group (18%) in the US population had an income range of $50,000-74,999. However, the lowest percentage of population in both the sample (4%) and US population (4%) had indicated the highest income range of $200,000 or more. The comparison of household income between the sample and the US population indicate that the sample is more skewed toward higher income range than the US population.

To summarize, the analysis of demographic characteristics comparing study's sample with US population indicates that respondents in both the sample and the US population are mostly female and older with an income of at least $35,000 and over. However, respondents in the sample seem to be more educated (with largest group (44%) in the sample having at least an associate's/bachelor's degree) than the average population in the US who possess only a high school diploma (32.6%). This demographic data suggest that results from this study will be better generalized toward such group of population in the US who are older and well educated with a household income of at least $35,000 and over.

Validity and Reliability of Measurement Scales

The content validity of the instrument was measured by having the experts review the scales used in the study before finalizing the survey instrument. Conducting exploratory factor analysis tested the construct validity of PCI, and EAA scales developed for this study. After the validity of measurement scales was established, reliability of the items returned from factor

analysis in each scale/subscale was tested using the measure of internal consistency. After testing

the reliability of scales/subscales, a composite mean score for each scale was computed which

was used for conducting predictive analysis to test the hypothesis and answer research questions.

The following sections are dedicated toward discussion of validity and reliability of the scales.

Perceived Characteristics of Innovation (PCI) Scale

A principal component exploratory factor analysis was conducted on 16 items in the PCI

scale (after reverse coding 8 negatively worded items). Before factors were extracted, Kaiser-

Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test of sphericity were

conducted for assessing if the data were suitable to conduct factor analysis. Table 5.2 shows

Kaiser-Meyer-Olkin (KMO) measure to be 0.77, which verified the sampling adequacy of the

data. According to Kaiser (1974), KMO value of 0.5 is a bare minimum while values between

0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good and values above 0.9 are excellent

(Hutcheson, & Sofroniou, 1999). Therefore KMO value of 0.77 indicates that the sample size is

adequate for conducting factor analysis. Bartlett's test of sphericity x^2 (36) was equal to 1219.67

and $p < .001$ satisfies the requirement of having less than the significance level indicating that

there are some relationships between variables that can be included in the analysis and therefore,

factor analysis was believed to be appropriate for this sample.

Table 5.2 KMO and Bartlett's Test Results for CI scale

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test		
	Approx. Chi-Square	DF	Sig.
.769	1219.67	36	.000

An initial analysis was run to obtain factor loadings with an eigenvalue more than 1 for

each factor in the data. The analysis identified three factors that had eigenvalues over Kaiser's

criterion of 1 and in combination explained 63.58% of the variance. The three factors identified were selected by interpreting the pattern matrix and grouped based on the latent variables they were designed to measure. While doing so, 7 items from the original 16 items that did not load clearly on to pattern matrix were dropped to make a clean three factor structure where all the remaining items loaded cleanly on to each factor and were correlated with each other. Further, factor loading of 0.5 was used as a cutoff point which means that the items retained in the final pattern matrix were strongly correlated with each other. Interestingly, the 7 items dropped due to not loading onto any factor as expected were all reverse coded items. One of the reasons for these negatively worded items not loading onto any of the factors may be due to participants responding to these items differently than they would generally respond to positively worded items. Responding to negatively worded items differently is not uncommon and was found to be an issue in survey research. Based on the excerpt taken from a study by Weems et al., (2003, p. 588), researchers who investigated the reasons for responding differently to negatively worded items indicate that they may result from "careless responses… insufficient cognitive ability…, impaired response accuracy as a result of the negatively-worded items… and the actual measurement of a different construct…" (Magazine, Williams & Williams, 1996, p. 247). Table 5.3 shows factor loadings of PCI scale with three latent variables identified as perceived complexity represented under factor 1, perceived compatibility represented under factor 2 and perceived relative advantage represented under factor 3.

Table 5.3 Factor Loadings for Perceived Characteristics of Innovation Scale

Item	Factor Loadings
Factor 1- Perceived Complexity	
4. It was obvious that this t-shirt has been certified as environmentally safe.	.830
2. It is evident that processes (e.g., dyeing, finishing, and construction) used in manufacturing this t-shirt are less harmful to the environment.	.829
10. I trust that this t-shirt will NOT have harsh chemical residues from manufacturing processes that may be harmful to my welfare.	.653
16. Based on the information provided, buying this t-shirt will make me feel I contributed to helping the environment.	.632
Eigenvalue = 3.090	
Variance accounted for = 34.332%	
Factor 2- Perceived Compatibility	
11. I believe wearing this t-shirt will accurately portray my self-image.	.842
14. This t-shirt suits my life-style.	.795
12. Wearing this t-shirt, with the features listed above will meet with approval from my friends.	.773
Eigenvalue = 1.457	
Variance accounted for = 16.186%	
Factor 3- Perceived Relative Advantage	
9. *I am not willing to pay this price.	.917
7. For a t-shirt with the characteristics and features listed above, this price seems to be about right.	.791
Eigenvalue = 1.175	
Variance accounted for =13.057%	

* Indicates items that are reverse scored.

Complexity

Four items measuring perceived complexity of eco-conscious apparel loaded onto the first factor. This factor accounted for 34% of variance with an eigenvalue of 3.1. The alpha internal consistency reliability of the Complexity subscale ranged from .733 for Scenario 1 to .790 for Scenario 2, which is considered to be good. Table 5.4 shows the reliability of complexity subscale scores for both the Scenarios. As deletion of any individual item did not significantly improve reliability scores, all four items in the complexity subscale were retained.

Compatibility

Three items loaded onto the second factor measuring perceived compatibility of eco-conscious apparel. This factor accounted for 16% of variance among the items with an eigenvalue of 1.5. The alpha internal consistency reliability of perceived compatibility subscale ranged from .716 for Scenario 1 to .806 for Scenario 2. Table 5.4 shows the reliability of perceived compatibility subscale scores for both the Scenarios. As deletion of any individual item did not significantly improve the reliability score, all three items in the subscale were retained.

Relative Advantage

Finally, two items loaded on to the third factor measuring perceived relative advantage of eco-conscious apparel. Both the items that loaded onto the perceived relative advantage factor were the items related to price. This factor accounted for a variance of 13% among the items with an eigenvalue of 1.2. The alpha internal consistency reliability of the perceived relative advantage subscale ranged from .633 for Scenario 1 to .735 for Scenario 2. Table 5.4 shows the reliability of perceived relative advantage subscale scores for both the Scenarios. Although Cronbach's alpha for relative advantage subscale was relatively low at .633 for Scenario 1, a*lpha*

levels of .50 or .60 are considered to be acceptable, especially for new instruments and

particularly when the factor score comprises only a few items (Moore & Benbasat, 1991), as was

the case for the 2-item perceived relative advantage subscale.

Table 5.4 Reliability Estimates of Measures using Cronbach's Alpha

Scale	Items	*alpha* (Scenario 1)	*alpha* (Scenario 2)
Innovativeness	3	.830	-
Eco-conscious apparel attitudes	16	.690	-
Perceived Characteristics of Innovation			
Complexity	4	.733	.790
Compatibility	3	.716	.806
Relative advantage	2	.633	.735

Eco-conscious Apparel Attitude Scale

The principal component exploratory factor analysis with promax rotation was performed

on16 items in the Eco-conscious apparel attitude (EAA) scale. Before conducting factor analysis,

a total of 9 negatively worded items were reverse coded. The KMO measure of .735 verified the

sampling adequacy required for conducting factor analysis. Bartlett's test of sphericity x2 (120)

was equal to 2302.083 and p < .001 indicates that correlations between items were large enough

for conducting factor analysis of EAA scale. An initial analysis was run to obtain factors with

eigenvalues greater than 1. The analysis resulted in five factor loadings. However, when

reliability of subscales for each factor was conducted the resultant factors did not make

conceptual sense and their Cronbach's alpha was also very low except for the first factor. Hence,

factor analysis was conducted again.

Table 5.5 Factor Loadings for Eco-conscious Apparel Attitude Scale

Item	Factor Loading
6. I would choose an eco-apparel product even if it was priced 25% higher than conventionally produced clothing.	.719
12. It is important for me to know about environmental certification of materials and processes used in manufacturing eco-apparel before I make a purchase.	.692
14. When I wear eco-apparel I feel it communicates who I am.	.686
15. While shopping, I do not mind reading as much information as can be provided to understand how an eco-apparel product reduces environmental impact.	.621
9. Wearing eco-apparel is better for your skin.	.589
8. I would like to have product information to differentiate between eco-apparel and non eco-apparel to help me make a more responsible purchase decision.	.581
13. Price is not a factor for me when purchasing eco-apparel.	.517

Eigenvalue = 3.356
Variance accounted for = 20.978%

This time, factor analysis was conducted by changing the criteria of the factor loading greater than eigenvalue 1 to forcing the items to load onto a specified number of factors. First, factors were forced to load on to four factors. Yet, the results were not satisfactory with items not being loaded as expected and their Cronbach's alpha being very low except for the first factor. Then, factor analysis was conducted by forcing items to load into three and two factors. However, similar problem persisted in which except for the first factor, the reliability of the remaining factors resulting in unacceptable alpha levels.

When factor analysis was conducted, forcing factors into a single factor, interestingly all the seven positively worded items representing positive attitudes towards the environment loaded onto a single factor and the remaining items that were negatively worded did not load onto the factor. The factor accounted for 21% of the variance between all the seven items with a factor loading greater than .5. The Cronbach's alpha of the scale was .77 and none of the items had a Cronbach's alpha if item deleted greater than .77, hence all the items were retained.

Consumer Innovativeness Scale

The reliability of CI scale has been pre-established with a composite reliability of 0.81 (Ailawadi et al., 2001), which is considered to be very good. The composite Cronbach's alpha for the CI scale in this study was 0.83. Cronbach's alpha if item deleted was not above 0.83 for any of the items, therefore, all three items were included in further analysis. After reliability of innovativeness scale was established, a mean innovativeness score for each respondent was computed by summing up the values for each item and dividing by three that resulted in the values from one to five for the scale.

Descriptive Statistics

After establishing validity and reliability of the scales, a composite mean score of each of the scales was computed by summing the item scores in the scale and dividing by the number of items. These composite mean scores were used in data analysis to answer research questions. The following section of the chapter presents details about the mean score computations and results.

Perceived Characteristics of Innovation (PCI) Scale

Complexity

The responses for the four perceived complexity items for Scenario 1 and Scenario 2 were presented as frequencies in Table 5.6. The responses for all the four items indicate that compared to the t-shirt in Scenario 1, the t-shirt shown in Scenario 2 was perceived to be less complex. This shows that when a high-level of product information was provided respondents perceive eco-conscious apparel to be less complex compared to when low-level of product information was provided. However, the items in the perceived complexity factor are such that a high score indicates low perceived complexity and low score means high perceived complexity. For example, a high score (i.e., 5=*strongly agree*) for the item "it was obvious that this t-shirt has been certified as environmentally safe" indicates that respondents perceive eco-conscious apparel to be less complex and a low score (i.e., 5=*strongly disagree*) indicates high perceived complexity. Whereas, it is opposite for the other two factors of PCI scale, which are perceived compatibility and perceived relative advantage. For these two factors, a high score indicates higher perceived compatibility or relative advantage and a low score means low perceived compatibility or relative advantage. This may be problematic and create confusion while analyzing the data obtained after running relevant statistical computations. Hence, the items in

the perceived complexity factor were reverse scored such that a high score means higher perceived complexity and low score means lower perceived complexity to match with the other PCI factors. The mean score for each item before reverse scoring and after reverse scoring was presented in the Table 5.6. After reverse scoring, a composite mean score was computed for the items to use in further data analysis. A composite mean perceived complexity score was computed by summing the values for each item and then dividing by four that returned the scale to a value ranging from one to five to yield a mean perceived complexity subscale score. For Scenario 1, as a group, participants composite mean score was 3.25 (SD= 0.71), whereas, for Scenario 2, as a group, participants composite mean score was 2.22 (SD= 0.69). This indicates that while for Scenario 1, participants perceived eco-conscious apparel to be neither highly complex nor less complex, whereas for Scenario 2, participants perceived eco-conscious apparel to be somewhat less complex. This shows that when high-level of product information was provided in Scenario 2, respondents perceived eco-conscious apparel to be less complex than Scenario 1 in which low-level of product information was provided.

Table 5.6 Factor 1 - Perceived Complexity

Item	Scenario	Frequencies (%)					Mean before reverse scoring	Std. Dev	Mean After reverse scoring
		Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree			
4. It was obvious that this t-shirt has been certified as environmentally safe.	Scenario 1	18.2	34	31.4	13.9	2.5	2.48	1.02	3.52
	Scenario 2	1.5	4.6	19.4	46.3	28.2	3.95	0.90	2.05
2. It is evident that processes (e.g., dyeing, finishing, and construction) used in manufacturing this t-shirt are less harmful to the environment.	Scenario 1	8	23.5	44.1	21	3.4	2.88	0.94	3.12
	Scenario 2	3.1	6.1	19.1	48.6	23.1	3.83	0.95	2.17
10. I trust that this t-shirt will NOT have harsh chemical residues from manufacturing processes that may be harmful to my welfare.	Scenario 1	5.7	20.3	40.5	30.1	3.4	3.05	0.93	2.95
	Scenario 2	1.5	4.2	24	52.7	17.6	3.81	0.83	2.19
16. Based on the information provided, buying this t-shirt will make me feel I contributed to helping the environment.	Scenario 1	13.3	28.9	44.4	12.7	0.7	2.58	.90	3.42
	Scenario 2	2.9	6.9	35.6	43	11.6	3.54	.90	2.46

Note. Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5
Composite Perceived Complexity Mean Score – Scenario 1 = 3.25
Composite Perceived Complexity Mean Score – Scenario 2 = 2.22

Table 5.7 Factor 2 - Perceived Compatibility

Item	Scenario	Frequencies (%)					Mean	Std. Dev
		Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
11. I believe wearing this t-shirt will accurately portray my self-image.	Scenario 1	10.8	23.8	51.4	12.6	1.4	2.70	0.87
	Scenario 2	5.6	15.2	58.8	17	3.4	2.97	0.82
14. This t-shirt suits my life-style.	Scenario 1	6.6	16.4	41.5	32.6	2.9	3.09	0.93
	Scenario 2	3.9	11	50.2	29.7	5.2	3.21	0.85
12. Wearing this t-shirt, with the features listed above will meet with approval from my friends.	Scenario 1	6.3	11.5	63.5	17.7	1	2.96	0.76
	Scenario 2	3.5	10	64.5	19	3	3.08	0.74

Note. Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5
Composite Perceived Compatibility Mean Score – Scenario 1 = 2.9
Composite Perceived Compatibility Mean Score – Scenario 2 = 3.1

Table 5.8 Factor 3 - Perceived Relative Advantage

Item	Scenario	Frequencies (%)					Mean	Std. Dev
		Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
9. *I am not willing to pay this price.	Scenario 1	3.4	5.6	11.7	30.2	49.1	1.84	1.05
	Scenario 2	3.2	13.8	23	34	26	2.34	1.08
7. For a t-shirt with the characteristics and features listed above, this price seems to be about right.	Scenario 1	25	41.4	18.9	13.5	1.2	2.24	1.01
	Scenario 2	11	23.5	31.3	28.7	5.5	2.94	1.10

Note. Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5
Composite Perceived Relative Advantage Mean Score – Scenario 1 = 2.04, Std. Dev = 0.88
Composite Perceived Relative Advantage Mean Score – Scenario 2 = 2.64, Std. Dev = 0.97

Compatibility

The responses for the three perceived compatibility items for Scenario 1 and Scenario 2 were presented as frequencies in Table 5.7. The responses from the Table indicate that for all the three items in both the Scenarios majority of the respondents perceived eco-conscious apparel to be neither highly compatible nor less compatible. A composite mean perceived compatibility score was computed by summing the values for each perceived compatibility item and then dividing by three to return the scale to a value ranging from one to five. A higher score for perceived compatibility subscale indicate respondents perceiving eco-conscious apparel to be highly compatible, while a lower mean score indicate low perceived compatibility. As a group, the participant's composite mean score for perceived compatibility subscale for Scenario 1 was 2.9 (SD= 0.68) and 3.1 (SD= 0.68) for Scenario 2 which indicate that on an average respondents neither agreed, nor disagreed with the statements pertaining to perceived compatibility of eco-conscious apparel. In other words, as the mean score of both the Scenarios is almost similar, it indicates that on average, respondents did not perceive eco-conscious apparel to be highly compatible nor did they perceive eco-conscious apparel to be less compatible based on the level of product information provided in the Scenarios. It shows that there is no difference between the perceived compatibility of eco-conscious apparel based on the level of information provided in each Scenario.

Relative Advantage

The responses for the two perceived relative advantage items for Scenario 1 and Scenario 2 were presented as frequencies in Table 5.8. The responses from the Table indicate that for the statement, "I am not willing to pay this price" majority of respondents in Scenario 1 (80%) as well as in Scenario 2 (60%) agreed or strongly agreed with the statement. For the statement "for

a t-shirt with the characteristics and features listed above, this price seems to be about right" a majority of 66% of the respondents in Scenario 1 disagreed to the statement. Whereas, in Scenario 2, around 34% of the respondents strongly disagreed or disagreed with the statement, while a similar percntage (34%) of the respondents have also agreed or strongly agreed with the statement. The composite mean perceived relative advantage score was computed by summing the values for each item and then dividing by two to return the scale to a value ranging from one to five. As a group, the participant's composite mean score was 2.04 (SD= 0.88) for the perceived relative advantage subscale for Scenario 1 which indicates that respondents disagree with the statements about the perceived relative advantage pertaining to eco-conscious apparel. This shows that when low-level of product information was provided, respondents did not perceive eco-conscious apparel to be relatively advantageous considering the price of the t-shirt. As a group, the composite mean score of 2.64 (SD= 0.97) for Scenario 2 indicates that on an average slightly more respondents neither agreed nor disagreed with the statements regarding perceived relative advantage pertaining to eco-conscious apparel. These responses indicate that mostly respondents perceived eco-conscious apparel to have a low relative advantage with regard to the price of the t-shirt.

Eco-conscious Apparel Attitude Scale

The responses for the seven eco-conscious apparel attitude scale items were presented as frequencies in Table 5.9. The individual mean score for the statement, "price is not a factor for me when purchasing eco-conscious apparel" (mean= 2.08) indicate that on average respondents disagreed with the statement. The mean score for the statements, "I would choose an eco-conscious apparel product even if it was priced 25% higher than conventionally produced clothing" (mean= 2.51), "when I wear eco-conscious apparel I feel it communicates who I am"

(mean= 2.66), and "it is important for me to know about environmental certification of materials and processes used in manufacturing eco-conscious apparel before I make a purchase" (mean= 2.85), indicate that on average respondents are close to neither agreeing nor disagreeing to the statements. Whereas, the mean score for the statements, "wearing eco-conscious apparel is better for your skin" (mean= 3.13), and "while shopping, I do not mind reading as much information as can be provided to understand how an eco-conscious apparel product reduces environmental impact" (mean= 3.11) shows that on average respondents neither agreed nor disagreed to the statements. On the other hand, the mean score for the statement, "I would like to have product information to differentiate between eco-conscious apparel and non-eco-conscious apparel to help me make a more responsible purchase decision" (mean= 3.58) indicates that on an average slightly more respondents indicated some agreement with the statement than those disagreeing or indicating a neutral position. A composite mean score of EAA scale was computed by summing the values for each item, then dividing by seven to return the scale to a value ranging from one to five. This mean EAA score was used in further data analysis. The composite mean for the scale was 2.84 indicating that on an average, respondents neither agreed nor disagreed with the statements in the scale.

Table 5.9 Eco-conscious Apparel Attitude Scale

Item	Frequencies (%)					Mean	Std. Dev
	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
6. I would choose an eco-apparel product even if it was priced 25% higher than conventionally produced clothing.	15.2	36.7	32	14.3	1.8	2.51	0.977
12. It is important for me to know about environmental certification of materials and processes used in manufacturing eco-apparel before I make a purchase.	8	25.3	43.4	20.3	3	2.85	0.935
14. When I wear eco-apparel I feel it communicates who I am.	11.3	25.7	50.7	10.6	1.7	2.66	0.876
15. While shopping, I do not mind reading as much information as can be provided to understand how an eco-apparel product reduces environmental impact.	4.9	22	34.6	34	4.5	3.11	0.962
9. Wearing eco-apparel is better for your skin.	1.9	11	62.8	21.3	3	3.13	0.709
8. I would like to have product information to differentiate between eco-apparel and non eco-apparel to help me make a more responsible purchase decision.	1.5	7.1	33.3	47.6	10.5	3.58	0.829
13. Price is not a factor for me when purchasing eco-apparel.	30	42.9	18.7	6.2	2.2	2.08	0.964

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Note. Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5
Composite Eco-conscious apparel attitude Scale Mean score = 2.84

Consumer Innovativeness Scale

The responses for the three consumer innovativeness scale items are presented as frequencies in Table 5.10. The distribution of responses was broken down for each item by grouping *strongly disagree* (1) and *disagree* (2) together as '1'(less innovative group), *agree* (4) and *strongly agree* (5) together as '2' (highly innovative group) and *neither agree nor disagree* as '3' (neutral group). For the statement "when I see a product somewhat different from the usual, I check it out", 70% of the respondents indicated agree or strongly agree. Similarly, for the statement "I like to try new and different products", around 67% of the respondents have agreed or strongly agreed with the statement. Based on the responses to these statements, the majority of respondents was founded to be innovative. In the statement "I am often among the first people to try a new product", the distribution of responses is mostly equally distributed between the three groups; 33% for the *strongly disagree* or *disagree* group, 32% for the *agree* or *strongly agree* group and 35% of the neutral group. A composite mean innovativeness score for each respondent was computed by summing up the values for each item and dividing by three that resulted in the values from one to five for the scale. The composite mean score for the CI scale was 3.48 (SD= .76) indicating that as a group, respondents somewhat agreed that they do check out products that are somewhat different from usual, will be the first to try new products and like to try new and different products.

Table 5.10 Consumer Innovativeness Scale With Responses Broken Down into 3 Groups

Item	Strongly Disagree & Disagree (1 & 2)		Neither Agree Nor Disagree (3)		Agree & Strongly Agree (4 & 5)	
	Frequency	%	Frequency	%	Frequency	%
When I see a product somewhat different from the usual, I check it out	43	7.3	135	22.8	414	69.9
I am often among the first people to try a new product	196	33.1	207	35	189	31.9
I like to try new and different products	40	6.8	155	26.2	397	67.1

Note. Strongly Disagree & Disagree =1, Neither Agree Nor Disagree =3, Agree & Strongly Agree =2

Table 5.11 Consumer Innovativeness Scale with 5 Response Categories

Item	Frequencies (%)					Mean	Std. Dev
	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
1. When I see a product somewhat different from the usual, I check it out	2.5	4.7	22.8	58.3	11.7	3.72	0.83
2. I am often among the first people to try a new product	5.1	28	35	25.3	6.6	3.00	1.00
3. I like to try new and different products	1.5	5.2	26.2	53.4	13.7	3.72	0.82

Note. Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5
Composite Mean Consumer Innovativeness Score = 3.48

Eco-conscious Apparel Knowledge Scale

Fourteen items in the Eco-conscious apparel knowledge (EAK) scale were recoded such that respondents received a score of '1' for each statement they answered correctly and a '0' if they answered incorrectly or 'don't know'. Based on their best judgment, they can either answer 'true', 'false' or 'don't know'. More specifically, statements were recoded in such a way that for true statements, respondents received a '0' if they chose either 'false' or 'don't know' and a score of '1' if they chose 'true'. Then, false statements were recoded such that respondents received a '0' if they answered 'true' or 'don't know' and '1' if they answered 'false'. In this way, all the statements that were answered as 'don't know' or incorrectly were coded as '0' because choosing either of them by respondents means that they missed the answer. As both positive and negative statements were used in the measurement scale negatively worded statement scores were reverse coded before any statistical procedures were performed.

Once all the statements were recoded, a composite EAK score was computed to compile an individual score for each respondent. This composite score was used in further data analysis. The results show that a majority of respondents scored very low. As there are fourteen statements in EAK scale, maximum score a respondent can receive was 14. Table 5.12 presents composite score, frequency distribution and percentage of EAK scores of the sample. A total of 86 (14.5%) respondents received a score of '0' indicating they answered all 14 items incorrect. More than one half (60%) of the respondents answered between 1 and 7 statements correct. Approximately 28% (n = 166) of the respondents scored between 8 and 12 and among those, 10% (n = 68) received a score between 10 and 12, 1.4% (n = 8) received a score of 13, and only 0.2 % (n = 1) of the respondents received the highest score of 14. To summarize, results indicate that majority

of the sample in this study have very little to no knowledge about environmental impacts caused

by apparel products throughout their life-cycle.

Table 5.12 Knowledge Composite Score

Score	Frequency	%	Cumulative Percentage
0	86	14.5	14.5
1	25	4.2	18.8
2	45	7.6	26.4
3	37	6.3	32.6
4	50	8.4	41.0
5	71	12.0	53.0
6	48	8.1	61.1
7	55	9.3	70.4
8	49	8.3	78.7
9	58	9.8	88.5
10	29	4.9	93.4
11	15	2.5	95.9
12	15	2.5	98.5
13	8	1.4	99.8
14	1	0.2	100.0

Intention to Purchase Eco-conscious Apparel

The dependent or outcome variable that was being measured was the intention to purchase eco-conscious apparel (i.e., IPEA). After each Scenario was presented to the participants they were asked to respond their level of intention to purchase the t-shirt in a percentage based on the information provided in each of those Scenarios. They were to pick one option from five percentages (i.e., 0%, 25%, 50%, 75% and 100%). While Scenario 1 represents a low-level of product information context Scenario 2 represents a high-level of product information context. After they chose their response, they were asked to specify any additional information that may have influenced their decision. Table 5.13 presents the percentage IPEA for Scenarios 1 and 2 respectively.

Table 5.13 Intention to Purchase Eco-conscious Apparel for Scenarios 1 & 2

Scenario 1				Scenario 2		
% Likelihood	Respondents	%		% Likelihood	Respondents	%
0%	202	34%		0%	110	18.5%
25%	157	27%		25%	114	19%
50%	133	22%		50%	159	27%
75%	85	14%		75%	148	25%
100%	15	3%		100%	61	10%
Total	592	100%		Total	592	100%

Table 5.13 reveals that when a high-level of product information was provided in Scenario 2 respondent's intention to purchase the t-shirt increased in comparison to Scenario 1 in which low-level of product information was provided. The Table 5.13 shows that in response to the low-level of product information in Scenario 1, a greater percentage (34%) of the sample

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indicated their intention to purchase the t-shirt was 0 % when compared to the approximately 18% (n = 110) reporting no intention to purchase after reviewing Scenario 2. In fact, the number of respondents indicating reluctance by selecting 0-25% intention to purchase was significantly reduced from Scenario 1 (61%) to Scenario 2 (37.5%). Another indication that level of product information for eco-conscious apparel may impact the intention to purchase is evidenced by over 50% increase in the number of respondents indicating a high likelihood (75% and 100%) of purchasing the eco-conscious apparel product between Scenario 1 (n = 100) and Scenario 2 (n = 209).

To summarize, when low-level of product information was provided in Scenario 1, the percentage intention to purchase eco-conscious t-shirt was negligible or low, indicating that the majority of respondents were not willing to purchase the t-shirt. However, when the amount of information provided about eco-conscious t-shirt was increased in Scenario 2, the percentage intention to purchase the eco-conscious t-shirt increased, indicating that providing additional information about eco-conscious t-shirt has positively influenced respondent's intention to purchase the eco-conscious t-shirt.

Additional Response to Open-Ended Question

To further understand the reason behind the participants' decision regarding their level of intention to purchase the shirt, they were asked to provide any additional information that may have influenced their intention to purchase the eco-conscious t-shirt for each Scenario. For Scenario 1 (i.e., low-level of product information context), around 29% (n = 170) of the respondents answered an open-ended question seeking additional information for their decision on the intention to purchase eco-conscious t-shirt. After analyzing responses to the open ended question, it was found that respondents were primarily concerned about relative advantage

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pertaining to the price of the t-shirt and stated that they are not willing to pay that price for a plain t-shirt even if it was manufactured using organic cotton. Respondents also indicated that they were not willing to purchase the t-shirt because there was too little information provided about eco-features of the t-shirt and that they need more information than just saying "organic cotton" to influence their purchase decision. For example, they indicated that they need more information about the country of origin, the dyes and methods of production used and above all how the product is environmentally safe. Respondents also expressed their concern regarding compatibility issues with the t-shirt with regard to style, available colors, size and quality.

In Scenario 2 (i.e., high-level of product information), around 23% (n = 133) of the respondents answered the open-ended question. Respondents indicated that providing a high-level of information did help them in making a purchase decision as they were able to understand environmental features of the product better and providing more information also made them feel that the product is trustworthy. They specifically mentioned that the information was very clear compared to Scenario 1 and that the country of origin (i.e., made in USA) tag highly influenced their decision. Although the majority of respondents who answered the open ended question mentioned that increased level of product information did positively influence their decision to purchase the product, they still would not pay listed price of $30 for a basic t-shirt even though it is environmentally safe. The reasons were similar to Scenario 1 in which they mentioned that environmental features of the t-shirt are secondary to price for them while making a purchase decision. Additionally, the respondents were still concerned about perceived compatibility of the t-shirt with regard to its size, look and feel. They also mentioned that they still want to feel and try the product, as online interaction with the product is not sufficient for them to make a purchase decision.

The following section presents the results of predictive analysis of the study. The hypotheses were tested using appropriate statistical analysis procedures and presented in numerical order based on the research questions.

Hypotheses Testing

Research Question 1

Do eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation together have a stronger influence on intention to purchase eco-conscious apparel?

To answer research question 1, four hypotheses were developed. A hierarchical multiple regression (HMR) analysis was performed to test the hypotheses;

Hypothesis H1a: Eco-conscious apparel knowledge has a statistically significant influence on the intention to purchase eco-conscious apparel.

Hypothesis H1b: Eco-conscious apparel knowledge and eco-conscious apparel attitudes together have a statistically significant influence on the intention to purchase eco-conscious apparel.

Hypothesis H1c: Eco-conscious apparel knowledge, Eco-conscious apparel attitudes, and perceived characteristics of innovation (i.e. complexity, compatibility and relative advantage) with regard to eco-conscious apparel have a statistically significant influence on the intention to purchase eco-conscious apparel.

Hypothesis H1d: There will be greater influence of eco-conscious apparel knowledge, eco-conscious apparel attitude and perceived characteristics of innovation on intention to purchase eco-conscious apparel when more information about eco-attributes of the innovation is provided than less information.

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IPEA was the criterion/dependent variable, eco-conscious apparel knowledge (EAK), eco-conscious apparel attitudes (EAA) and PCI (i.e., complexity, compatibility and relative advantage) were the predictor/independent variables. While computing HMR, the mean score of the dependent variable (IPEA) computed from both the Scenarios was entered under the criterion variable. For predictor variables, EAK was entered in the first block, the EAA was entered in the second block and mean scores of PCI factors (i.e., complexity, compatibility and relative advantage) computed from both the Scenarios were added in the third block. Preliminary analysis was conducted to ensure that there was no violation of the assumptions pertaining to normality, linearity and homoscedasticity. For that the points on the Normal P-P plot were checked to see if they were reasonably lying on a straight diagonal line from bottom left to top right, the residuals were checked to make sure they were rectangularly distributed with most of the scores concentrated on the center, and that standardized residuals were not more than 3.3 or less than -3.3 (Tabachnick & Fidell, 2007). As they were all under the expected range it was assumed that there was no violation of the assumptions. The results were also checked to make sure that there were no issues with multicollinearity. As Tolerance Value was more than .10 and Variance Inflation Factor (VIF) was below 10 for all the variables, it was assumed there were no issues pertaining to multicollinearity. No substantial correlations ($r > .9$) Were found in the data, providing additional confirmation that multicollinearity was not an issue.

Table 5.14 Summary of Hierarchical Regression Analysis Results

Model and Variables		b(SE)	β	R	R^2	ΔR^2	F-ratio
Model 1	(Constant)			.14	.02**		12.53**
	EAK	.04 (.01)	.14**				
Model 2	(Constant)			.47	.22**	.20**	83.38**
	EAK	.01 (.01)	.04				
	EAA	.87 (.07)	.46**				
Model 3	(Constant)			.67	.45**	.23**	96.55**
	EAK	.01 (.01)	.03				
	EAA	.30 (.07)	.16**				
	Perceived Complexity	-.21 (.07)	-.10**				
	Perceived Compatibility	.28 (.06)	.16**				
	Perceived Relative Advantage	.60 (.05)	.45**				

Notes. *p < .05, **p < .01

Table 5.14 summarizes the results of hierarchical regression analysis for all the predictor and outcome variables under investigation. The analysis shows that when only EAK was used to predict IPEA in Model 1, it accounted for only 2% of total variance in IPEA. However, the variance was found to be statistically significant ($p < .05$) indicating that EAK was significantly a good predictor of IPEA. When EAA mean score was added to the Model 2, both EAK and EAA accounted for a total of 22% variance in IPEA indicating an increase of 20% in R^2 over Model 1. This was a significant ($p < .05$) Variance indicating that the Model 2 with both variables (i.e., EAK and EAA) together better-predicted IPEA compared to Model 1. In Model 3, when a mean score of PCI (i.e., complexity, compatibility and relative advantage) was added, all three variables (i.e., EAK, EAA and PCI) together accounted for a total of 45% variance in IPEA indicating a significant increase in R^2 (23%) over Model 2. This shows that when EAK and EAA were accompanied by PCI in Model 3, a significantly larger amount of variance was explained in IPEA indicating that the Model 3 was best predicting the outcome variable (IPEA) compared to previous models.

To analyze whether the model provided a significant fit of the data overall rather than just looking at the mean, each model was analyzed for a ratio of improvement over the previous one. When only EAK was included, Model 1 was found to be statistically significant ($F (1, 590) = 12.53$, $p < .05$) at predicting the outcome variable (i.e., IPEA). Hence, hypothesis H1a: "eco-conscious apparel knowledge has a statistically significant influence on the intention to purchase eco-conscious apparel." was supported.

In Model 2, when EAA was added along with EAK, there was a statistically significant ($F (2, 589) = 83.38$, $p < .05$) improvement in the ability of the model to predict the outcome variable (IPEA). This introduction of EAA explained additional 20% variance in IPEA in Model

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2. However, in Model 2, only EAA (t (589) =12.29, p < .05) was found to be statistically significant in contributing to the overall model in influencing IPEA while EAK was not found to be significantly contributing to the overall model. The results indicated that although Model 1 predicted IPEA, Model 2 was even better in predicting IPEA because the F-ratio is significantly higher for Model 2 compared to Model 1. This was in support of hypothesis H1b: "eco-conscious apparel knowledge and eco-conscious apparel attitudes have a statistically significant influence on the intention to purchase eco-conscious apparel".

When PCI were added to EAK and EAA, in Model 3, the influence was even greater. Model 3 proved to be even better at (F (5, 586) = 96.55, p < .05) predicting IPEA as the F-ratio was significantly higher than the previous two models. Therefore, hypothesis H1c: "eco-conscious apparel knowledge, eco-conscious apparel attitude, and perceived characteristics of innovation (i.e. complexity, compatibility and relative advantage of eco-conscious apparel) have a statistically significant influence on the intention to purchase eco-conscious apparel" was supported. However, in Model 3, except for EAK, the remaining predictor variables; EAA (t(586) = 1.04, p < .05), perceived complexity (t(586) = 2.92, p < .05), perceived compatibility (t(586) = 4.33, p < .05) and perceived relative advantage (t(586) = 12.66, p < .05) have all been found to be statistically significant in contributing to the overall model in influencing IPEA. From the magnitude of the t-statistic (Table 5.14) it can be seen that while perceived relative advantage had a greater impact, both EAA and perceived compatibility had a similar impact, whereas perceived complexity had less impact in contributing to the overall model in influencing IPEA. Among these four predictors, perceived relative advantage (β = .45, p < .05) had the greatest degree of importance in the model followed by EAA (β = .16, p < .05) and perceived

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compatibility ($\beta = .16$, $p < .05$), which had a comparable degree of importance, whereas perceived complexity ($\beta = .10$, $p < .05$) had a low degree of importance in predicting IPEA.

To test hypothesis H1d, hierarchical multiple regression analysis was computed separately for predictor and outcome variables in each Scenario. Then, the results from both the analyses (i.e., Scenario 1 and Scenario 2) were compared to understand if there was a greater influence of EAK, EAA and PCI on IPEA when more information about eco-attributes of the t-shirt was provided than less information. From the correlation matrix, no issues with multicollinearity were detected as substantial correlation between any variables was not found to be greater than .9.

Table 5.15 reports the results from hierarchical multiple regression testing the three models for each Scenario (1 and 2) independently. This allowed a comparison between Scenario 1 results of the three models against Scenario 2 results of the three models. The analysis shows that in Model 1 of Scenario 1 in which low-level of product information was provided, when EAK was used to predict IPEA it accounted for only 0.4% of total variance in IPEA, which was non-significant ($p > .05$). Whereas, for Scenario 2 in which high-level of product information was provided, EAK accounted for a total of 4% variability in IPEA, which was statistically significant ($p < .05$) indicating that EAK was a good predictor of IPEA. This indicates that R^2 in Model 1 of Scenario 2 (i.e., high-level of product information context) was greater than R^2 in Model 1 of Scenario 1 (i.e., low-level of product information context). When EAA mean score was added, both EAK and EAA together in Model 2 of Scenario 1 significantly ($p < .05$) accounted for a total of 13% variance in IPEA indicating an increase of around 12.6% in R^2 over Model 1. For Model 2 of Scenario 2, both EAK and EAA together significantly accounted ($p < .05$) for a total of 25.8% variability in IPEA indicating an increase of 21.8% in R^2 over Model

1. This shows that R^2 in Model 2 of Scenario 2 with a high-level of product information context was greater than R^2 in Model 2 of Scenario 1 with a low-level of product information context.

When mean scores of PCI (i.e., complexity, compatibility and relative advantage) were added in Model 3 of Scenario 1, all three variables (i.e., EAK, EAA and PCI) together accounted for a total of 31.4% variance in IPEA indicating a significantly ($p < .05$) greater increase in R^2 (18.4%) over Model 2 of Scenario 1. This shows that the inclusion of PCI explained a significantly large amount of variance in IPEA indicating that the Model 3 was best predicting the outcome variable (IPEA) compared to previous models. Similar results were found for Model 3 of Scenario 2 in which as the mean score of PCI (i.e., complexity, compatibility and relative advantage) were added, all three variables (i.e., EAK, EAA and PCI) together accounted for a total of 51.1% variance in IPEA indicating a significantly greater increase in R^2 (25.3%) over Model 2 of Scenario 2 when PCI was included. This indicated that similar to Scenario 1, Model 3 of Scenario 2 is best predicting the outcome variable (IPEA) compared to its previous Models 1 and 2. Additionally, the variability was greater in Scenario 2 in all the three models compared to the variability in all the models in Scenario 1 indicating that when a high-level of product information was provided (Scenario 2) the variance was greater in predicting IPEA than when low-level of product information was provided (Scenario 1).

The significance of fit of all the three models in both the Scenarios was compared to analyze if models in Scenario 2 (high-level of product information context) were better than models in Scenario 1 (low-level of product information context) in their ability of predicting IPEA.

Table 5.15 Summary of Results from Hierarchical Regression Analysis of Scenarios 1 and 2

Scenario	Variables	b(SE)	β	R	R^2	ΔR^2	F-ratio
			MODEL 1				
Scenario 1	(Constant)	2.14 (0.08)		.062	.004		2.30
	EAK	0.02 (0.01)	.06				
Scenario 2	(Constant)	2.52 (0.10)		.198	.04**	.04	24.13**
	EAK	0.07 (0.01)	.20**				
			MODEL 2				
Scenario 1	(Constant)	0.26 (0.22)		.36	.130**	.127	44.0**
	EAK	-0.01 (0.01)	-.02				
	EAA	0.71 (0.08)	.36**				
Scenario 2	(Constant)	-0.21 (0.22)		.508	.26**	.22	102.30**
	EAK	0.03 (0.01)	.10*				
	EAA	1.03 (0.08)	.50**				
			MODEL 3				
Scenario 1	(Constant)	-0.56 (0.35)		.56	.31**	.18	53.61**
	EAK	-0.01 (0.01)	-.01				

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Table 4.15 Continued

Scenario	Variables	b(SE)	β	R	R^2	Δ R^2	F-ratio
			MODEL 3				
	EAA	0.33 (0.08)	.17**				
	Complexity	-0.02 (0.06)	-.01				
	Compatibility	0.34 (0.06)	.20**				
	Relative Advantage	0.47 (0.05)	.37**				
Scenario 2	(Constant)	.18 (0.30)		.715	.51**	.25	122.367**
	EAK	0.01 (0.01)	.03				
	EAA	0.41 (0.10)	.20**				
	Complexity	-0.33 (0.06)	-.20**				
	Compatibility	0.23 (0.06)	.13**				
	Relative Advantage	0.60 (0.04)	.44**				

Notes. *p < .05, **p < .01

For Scenario 1, when PCI were added to EAK and EAA, Model 3 as a whole proved to be significantly better in predicting IPEA as F-ratio of Model 3 (F (5, 586) = 53.61, p < .05) was significantly higher than the F-ratio of Model 1 (F (1, 590) = 2.30, p > .05) and Model 2 (F (2, 589) = 44.0, p < .05). Similarly, for Scenario 2, Model 3 as a whole proved to be significantly better in predicting IPEA with an F-ratio higher (F (5, 586) = 122.37, p < .05) than Model 1 (F (1, 590) = 24.13, p < .05) and Model 2 (F (2, 589) = 102.30, p < .05). When compared, not only the F-ratio of Model 3 for Scenario 2 was higher than F-ratio of Model 3 for Scenario 1, but also F-ratios of all the three models in Scenario 2 (high-level of product information context) were higher than F-ratios of all the three models in Scenario 1 (low-level of product information context). This indicates that in Scenario 2, when high-level of product information was provided, the significance of Model 3 in predicting IPEA had increased greatly when compared to Scenario 1 in which low-level of product information was provided. Therefore, it can be inferred that hypothesis H1d: "there will be greater influence of eco-conscious apparel knowledge, Eco-conscious apparel attitude and perceived characteristics of innovation on the intention to purchase eco-conscious apparel when more information about eco-attributes of the innovation is provided than less information," was supported.

The magnitude of t-statistic of each predictor variable in Model 3 of Scenario 1 was compared with Model 3 of Scenario 2 to understand their contribution to the overall model influencing IPEA. In Scenario 1, only three predictors were found to be significantly contributing to the overall model with perceived relative advantage (t(586) = 9.71, p < .05) having a greater impact than perceived compatibility (t(586) = 5.32, p < .05) and EAA (t(586) = 4.40, p < .05). Whereas, EAK and perceived complexity were not found to be significantly contributing to the overall model influencing IPEA. In Scenario 2, four predictors were found to

be significantly contributing to the overall model influencing IPEA. Perceived relative advantage (t(586) = 13.20, p < .05) had the greatest impact followed by the perceived complexity (t(586) = -5.61, p < .05), EAA (t(586) = 5.38, p < .05) and perceived compatibility (t(586) = 3.60, p < .05). However, EAK was not found to be statistically significant in contributing to the overall model in predicting IPEA.

In summary, while the perceived relative advantage in both the Scenarios was found to have a greater impact in contributing to the overall model, EAK was found to be non-significant in both the Scenarios. Additionally, while four predictors in Scenario 2 were found to be significantly contributing to the overall model, only three predictors were found to be contributing to the overall model in Scenario 1. Overall, the comparison of R^2, F-ratio and t-statistic of Scenario 1 with Scenario 2 indicate that predictors in Scenario 2 were greater in influencing IPEA compared to predictors in Scenario 1.

Research Question 2

Does amount of information reported about eco-conscious attributes of the innovation influence consumer's perception of innovation characteristics?

Three hypotheses were developed and tested using dependent-samples *t*-test to answer the research question 2.

> *Hypothesis H2a: Perception of complexity will significantly lessen when consumers are provided with more information about eco-attributes of the innovation (i.e., eco-conscious apparel) than less information.*

The dependent-samples *t*-test was conducted to test the hypothesis H2a. The results presented in Table 5.16 indicate that the mean score of perceived complexity for Scenario 2 (M=2.22, SD=.70) in which more information was provided about eco-attributes of the t-shirt

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was significantly (t (591) = 27.23, p < .05) (n= 592) lesser than the mean score of perceived

complexity for Scenario 1 (M=3.25, SD=.71) in which less information was provided. These

results suggest that, when more information (Scenario 2) was provided about eco-attributes of

the t-shirt, respondents perceive complexity associated with eco-apparel to be less and when less

information (Scenario 1) was provided about eco-attributes of the t-shirt, respondents perceive

complexity associated with eco-apparel to be higher. Therefore, based on the results, it can be

inferred that hypothesis H2a was supported.

> *Hypothesis H2b: Perception of compatibility will significantly strengthen when*
>
> *consumers are provided with more information about eco-attributes of the innovation*
>
> *(i.e., eco-conscious apparel) than less information.*

The dependent-samples t-test was conducted to test the hypothesis H2b. The results

(Table 5.16) indicate that the mean score of perceived compatibility for Scenario 2 (M=3.09,

SD=.68) in which more information was provided about eco-attributes of the t-shirt was

significantly (t (591) = -7.35, p < .05) (n= 592) greater than the mean score of perceived

compatibility for Scenario 1 (M=2.91, SD=.68) in which less information was provided. These

results suggest that, when more information (Scenario 2) was provided about eco-attributes of

the t-shirt respondents perceive eco-conscious apparel to be more compatible and when less

information (Scenario 1) was provided about eco-attributes of the t-shirt, respondents perceive

eco-conscious apparel to be less compatible. Therefore, based on the results, it can be inferred

that hypothesis H2b was supported.

> *Hypothesis H2c: Perception of relative advantage will significantly strengthen when*
>
> *consumers are provided with more information about eco-attributes of the innovation*
>
> *(i.e., eco-conscious apparel) than less information.*

The dependent-samples *t*-test was conducted to test the hypothesis H2c. The results from the Table 5.16 indicate that the mean score of perceived relative advantage for Scenario 2 (M=2.64, SD=.97) in which more information was provided about eco-attributes of the t-shirt is significantly (t (591) = -17.16, p < .05), (n= 592) greater than the mean score of perceived compatibility for Scenario 1 (M=2.04, SD=.88) in which less information was provided. These results suggest that, when more information (Scenario 2) was provided about eco-attributes of the t-shirt respondents' perception of relative advantage of eco-conscious apparel strengthened than when less information (Scenario 1) was provided about eco-attributes of the t-shirt. Therefore, based on the results, it can be inferred that hypothesis H2c was supported.

Table 5.16 Results from Dependent-Samples *t*-test Comparing Difference in Consumer's Perception of Innovation Characteristics based on the Amount of Information Reported about Eco-Conscious Attributes of Innovation

	Scenario 1 Low Information Context		Scenario 2 High Information Context		*t*	*df*
	Mean	Std. Dev	Mean	Std. Dev		
Perceived Complexity	3.25	.71	2.22	.70	27.23**	591
Perceived Compatibility	2.91	.68	3.09	.68	-7.35**	591
Perceived Relative Advantage	2.04	.88	2.64	.97	-17.16**	591

Notes. *p < .05, **p < .01

Research Question 3

Does consumer's perception of the eco-conscious attributes of the innovation makes a difference in consumers' intention to purchase eco-conscious apparel?

Six hypotheses (i.e., H3a-H3f) were developed and tested using independent-samples *t*-test to answer the research question 3. The composite mean scores of each factor in the PCI variable in each Scenario have a response value ranging from 1 to 5. Therefore, before computing independent samples t-tests, the scores were changed from a 5 response category into 3 response category. The significance of *t*-test was determined using the p-value.

> *Hypothesis H3a: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to purchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).*

To test the hypothesis H3a an independent-samples *t*-test was conducted using an alpha level of .05. Results from the *t*-test presented in Table 5.17 illustrate that there was a statistically significant difference ($t(161.87) = 4.77$, $p < .05$) in the mean scores for the combined results of *strongly disagree and disagree* (M=2.60, SD=1.24) and the combined results of *agree and strongly agree* (M=1.89, SD=.98). These results indicate that in Scenario 1 (i.e., less information provided) there was a difference in the intention to purchase eco-conscious apparel among respondents who perceive eco-conscious apparel to be less complex (*n*= 165) and respondents who perceive eco-conscious apparel to be more complex (*n*= 95). Specifically, results illustrate that respondents who perceived eco-conscious apparel to be less complex are more likely to *purchase* eco-conscious apparel than respondents who perceived eco-conscious apparel to be more complex. Hence, hypothesis H3a was supported.

Table 5.17 Results from Independent-Samples t-test Comparing Difference in Consumers' Intention to Purchase Eco-conscious Apparel based on Consumer's Perception of Eco-conscious Attributes of the Innovation

intention to purchase Eco-Conscious Apparel		Level of Perception of Eco-conscious Attributes of Innovation						*t*	*df*
		Low Perception			High Perception				
		Mean	Std. Dev	n	Mean	Std. Dev	n		
Perceived Complexity	Scenario 1	2.60	1.24	95	1.89	.98	165	4.77**	161.87
	Scenario 2	3.14	1.22	429	1.95	1.09	20	4.28**	447
Perceived Compatibility	Scenario 1	1.69	.94	134	2.83	1.19	107	-8.12**	197.87
	Scenario 2	2.00	1.10	96	3.69	1.12	137	-11.35**	231
Perceived Relative Advantage	Scenario 1	2.02	1.05	447	3.47	1.31	30	-7.20**	475
	Scenario 2	2.31	1.10	221	4.24	.76	154	-19.20**	211.35

Notes. *p < .05, **p < .01

Hypothesis H3b: *Consumers perceiving the innovation (i.e., eco-conscious apparel) as being less complex are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).*

To test the hypothesis H3b an independent-samples t-test was conducted using an alpha level of .05. Results from the t-test (Table 5.17) illustrate that there was a statistically significant difference (t(447) = 4.28, p < .05) in the mean scores for the combined results of strongly disagree and disagree (M=3.14, SD=1.22) and the combined results of agree and strongly agree (M=1.95, SD=1.09). These results indicate that in Scenario 2 when more information was provided about eco-attributes of the t-shirt, there is a difference in the intention to purchase eco-conscious apparel among respondents who perceive eco-conscious apparel to be less complex (n= 20) and respondents who perceive eco-conscious apparel to be more complex (n= 429). Specifically, results illustrate that respondents who perceived eco-conscious apparel to be less complex are more likely to purchase eco-conscious apparel than respondents who perceived eco-conscious apparel to me more complex. Hence, hypothesis H3b was supported.

Hypothesis H3c: *Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).*

To test the hypothesis H3c an independent-samples t-test was conducted using an alpha level of .05. Results (Table 5.17) from the t-test illustrate that there was a statistically significant difference (t(197.87) = -8.12, p < .05) in the mean scores for the combined results of strongly disagree and disagree (M=1.69, SD=.94) and the combined results of agree and strongly agree (M=2.83, SD=1.19). These results indicate that in Scenario 1 when less information was provided about eco-attributes of apparel, there is a difference in the intention to purchase eco-

conscious apparel among respondents who perceive eco-conscious apparel to be less compatible (n= 134) and respondents who perceive eco-conscious apparel to be more compatible (n= 107). Specifically, results illustrate that respondents who perceived eco-conscious apparel to be more compatible are more likely to purchase eco-conscious apparel than respondents who perceived eco-conscious apparel to be less compatible. Hence, hypothesis H3c was supported.

Hypothesis H3d: Consumers perceiving the innovation (i.e., eco-conscious apparel) as being more compatible are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).

To test the hypothesis H3d an independent-samples t-test was conducted using an alpha level of .05. Results from the t-test presented in Table 5.17 illustrate that there was a statistically significant difference (t(231) = -11.35, p < .05) in the mean scores for the combined results of strongly disagree and disagree (M=2.0, SD=1.10) and the combined results of agree and strongly agree (M=3.69, SD=1.12). These results indicate that in Scenario 2 when more information was provided about eco-attributes of apparel, there is a difference in the intention to purchase eco-conscious apparel among respondents (n= 96) who perceive eco-conscious apparel to be less compatible and respondents (n= 137) who perceive eco-conscious apparel to be more compatible. Specifically, results illustrate that respondents who perceived eco-conscious apparel to be more compatible are more likely to purchase eco-conscious apparel than respondents who perceived eco-conscious apparel to be less compatible. Hence, hypothesis H3d was supported.

Hypothesis H3e: Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in the less information context (i.e., Scenario 1).

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To test the hypothesis H3e an independent-samples t-test was conducted using an alpha level of .05. Results (Table 5.17) from the t-test illustrate that there was a statistically significant difference (t(475) = -7.20, p < .05) in the mean scores for the combined results of strongly disagree and disagree (M=2.02, SD=1.05) and the combined results of agree and strongly agree (M=3.47, SD=1.31). These results indicate that in Scenario 1 when less information was provided about eco-attributes of the t-shirt, there is a difference in the intention to purchase eco-conscious apparel among respondents (n= 447) who perceive eco-conscious apparel to be providing less relative advantage and respondents (n= 30) who perceive eco-conscious apparel to be providing a greater relative advantage. Specifically, results illustrate that respondents who perceived eco-conscious apparel to be providing greater relative advantage are more likely to purchase eco-conscious apparel than respondents who perceived eco-conscious apparel to be providing less relative advantage. Hence, the hypothesis H3e was supported.

Hypothesis H3f: *Consumers perceiving the innovation (i.e., eco-conscious apparel) as providing higher relative advantage are more likely to purchase eco-conscious apparel presented in the more information context (i.e., Scenario 2).*

To test the hypothesis H3f an independent-samples t-test was conducted using an alpha level of .05. Results from the Table 5.17 illustrate that there was a statistically significant difference (t(211.35) = -19.20, p < .05) in the mean scores for the combined results of strongly disagree and disagree (M=2.31, SD=1.10) and the combined results of agree and strongly agree (M=4.24, SD=.76). These results indicate that in Scenario 2 when more information was provided about eco-attributes of apparel, there is a difference in the intention to purchase eco-conscious apparel among respondents (n= 221) who perceive eco-conscious apparel to be providing less relative advantage and respondents (n= 154) who perceive eco-conscious apparel

to be providing a higher relative advantage. Specifically, results illustrate that respondents who

perceived eco-conscious apparel to be providing more relative advantage are more likely to

purchase eco-conscious apparel than respondents who perceived eco-conscious apparel to be

providing less relative advantage. Hence, hypothesis H3f was supported.

Research Question 4

Is there a relationship between a consumers' level of innovativeness and his/her perception

of innovation characteristics of eco-conscious apparel products?

To answer research question 4, three hypotheses were developed. These hypotheses: H4a,

H4b and H4c were tested using Pearson's product moment correlation coefficient.

Table 5.18 Correlation between Innovativeness and PCI Factors

	Innovativeness	Perceived Complexity	Perceived Compatibility	Perceived Relative Advantage
Innovativeness	1	-.261**	.237**	.035

N = 592
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis H4a: Consumer's level of innovativeness will have a statistically significant inverse

relationship to his/her perception of the complexity of an innovation (i.e. eco-conscious apparel).

Table 5.18 summarizes results from the correlation analysis. The Pearson's correlation

coefficient indicates that there is a statistically significant inverse relationship ($r = -.261$, $n = 592$,

$p < .05$) between level of innovativeness and perceived complexity. In other words, the results

indicate that respondents who have a high-level of innovativeness perceive eco-conscious

apparel to be less complex and those who have low innovativeness perceive eco-conscious

apparel to be more complex. Hence, hypothesis H4a was supported.

Hypothesis H4b: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the compatibility of an innovation (i.e. eco-conscious apparel).

Regarding the relationship between level of innovativeness and perceived compatibility, results presented in Table 5.18 indicate that there is a statistically significant positive relationship (r = .237, n = 592, p < .05) between the level of innovativeness and perceived compatibility. This shows that, the higher a consumers' level of innovativeness, the greater will be their perceived compatibility of eco-conscious apparel. Therefore, the hypothesis H4b was supported.

Hypothesis H4c: Consumer's level of innovativeness will have a statistically significant positive relationship to his/her perception of the relative advantage of an innovation (i.e. eco-conscious apparel).

With regard to the relationship between level of innovativeness and perceived relative advantage, the results (Table 5.18) showed no significant relationship between the respondent's level of innovativeness (r = .035, n = 592, p > .05) and their perception of relative advantage of eco-conscious apparel. Hence, the hypothesis H4c was not supported.

Research Question 5

Is there a relationship between a consumers' level of innovativeness and his/her intention to purchase the innovation (i.e., eco-conscious apparel)?

Hypothesis H5: Consumers' level of innovativeness will be significantly positively related to their intention to purchase the innovation (i.e., eco-conscious apparel).

To test hypothesis H5, Pearson's product moment correlation coefficient analysis was computed. The results from the analysis indicate that there is a statistically significant positive relationship ($r = .261$, $n = 592$, $p < .05$) between respondents' level of innovativeness and their intention to purchase eco-conscious apparel. In other words, the results indicate that respondents who are highly innovative are more likely to purchase eco-conscious apparel than those who are less innovative. Hence the hypothesis H5 was supported.

Research Question 6

Are certain demographic characteristics (i.e., age, education, household income and gender) of consumers related to their level of innovativeness, knowledge about apparel environmental impacts, eco-conscious apparel attitudes, perception of product characteristics, and intention to purchase eco-conscious apparel products?

To answer research question 6, four hypotheses were developed, one for each demographic variable. To test hypotheses H6a, H6b and H6c a Pearson's product-moment correlation coefficient was conducted and hypothesis H6d was tested using an independent-samples *t*-test.

Table 5.19 Correlation between Demographic Characteristics and other Variables

	CI	EAK	EAA	PCI			IPEA
				Perceived Complexity	Perceived Compatibility	Perceived Relative Advantage	
Age	-.14**	-.01	-.06	.05	-.04	.04	.07
Education	-.08*	.15**	-.01	.13**	-.08*	-.07	-.06
Household Income	-.04	.06	-.01	.05	-.03	.02	-.02

**. Correlation is significant at the 0.01 level (2-tailed).
 *. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis H6a: There will be a statistically significant positive relationship between a consumer's age and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.

Results from the Table 5.19 indicated that age was significantly correlated only with the consumer's level of innovativeness. A statistically significant negative relationship was found between respondent's age and level of innovativeness (r = -.140, n = 592, p < .05) indicating that the younger the respondent the higher their level of innovativeness and the older the respondent the lower their level of innovativeness. Therefore, the hypothesis H6a was only partially supported.

Hypothesis H6b: There will be a statistically significant positive relationship between a consumer's education and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.

From the results presented in Table 5.19 the level of education of respondents was found to have a statistically significant relationship with their level of innovativeness, EAK, perceived complexity and perceived compatibility. While level of education was found to be positively related to EAK (r=.15, n=592, p<.05) and perceived complexity (r=.12, n=592, p<.05), it was found to be negatively related to consumer innovativeness (r=-.08, n=592, p<.05) and perceived compatibility (r=-.08, n=592, p<.05). These results indicate that, the higher respondents' level of education, the greater will be their EAK and perceived complexity. In other words, people who

are highly educated, possess higher EAK than people who are less educated. The relationship between level of education and perceived complexity indicate that, respondents who are highly educated perceive eco-conscious apparel to be highly complex and those who are less educated perceive eco-conscious apparel to be less complex. However, the negative relationship between level of education and consumer innovativeness indicate that respondents who are highly educated are less innovative and those who are less educated are highly innovative. Similarly, results indicate that consumers who are highly educated perceive eco-conscious apparel to be less compatible and those who are less educated perceive eco-conscious apparel to be more compatible. Hence, the hypothesis H6b was only partially supported.

Hypothesis H6c: There will be a statistically significant positive relationship between a consumer's household income and his/her level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.

Respondents' household income was not found to be significantly related to their level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel. Hence, the hypothesis H6c was not supported.

Hypothesis H6d: There will be a statistically significant difference between men and women in their level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) and intention to purchase eco-conscious apparel.

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To test hypothesis H6d an independent-samples t-test was conducted using an alpha level of .05. From the results of t-test, a statistically significant difference ($t(590) = 3.67$, $p < .05$) was found between male ($M = 2.85$, $SD = 0.49$, n=195) and female ($M = 2.68$, $SD = 0.54$, n=397) respondents only with regard to their perceived complexity toward eco-conscious apparel. The results indicate that female respondents perceive eco-conscious apparel to be less complex compared to male respondents who perceive eco-conscious apparel to be more complex. However, the difference between male and female respondents in their level of innovativeness, eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation (compatibility and relative advantage) and intention to purchase eco-conscious apparel was not found to be statistically significant. Hence, hypothesis H6d was only partially supported.

Summary

This chapter presented results from the data collected during the survey research. Demographic results from the data were presented, followed by predictive analysis of the results that were presented chronologically based on the hypotheses tested primarily, to explore the hierarchical relationship between EAK, EAA, PCI and IPEA and secondarily, to understand the relationship/differences among the variables of interest in the study. In Chapter 6 the summary of research, discussion of findings, implications, limitations, and recommendations for future research are presented.

Chapter 6 - Summary, Discussion, Implications, Limitations and Recommendations for Future Research

The final chapter of this dissertation is dedicated towards summarizing the research design and methodology followed by a detailed discussion of the study results along with implications, limitations and future research recommendations. First, a brief summary of the study, including the structure of the study with an emphasis on discussing major findings related to the influence of eco-conscious apparel knowledge (EAK) and eco-conscious apparel attitudes (EAA) on intention to purchase eco-conscious apparel (IPEA) using an additional variable; perceived characteristics of innovation (PCI) was made. Second, a discussion of the findings and conclusions of the study based on research questions and hypotheses tested follows. Finally, implications of the study and recommendations for future research were provided.

Summary of Research Design and Sample

Research findings pertaining to the link between eco-conscious knowledge, attitude and behavior in general and eco-conscious apparel purchase behavior in particular has been inconsistent and inconclusive so far. Specifically, research related to the influence of eco-conscious apparel knowledge, eco-conscious apparel attitudes as well as perceived product characteristics on intention to purchase eco-conscious apparel has not been conducted in any previously published studies. Therefore, the objective of this study was to investigate the influential relationship pertaining to eco-conscious apparel knowledge, eco-conscious apparel attitudes, perceived characteristics of innovation and eco-conscious apparel purchase intention to understand if including perceived characteristics of innovation strengthens the inconsistent link between knowledge, attitudes and behavior. To meet the objective of this study, the paradigm of

the innovation-decision process for eco-conscious apparel was developed and tested. The model of stages in the innovation-decision process developed by Roger's (1983) in the diffusion of innovation theory was used as a theoretical framework for developing the model for this study. Specifically, the three product characteristics used in this current study were based on the perceived characteristics of innovation (i.e., complexity, compatibility and relative advantage) explained by Rogers (1983) model.

Six research questions were developed each followed by relevant hypotheses in order to meet the objective of this study. The first research question explored the influence of eco-conscious apparel knowledge, eco-conscious apparel attitudes and perceived characteristics of innovation on eco-conscious apparel purchase decision-making and whether such influence was greater when more information was provided than less information. The second research question investigated whether the amount of information reported about eco-conscious attributes of the innovation influenced consumer's perception of innovation characteristics. The third research question sought to understand whether the consumers' perception of eco-conscious attributes of the innovation made a difference in consumers' eco-conscious purchase decision-making. Fourth research question investigated the relationship between consumers' level of innovativeness and his/her perception of innovation characteristics of eco-conscious apparel products. Fifth question pertained to the relationship between consumers' level of innovativeness and their intention to adopt eco-conscious apparel. The sixth question explored the relationship between respondent's demographic characteristics (i.e., gender, age, education and household income) and their EAK, EAA, PCI, consumer innovativeness (CI) and IPEA. To explore these research questions, relevant hypotheses were developed and tested.

A quantitative research design was adopted and survey instrument was used to collect the data. An initial instrument was developed and pilot tested before collecting the data. The instrument was modified based on the results from the pilot test. The final instrument included a pre-existing consumer innovativeness scale along with perceived characteristics of innovation, eco-conscious apparel knowledge and eco-conscious apparel attitude scales which were developed specifically for this study. The instrument also included two Scenarios, one with the least amount of product information (i.e., Scenario 1) and the other with the most amount of product information (i.e., Scenario 2) which were presented to the respondents to understand their intention to purchase the eco-conscious t-shirt (i.e., dependent variable) shown in each of those Scenarios. Responses to an open-ended question after each Scenario were also collected from the respondents. The demographic information was collected from the respondents towards the end of the survey. The validity of scales used in the instrument was tested using an exploratory factor analysis and reliability of scales was verified using Cronbach's alpha with a significance level of $p < .05$.

The demographic profile of the sample compiled based on the results was compared with the demographic profile of the US general population from 2010 census. The demographic characteristics pertaining to gender, age, education and household income were compared. The predictive analysis of the results was presented by testing each hypothesis using suitable statistical analysis procedure. The hypotheses to answer research question 1 (i.e., H1a, H1b, H1c and H1d) were tested using hierarchical multiple regression analysis. The Hypotheses to answer research questions 2 (i.e., H2a, H2b and H2c), 3 (i.e., H3a, H3b, H3c, H3d, H3e and H3f) and 6 (i.e., H6d) were tested using a *t*-test. Then, hypotheses to answer research questions 4 (i.e., H4a, H4b and H4c), 5 (i.e., H5) and 6 (i.e., H6a, H6b and H6c) were tested using Pearson's

correlation coefficient analysis. For all statistical analysis, a significant value of $p < .05$ was used to accept or reject the hypotheses.

Discussion of Research Findings

The theoretical base for this study was built upon the innovation-decision process model depicted in the theory of diffusion of innovation by Rogers (1983). A model of stages in the innovation-decision process for eco-conscious apparel was developed and tested to understand consumers' knowledge, attitude and purchase behavior towards eco-conscious apparel. By testing the model, this study has contributed toward enhancing the ability to predict IPEA as well as strengthening the link between EAK, EAA, IPEA. Specifically, as indicated by Rogers (1995) that a greater variance in the adoption of an innovation can be explained by PCI factors, this study has also indicated that a greater variance in IPEA can be better explained by PCI factors. The following section is dedicated toward discussing findings regarding respondents' EAK, EAA, IPEA based on the results obtained from testing the hypotheses That were developed to answer study's research questions.

Knowledge about Environmental Impacts of Apparel Products

Overall, respondents were not found to be highly knowledgeable about environmental impacts of apparel products. Although EAK was found to be significantly predicting IPEA, it was not a strong predictor as only 2% of variance in IPEA was explained by EAK. One reason for EAK not being a strong predictor of IPEA can be attributed toward lower EAK of respondents found in the study. A majority of respondents in this study were found to possess a low-level of knowledge about environmental impacts of apparel products. This may have been the reason for EAK not being a good predictor of IPEA in both the Scenarios with low-level and high-level information contexts. This finding was also supported in previous studies where

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consumers were found to possess very limited knowledge about the factors related to the environmental impacts of apparel products and therefore need more knowledge to become more eco-conscious (Dickson, 2000; Joergens, 2006). Similarly, a study by Laroche et al. (2001) found eco-conscious knowledge to be a poor predictor of consumer's willingness to pay more for eco-conscious products. Studies have also found that consumers with higher eco-conscious knowledge are more likely to act more positively (Hines et al., 1987; Pickett-Baker, & Ozaki, 2008; Thøgersen, 2000) and when consumers possess low-levels or insufficient knowledge to guide their behavior, they tend to dislike and try to avoid such situations (Kaplan, 1991).

Results from the current and previous studies imply that consumers need sufficient knowledge about environmental impacts of apparel products for them to involve in purchase behavior of eco-conscious apparel. In the absence of such knowledge, consumers' involvement in eco-conscious apparel purchase behavior becomes limited. One reason for this could be that when consumers have limited EAK, then they will not be aware of how their involvement (i.e., purchase, use and discard) with non-eco-conscious products harm the environment. If consumers are not aware of negative consequences of their behavior, then then may not feel the urge to change their current state of behavior. Therefore, it is important to educate consumers about environmental impacts of apparel products which may influence them to change their current state of behavior toward apparel products.

Previous studies have indicated that consumers generally involve in purchase behavior of products when such products' attributes yield a direct positive benefit to them personally (Hutchins & Greenhalgh, 1997; Squires et al., 2001). For example, consumers purchase organic food products because they believe that consuming such products provides them a direct health benefit (Hutchins & Greenhalgh, 1997; Joergens, 2006; Squires et al., 2001). Therefore, along

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with educating consumers about environmental impacts of apparel products, if they are also

educated about how eco-conscious apparel not only benefits the environment, but also their own

health directly or indirectly, then consumers may be in a better position to understand the

benefits and hence beome more involved in eco-conscious apparel purchase behavior.

Attitude towards Eco-Conscious Apparel

While knowledge was not found to be a good predictor of IPEA, EAA was found to

significantly predict IPEA. This fnding supported previous studies which have indicated that, to

predict behavioral intention toward a particular object or situation, it is important to study

attitudes specific toward that particular object or situation (Ajzen, & Fishbein, 1977; Fishbein &

Ajzen, 1975; Fisherbein & Middlestadt, 1995). As attitudes specific toward eco-conscious

apparel was used to predict behavior toward eco-conscious apparel, this could be the reason for

finding EAA to be significantly predicting IPEA in this study. This supports the assertion of

previous studies that if purchase behavior toward eco-conscious apparel has to be predicted, then

attitude toward eco-conscious apparel has to be examined rather than general eco-conscious

attitudes.

Relationship between Knowledge, Attitudes, Perceived Characteristics of Innovation and Purchase Behavior towards Eco-conscious Apparel

The knowledge and attitude towards eco-conscious apparel along with PCI were found to

be significantly predicting the purchase behavior toward eco-conscious apparel. The results

obtained from testing the model suggest that along with EAK and EAA, when PCI (i.e.,

complexity, compatibility and relative advantage) were added to the model, the variance

explained by IPEA significantly increased to 45%. This indicates that PCI factors played a

significant role in explaining the variance in the model to predict IPEA than when only EAK

(2% variance in R^2) or EAK and EAA together (22% variance in R^2) were used to predict IPEA. This shows that although EAK and EAA significantly influence IPEA, the addition of PCI has explained a significantly greater variance in predicting IPEA. This finding once again proved Rogers (1995) assertion that a greater variance in the adoption of an innovation can be better explained by PCI. Based on these results one may conclude that the relationship between knowledge, attitude and behavior strengthens when PCI are included to the link. Although, the ability to predict IPEA significantly increased when PCI were added along with EAK and EAA, there still remains around 55% of variance in R^2 unexplained indicating that there are other variables that still remain unaccounted for which, if identified may further increase the predictability of IPEA.

Findings from the study indicate all three PCI factors (i.e., perceived complexity, perceived compatibility and perceived relative advantage) to be significantly contributing in predicting IPEA. This is in line with the results from studies that used the influence of PCI on successful adoption of an innovation (Arnould 1989; Gatignon & Robertson, 1985; Rogers, 1983). The results from studies that investigated the influence of PCI on innovation adoption found that PCI significantly influences and can explain about 49-87% of variance in the adoption of an innovation (Rogers, 2003). Studies have also found that successful adoption of an innovation significantly depends on how potential consumers perceive the product characteristics of an innovation (Atkinson, 2007; Robertson, 1971). As PCI were not used in previous studies to understand the relationship between EAK, EAA and IPEA, this finding from the current study better explains the relationship between knowledge, attitude and behavior in general and EAK, EAA and IPEA in particular. Specifically, this study implies that, to strengthen the predictive relationship of knowledge and attitudes on behavior toward eco-conscious apparel, perceived

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characteristics of eco-conscious apparel should be included. Through this finding, this study contributed a significant piece of knowledge to the knowledge, attitude and behavior literature as well as to the innovation-decision process model.

Influence of the Level of Information on Consumer's Intention to Purchase Eco-conscious Apparel

The findings of this study indicated that the ability to predict IPEA is higher when consumers are provided with more information (i.e., Scenario 2) about eco-attributes of innovation (i.e., eco-conscious apparel) than less information (i.e., Scenario 1). The relationship between EAK, EAA and IPEA by including PCI was compared for both low-level (i.e., Scenario 1) and high-level (i.e., Scenario 2) of product information contexts. When both Scenario 1 and Scenario 2 were compared, the variance explained by EAK, EAA and PCI together in IPEA increased significantly in both the Scenarios indicating that the addition of PCI does have a significantly greater influence in predicting IPEA in both high-level and low-level of product information contexts. However, the variance was greater in Scenario 2 compared to Scenario 1 indicating that, providing high-level of product information has a greater influence in predicting IPEA than providing a low-level of product information. This was also supported through the analysis of results from the open-ended question asked after each Scenario to provide additional information that may have influenced the respondent's decision to purchase or not to purchase eco-conscious apparel. When low-level of product information was provided in Scenario 1, the respondents indicated that the information provided was not sufficient and that they needed more information about eco-conscious apparel attributes to make a purchase decision. Whereas, when a high-level of product information was provided in Scenario 2, respondents indicated that the information was sufficient for them to understand eco-conscious attributes of the apparel better.

Previous studies have also supported the result that consumers need more information to become more eco-conscious. For example, in a study by Hiller Connell (2010) the author found that for consumers to engage in eco-conscious apparel consumption behaviors, they need more information about the manufacturing processes of eco-conscious apparel, the distance traveled by apparel throughout the supply chain and their carbon footprint, effects of apparel on the environment and where to purchase eco-conscious apparel. Similarly, Dickson, (2000) and Joergens, (2006) have also found that for consumers to become more eco-conscious they need more information about the eco-conscious attributes of apparel products. The results from these studies indicating that consumers need more information to engage in more eco-conscious behaviors support the finding in this study: when more information was provided about eco-attributes of apparel, the variance explained by EAK, EAA and PCI in predicting IPEA increased compared to when less information was provided. The information provided in Scenario 2 with more information context was similar to the information that Hiller Connell (2010) found in her study to be required for consumers to engage more in eco-conscious apparel consumption behaviors. Some of the information provided in Scenario 2 was with regard to eco-conscious processes and material used in manufacturing eco-conscious apparel, the country of origin, the mode of transportation used to reduce the product's carbon footprint, how to care for the products during the use phase to reduce environmental impact as well as how to safely discard the product, the physical features of the product such as style, type of fabric and available colors and sizes. Therefore, results from this study confirms previous studies results and implies that to encourage consumer's purchase behavior toward eco-conscious apparel, it is important to provide more information about eco-conscious attributes of the apparel such that consumers

understand the advantages of such apparel better which may positively influence their adoption of eco-conscious apparel.

Perceived Characteristics of Innovation and Purchase Intention toward Eco-conscious Apparel

When a high-level of product information was provided, respondents were found to perceive eco-conscious apparel to be less complex, highly compatible and relatively advantageous and such respondents who perceived eco-conscious apparel to be less complex, highly compatible and relatively advantageous were found to be the ones most likely to purchase eco-conscious apparel. The findings from the study indicate that when low-level of information regarding the eco-conscious attributes of apparel products was provided, the perceived complexity associated with eco-conscious apparel significantly increased while perceived compatibility and perceived relative advantage toward eco-conscious apparel significantly decreased. Whereas, when a high-level of product information was provided about eco-conscious apparel, the perceived complexity associated with eco-conscious apparel significantly reduced while perceived compatibility and perceived relative advantage significantly increased. This finding indicates that when a high-level of product information was provided, consumer's perception of innovation characteristics (i.e., PCI) pertaining to eco-conscious apparel was influenced more positively compared to when low-level of product information was provided.

For example, in Scenario 1, very minimal information about eco-conscious attributes of apparel were provided such as fiber content as "100% organic cotton" and company name as "green touch" which does not prominently indicate the eco-consciousness of the apparel product. In the absence of more information regarding eco-attributes of apparel respondents perceived the t-shirt provided in Scenario 1 to be highly complex, less compatible and not relatively

advantageous. Whereas, in Scenario 2, the maximum amount of information was provided about eco-conscious attributes of the apparel because of which the respondents could easily understand the eco-conscious attributes of the t-shirt.

As such, when more information was provided about eco-conscious apparel attributes, it may have helped the respondents to more clearly understand the attributes of the apparel product in Scenario 2. Because of providing such high-level of product information respondents considered eco-conscious apparel in Scenario 2 to be less harmful to the environment as well as their personal welfare and by purchasing such eco-conscious apparel they consider themselves to be personally contributing toward helping the environment. This may in turn have increased their intention to purchase eco-conscious apparel in Scenario 2 compared to Scenario 1. Similarly, by providing more information, consumers might have perceived eco-conscious apparel to be more compatible with their self-image, life-style and opinion of their friends and family, which may have increased their intention to purchase eco-conscious apparel. Additionally, more information may have influenced consumers to perceive eco-conscious apparel to be relatively advantageous with regard to its price, which, they may not perceive otherwise in the absence of such information that influenced their IPEA.

The findings also suggest that irrespective of the amount of information provided about eco-conscious attributes of the apparel, respondents who perceived eco-conscious apparel to be less complex, highly compatible and relatively advantageous are more likely to adopt eco-conscious apparel than those who perceive eco-conscious apparel to be more complex, less compatible and relatively disadvantageous. This finding indicated that when high-level of product information was provided, consumers will perceive eco-conscious apparel to be less complex, highly compatible and relatively advantageous and such consumers who perceive eco-

conscious apparel to be less complex, highly compatible and relatively advantageous are the ones who are more likely to purchase eco-conscious apparel. Therefore, if the marketers of eco-conscious apparel want to increase consumers' intention to purchase eco-conscious apparel, then they have to influence consumers' perception toward eco-conscious apparel such that, consumers perceive eco-conscious apparel to be less complex, more compatible and relatively advantageous. For this, marketers have to provide more information about eco-conscious apparel at the point-of-purchase so that consumers' perception of complexity will lessen while increasing their perception of compatibility and relative advantage of eco-conscious apparel.

These findings imply that when considered to provide more information about eco-conscious apparel, marketers must take care to provide as much information as possible so that after reading such information, consumers' perception of product-attributes will be positively influenced resulting in an increased intention to purchase eco-conscious apparel. The results from the open-ended optional question have also supported this finding. Some of those who responded to the question for Scenario 1 in which low-level of product information was provided indicated that there was too little information making it hard to better understand the product attributes. They needed more information about the country of origin, eco-conscious materials and processes used in manufacturing the t-shirt such as organic cotton, the dyes and chemicals used if any, washing and care instructions and how the t-shirt was environmentally safe. This could be the reason that respondents indicated that they were less likely to purchase the t-shirt shown in Scenario 1. Past research also found that when promotional messages lack credible and clear information it creates a burden on consumers because they have to invest more time in seeking additional information on their own to increase their knowledge about eco-conscious apparel and availability of eco-conscious brand options which according to Moisander (2007), is

a task that is considered by many consumers as highly complex resulting in a lower adoption and slow market growth of eco-conscious apparel (Yan et al., 2012).

On the other hand, respondents to the open-ended question for Scenario 2 in which high-level of product information was provided indicated the amount of information provided was sufficient enough to understand the eco-conscious attributes because, the information is much clearer and far better than the information provided in Scenario 1. This was in support of the finding from previous studies, which indicated that consumers require more information to be more eco-conscious (Hiller Connell, 2010, Dickson, 2000; Joergens, 2006). However, among the respondents to the open-ended question, four of them indicated that although the information provided did help them to understand the product better, the amount of information provided was somewhat overwhelming. Therefore, although it was found that providing more information helped respondents in understanding the product better, care should also be taken by marketers of eco-conscious apparel to provide only as much information necessary to understand the product attributes better and not so much that the credibility of the message was lost or it may start to negatively influence the consumers' decision to purchase eco-conscious apparel.

Respondents' Level of Innovativeness, Perception of Innovation Characteristics and Purchase Intention toward Eco-conscious Apparel

Respondents' level of innovativeness was found to be significantly related to only two PCI factors which are perceived complexity and perceived compatibility toward eco-conscious apparel. While the respondents' level of innovativeness was found to be negatively related to their perceived complexity, it was positively related to their perceived compatibility of eco-conscious apparel. These results indicate that consumers who are highly innovative perceive eco-conscious apparel to be less complex while consumers who are less innovative perceive eco-

conscious apparel to be more complex. Similarly, consumers who are highly innovative perceive eco-conscious apparel to be highly compatible and consumers who are less innovative perceive eco-conscious apparel to be less compatible.

These findings support Rogers (2003) who, in the diffusion of innovation theory, found perceived complexity to be inversely related to consumers' level of innovativeness. Roger's findings (1995) also indicated that consumers' innovativeness is positively related to their perceived compatibility of an innovation. Research indicates that consumers who have high-levels of innovativeness are venturesome and risk takers and hence are the first to adopt new products (Rogers, 1995). Studies also indicate that the innovators are the first to adopt new products (Beaudion, Lachance & Robitaille, 2003; Rogers, 1995) and one of the reasons for adopting innovative products is because of the associated newness (Robertson, 1971). This could be the reason for the finding that consumers who are highly innovative consider eco-conscious apparel to be less complex and highly compatible because being risk takers and influenced by the associated newness they may either not consider or totally ignore the complexity associated with eco-conscious apparel and perceive it to be highly compatible hence will be more likely to adopt eco-conscious apparel than others.

Surprisingly, consumers' level of innovativeness was not found to have a significant relationship with the perceived relative advantage pertaining to price of eco-conscious apparel. Research indicates that consumers who are innovative are less sensitive to price (Flynn & Goldsmith, 1993; Goldsmith, d'Hauteville, & Flynn, 1998) suggesting that consumers who are highly innovative may not consider price while purchasing innovative products. These results are contrary to the current studies' finding which suggests that there is no difference between respondents who are highly innovative and those who are less innovative regarding their

perception of price of eco-conscious apparel. This was also supported by the responses to the open-ended question in which, irrespective of the level of information provided, respondents perceived the t-shirt from both the Scenarios to be over-priced. Respondents indicated that the t-shirt was very basic without any design or details and for such a generic t-shirt, paying $30 was very high even if it was made using eco-conscious materials and processes. They further indicated that, although providing more information did help them understand the eco-consciousness of the t-shirt better in Scenario 2, they still would not pay that much for a basic fitted t-shirt. This indicates that irrespective of a respondent's innovativeness, the price of $30 seemed too high.

The study's results suggeste that respondents who are highly innovative are more likely to purchase eco-conscious apparel than less innovative respondents. The findings indicate a significant positive relationship between the respondents' level of innovativeness and their intention to purchase eco-conscious apparel. In other words, the results indicate that highly innovative respondents are more likely to purchase eco-conscious apparel than those who are less innovative. This was in support of the findings of previous studies which found that consumers' innovativeness influences their intention to adopt purchase behaviors (Blake, Neuendorf, & Valdiserri, 2003) as well as the frequency of adoption (Goldsmith, 2000). Rogers (2003) and other studies have also found that highly innovative consumers tend to be more likely to purchase innovative products than those who have a lower-level of general innovativeness (Goldsmith & Newell, 1997). This indicates that for successful adoption of eco-conscious apparel and to increase their market share, it is important for eco-conscious firms to attract consumers who are highly innovative because literature indicates that once innovators adopt the

innovation, then it becomes easy and quick for the product to diffuse into the social system and be adopted by a larger group of consumers (Rogers, 2003).

Characteristics of the Decision Making Unit

In this study, only certain demographic variables of the respondents were found to be significantly related to the study's research variables. Age was significantly found to be related only with innovativeness. This findings indicate that respondents who are younger are more innovative compared to older respondents who were found to be less innovative. This relationship between age and consumer's level of innovativeness was not surprising because previous studies have also found younger consumers to be more highly innovative than other consumer groups (Gatignon & Robertson, 1991; Lambert-Pandraud, & Laurent, 2010). Studies have also found that younger consumers play a significant role as fashion innovators (Beaudoin, Moore, & Goldsmith 1998; Goldsmith & Hofacker, 1991; Gutman & Mills, 1982) acting as trend-setters for other consumer groups including older consumers (Male, 2010). These younger generations were found to play a significant role in influencing the success or failure of new products within a few months after the product was introduced into the market (Johnson, 2006).

Regarding gender, female respondents were found to significantly differ from male respondents only with regard to how complex they perceive eco-conscious apparel to be. Female respondents were found to perceive eco-conscious apparel to be less complex than male respondents. Although some of the previous studies found significant differences among men and women with regard to innovativeness (Im et al., 2003), eco-conscious knowledge (Arcury & Johnson, 1987) and eco-conscious behaviors (Berkowitz & Lutterman, 1968; Blake, 2001; Granzin & Olsen, 1991; Roberts, 1996; Shrum et al., 1995; Webster, 1975), this study failed to find any significant differences among male and female respondents with regard to their CI,

EAK, EAA, perceived compatibility, perceived relative advantage and their intention to purchase eco-conscious apparel. These findings were somewhat similar to findings of other studies, which found no significant relationship between gender and eco-conscious behaviors (Antil, 1984; Balderjahn, 1988; Oom do Valle et al., 2004).

The respondents' education level was positively related to EAK and perceived complexity and negatively related to their level of innovativeness and perceived compatibility towards eco-conscious apparel. This indicates that respondents who are highly educated are less innovative than respondents who are less educated. These results are somewhat contradictory to previous findings, which found innovators to be well educated with higher incomes (Hauser, Tellis & Griffin, 2006; Rogers, 2003). However, the findings indicate that respondents who are highly educated were found to have higher-levels of EAK than less educated respondents. Diamantopoulos, Schlegelmilch, Sinkovics and Bohlen (2003) and Kollmuss and Agyeman, (2002) indicated that the higher the person's education, the more extensive their knowledge about environmental issues. However, they found that possessing more education does not necessarily guarantee an increased eco-conscious behavior. Their findings were consistent with this study because, although more educated respondents were found to possess high-levels of EAK, their IPEA was not found to be significant. The results also indicate that respondents who are highly educated perceive eco-conscious apparel to be more complex and less compatible than respondents who are less educated. These findings indicate that highly educated consumers may not necessarily perceive eco-conscious apparel to be less complex and more compatible suggesting that for consumers to perceive eco-conscious apparel to be less complex and more compatible they do not necessarily need to be highly educated.

Among all the demographic variables tested, household income was the only variable not significantly related to the study's research variables. Although previous studies found income to be significantly related with some of the variables explored in this study, it is surprising to find absence of such relationship in this study. Yet another surprising finding is that none of the demographic variables were found to be significantly related to the respondents' IPEA which is contradictory to the results from previous finding which suggested that among all the demographic characteristics, age, gender, education and income were found to have a significant relationship with eco-conscious behavior (Anderson & Cunningham, 1972; Balderjahn, 1988; Berkowitz & Lutterman, 1968; Blake, 2001; Granzin & Olsen, 1991; Kinnear et al., 1974; Roberts, 1996; Shrum et al., 1995; Tucker, 1980; Webster, 1975). However, findings regarding the relationship between demographic characteristics and other variables in this study imply that if marketers of eco-conscious apparel could attract more innovative, female and younger consumers, then the successful penetration of eco-conscious apparel into the mainstream market and eventually its successful adoption by more consumer groups would be easier.

Implications for Educators

This study was undertaken to understand if the relationship between knowledge, attitudes and behavior strengthens by including PCI as well as enhances the ability to predict eco-conscious behavior. One of the important implications of this study is its contribution toward extending the current literature base by addressing the inconsistencies that have been found in the literature regarding the link between knowledge, attitudes and behavior pertaining to eco-conscious apparel. No study until now has investigated the relationship with regard to EAK, EAA and IPEA using additional variable PCI. Therefore, this study, has significantly contributed to the existing literature by finding that, by including PCI, the relationship between

EAK, EAA and IPEA can be strengthened and the ability to predict IPEA can also be strengthened. This study, by contributing toward the existing literature base will help educators in the field of apparel and textiles who are interested in understanding as well as educating the students regarding the variables that can strengthen the weak and inconsistent relationship between knowledge, attitude and behavior in general and eco-conscious apparel in particular.

Another important implication resulting from this study is with regard to the theoretical framework used to reach the objective of the study. The model of stages in the innovation-decision process for eco-conscious apparel used as the theoretical base has proved to enhance the predictability of eco-conscious behavior as well as strengthens the link between knowledge, attitude and behavior when PCI was added to the link. As no study in the past has utilized Rogers innovation-decision process model and specifically PCI to predict eco-conscious apparel purchase behavior, this study implies that if educators want to examine knowledge, attitude and purchase behavior toward eco-conscious apparel then innovation-decision process model could prove beneficial. There has been an inconsistency in the literature with regard to the link between knowledge, attitudes and behavior with studies showing consumers not being able to translate their knowledge and attitude into purchase behavior regarding eco-conscious products. While such an inconsistency prevails, this study aids educators interested in consumer behavior toward eco-conscious products to understand the importance of the innovation-decision process as well as the significant role played by PCI in IPEA. Educators can use the innovation-decision process model for eco-conscious apparel developed in this study to further their understanding of the weak link between EAK, EAA and IPEA.

Implications for Apparel Manufacturers, Retailers and Brands

This study indicated that the way consumers perceive product characteristics can explain a significant amount of variance in the adoption of such products. Specifically, this study implies that if consumers' knowledge and attitude toward eco-conscious apparel have to be translated into purchase behavior, apparel retailers and brands have to gain more insight into consumers' perceptions of complexity, compatibility and relative advantage toward eco-conscious apparel. If apparel retailers and brands can understand how consumers' perception of product characteristics influences their purchase behavior, then it may aid them to develop suitable marketing strategies. These marketing strategies should be formulated in such a way that they reduce consumers' perceived complexity and increase perceived compatibility and relative advantage toward eco-conscious apparel which may increase their adoption. Therefore, it is important to understand consumers' perception of product characteristics pertaining to eco-conscious apparel if such products have to pass through niche market and enter the main stream market where they are continuously adopted by more number of consumers.

It was found in the study that the magnitude of each PCI factor's impact on IPEA is different. The magnitude of perceived relative advantage was found to have greatest impact than perceived compatibility and perceived complexity. When more information was provided about product characteristics in Scenario 2, the understanding of eco-consciousness of the t-shirt increased, resulting in a decreased perception of complexity and increased perception of compatibility. However, consumers' perception of relative advantage played a significant role in influencing IPEA than perceived complexity and compatibility. Regarding perceived relative advantage, price was found to be an important factor influencing consumers' IPEA. Irrespective of the amount of product information provided, the perception of price was found to be an important factor in influencing IPEA. Similar responses were provided by the respondents to the

open-ended question in which price was stated as an important barrier toward IPEA. They stated that, even though providing more product information in Scenario 2 helped them to understand the eco-conscious t-shirt better which increased their intention to purchase the t-shirt, they still would not purchase the t-shirt because of their perception of its' price. This indicates that although providing more product information reduces perceived complexity and increases perceived compatibility, the perception of relative advantage regarding price still plays a significant role by forming a barrier in influencing IPEA. This implies that if the consumers' perception of price can be influenced more positively then it may aid in increased adoption of eco-conscious apparel. The study's findings indicated that consumers have low-levels of EAK. Therefore, if consumers are educated about how the environment in which they live is being affected by production, use and disposal of non-eco-conscious apparel products and how adoption of eco-conscious apparel products would benefit the environment then this may positively influence consumer's perception of eco-conscious apparel prices. However, on the other hand, if the solution is to reduce the prices then the entire responsibility of reducing the prices of eco-conscious apparel should not lie solely with manufacturers, retailers, brands, apparel industry or the government alone. Rather, all these players should join work together and formulate strategies to regulate prices of eco-conscious apparel which benefits consumers as well as the manufacturers, retailers and brands that sell eco-conscious apparel. The retailers and brands sell products with a profit motive and hence will not be willing to reduce the prices of eco-conscious apparel unless the price reduction is compensated through other means. In such instances, if government can reduce the import taxes and tariffs levied on eco-conscious apparel which in turn could facilitate in price reduction by manufacturers, retailers and brands without losing their profit then consumers may be more willing to adopt eco-conscious apparel.

Implications for Consumers

Awareness and purchase of eco-conscious products such as organic foods has gained momentum. However, the market for eco-conscious apparel is still very low. Consumers, even though expressing positive attitudes toward eco-conscious apparel are not able to translate such attitudes into purchase behavior. One reason for this could be attributed toward low-level of knowledge about apparel impacts on the environment found in this study which is similar to the previous study's findings. Consumers are very well aware of the advantages of adopting organic foods as the benefits are directly related to their health. However, low-level of EAK could be because the benefits of adopting eco-conscious apparel are not directly tangible to the health and welfare of consumers. This implies that it is important to educate consumers to create awareness and increase their knowledge about environmental impacts of apparel products as well as the benefits of adopting eco-conscious apparel. However, a bigger question that follows is who has to take the responsibility of educating and creating awareness among consumers? Should it be retailers and brands responsibility because a significant amount of environmental damage is created during the manufacturing and distribution phases of apparel products. Or, should it be the governments responsibility because apparel impacts on the environment is a part of global environmental problem which is generally tackled at the government level. Rather, should the responsibility be shared by manufacturers, retailers and brands as well as the government together.

While the knowledge of the impact of apparel on the environment was found to be very low in respondents in this study, it was also found that respondents who are highly educated possess high-level of EAK than those who are less educated. The results also indicated that if respondents are provided with more information on product characteristics, then it increased

respondents' IPEA. The respondents, while responding to open-ended question also indicated that providing more information about eco-consciousness of the t-shirt in Scenario 2 has helped them in understanding the product better which positively influenced their IPEA. This implies that even if consumers are less educated if they are provided with more information about product characteristics at the point-of-purchase, then, it not only increases their knowledge about the product, but also influences their perception of the product positively which in turn promotes a favorable attitude influencing their IPEA. This indicates that, one way to increase consumers' knowledge toward the impact of apparel products as well as awareness of eco-conscious apparel is by providing more information about product characteristics at the point-of-purchase. The apparel manufacturers and brands who do not have direct contact with consumers could use hang-tags, labels and inserts to provide product information to the consumers. As retailers are in constant contact with consumers, they can, through direct interaction with their customers obtain information regarding the type and amount of product information customers look for while purchasing eco-conscious apparel and pass it on to the manufacturers and brand owners so that they can incorporate such information on the hang-tags. The retailers on the other hand, can develop additional promotional activities on the sales floor which will further increase consumers' knowledge about environmental impacts and awareness of eco-conscious apparel at the point-of-purchase. The apparel manufacturers, retailers and brands, through providing as much product information as possible at the point-of-purchase can create awareness and increase knowledge about the impact of apparel products on the environment which may influence consumers' perception of eco-conscious apparel resulting in promoting positive attitudes toward eco-conscious apparel. This may encourage consumers to weigh the advantages of adopting eco-conscious apparel over conventionally produced apparel which may positively influence their

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IPEA. On the other hand government, through the proper means of advertising and educational programs can educate consumers of apparel impacts on the environment as well as create awareness of eco-conscious apparel which may promote positive attitudes and increase consumers IPEA.

Segmentation of Eco-conscious Consumer Market

Segmenting consumers and targeting that segment of consumers who are more willing to purchase and influence the adoption of eco-conscious apparel is important for any retailer or brand to successfully market their eco-conscious apparel products. The diffusion of innovation theory indicates that consumers who are innovative adopt innovative products first than any other group and also plays a significant role in the diffusion and successful adoption of an innovation (1995). The results from this study also indicated that consumers who are highly innovative are more likely to adopt eco-conscious apparel than consumers who are less innovative. With regard to the demographic variables, younger and less educated respondents were found to be highly innovative than their counterparts. Although, it is not surprising that younger consumers were found to be highly innovative, it is surprising to find that the less educated are more innovative than highly educated in this study. This implies that targeting innovative and younger consumers may aid in fast diffusion and adoption of eco-conscious apparel. If manufacturers, retailers and brands want to target younger and innovative consumers, then such consumers' needs, wants and tastes should be considered while designing apparel as well as developing marketing strategies to successfully position their apparel products in the market.

Limitations of the Study and Recommendations for Future Research

Although there are important findings related to the influence of perceived characteristics of innovation on adoption behaviors of eco-conscious apparel products, there also exist some limitations that should be considered for future research. First of all, this study has found that including PCI significantly enhances the relationship between EAK-EAA-IPEA as well as the predictability of IPEA. The study also found that when consumers' perception toward product characteristics is taken into consideration along with EAK and EAA, then the variables together provide greater ability in predicting consumers' intention to purchase eco-conscious apparel. However, there is still variability in predicting IPEA that remains unexplained by the variables in this study. Hence, researchers undertaking future studies should include additional variables to further strengthen the influential links between EAK, EAA, PCI and the ability to predict IPEA.

Second, while constructing the survey instrument four Scenarios with different levels of information were developed. While the first Scenario possessed least amount of information, the fourth Scenario had the most amount of product information. However, the pilot test results indicated that respondents felt bored and fatigued to respond to a similar set of statements four times which affected the results of the survey. Hence, the number of surveys was reduced from four to two in the final survey instrument by retaining the Scenarios with the least and most amount of product information which reduced the respondent fatigue. The study results indicated that including PCI enhances the relationship between EAK-EAA-IPEA along with the predictability of IPEA to a greater extent when consumers are provided with more information about eco-attributes of innovation than less information using two different Scenarios. However, as there was no middle Scenario with a medium amount of product information, this study was unable to determine how much product information would be sufficient to positively enough to influence IPEA. On the other hand, responses from the open-ended questions did provide some

insight into the product attributes that were indicated as important by the respondents. It is recommended that future research explore varying levels of information in order to determine the most efficient and effective information for influencing eco-conscious apparel product intention to purchase.

Regarding perceived complexity respondents indicated information regarding methods of production, the dyes used, country of origin and how the product is environmentally safe are important. The attributes of perceived compatibility pertaining to product style, quality, look and feel of the product and available colors and sizes were aso indicated as important by the respondents. For perceived relative advantage, the price of the product was found to be important for the respondents. However, it could not be found which attributes among these are more important than others in this study. Therefore, future study may include another Scenario with medium level of product information to see what level of product information would be sufficient to exert influence on consumers' IPEA. Further, the study can also be designed such that the respondents can rank order the attributes important for them in eco-conscious apparel. This may help the manufactures to incorporate such attributes while manufacturing eco-conscious apparel and retailers and brands in making sure to provide information about such product attributes while marketing eco-conscious apparel.

Third, current study included only three perceived characteristics in the paradigm of the innovation-decision process for eco-conscious apparel. However, there are other PCI factors found by Rogers (2003) and other researchers that significantly influence adoption of an innovation such as perceived trialability, perceived observability, perceived risk etc. Further research could be done to explore the influence of PCI on EAK, EAA and IPEA by including such perceived characteristics to the innovation-decision process model for eco-conscious

apparel. Such an investigation may explain more of the variance influencing IPEA. Future studies may also include domain-specific innovativeness instead of general consumer innovativeness or other demographic variables to explore whether results from such studies will be similar or different.

Fourth limitation was related to the image of the eco-conscious t-shirt presented in the two Scenarios developed for the survey instrument. After much pondering, a plain basic t-shirt with short sleeves was presented to minimize the influence of physical features of the t-shirt on respondents' decision-making process. It is possible that the physical appearance of the t-shirt might have influenced the decision process of some respondents apart from or instead of the information provided in the Scenarios. Future research can concentrate on providing product information using a different apparel product or providing the information in a different format such as in the form of hang-tags, labels, pamphlets inserted along with the apparel product etc. to see if providing information in a different format or using a different apparel product influences consumers IPEA differently.

Fifth, the data for this study was obtained by administering an online survey using scales developed particularly for this study. While performing the validity test of EAA and PCI scales, several items were deleted to obtain factors with items that make meaningful sense. One reason for removal of items could be attributable toward items not being understood by respondents the way they should have been because of the way the items were written. This calls for further improvement of scales by deleting or modifying the items that did not load on to any factor or have resulted in low factor loadings. These modified scales can be tested to further improve their validity and reliability by administering them using a different sampling frame.

Sixth limitation to the study was related to the data collection approach employed. Data were collected using an online market research company which limited from whom the data was collected - only registered members of the company's database. However, as the company is a nationally renowned market research firm with a database of more than 2.6 million registered members that serve as "panelists" in survey research who fit into a wide range of demographic profiles (Horvath, Courtenay-Quirk, Harwood, Fisher, Kachur, McFarlane, & Rosser, 2009) it was assumed that a good representation of general population in the US was obtained by administering survey through this market research firm. The results from the study also indicated that demographic characteristics of the sample were similar to demographic characteristics of the US general population as reported in the 2010 US census data which reduced the impact from this limitation to a certain extent. However, had the data been collected in a true randomized sampling procedure, survey results might have been different. Therefore, future study may employ a different method of data collection to see if the results turn out to be similar or different from the current studies' results.

Seventh limitation was regarding the sampling technique used. Although quota sampling technique was used such that the sample drawn closely represent general population of the US with regard to age, gender, education and household income based on 2010 census the results may have been different if a sample was drawn using other sampling technique or randomly drawn from the US general population. Hence, this calls for further research using a different consumer group in a different place to test the results of this study that may improve the generalizability to a wider range of population.

Eighth, the findings of this study showed that knowledge about the apparel environmental impact was very low in the respondents. This is not surprising because a review of literature in

chapter 3 also found that people possess low-levels of EAK. If people could be more educated about apparel impacts on the environment, then it may help them to make wise choices by seeking alternative apparel products that exert less effect on the environment such as eco-conscious apparel. This requires further research exploring the level of EAK among various consumer groups and reasons for the low-level of EAK in the consumers. If, future studies find that there are certain consumer groups that possess high-level of EAK then, reasons may be explored why those consumer groups possess high-level of EAK than others. Findings from such studies may help in formulating strategies to increase the EAK of consumer groups which may increase their IPEA.

Finally, the ninth limitation was related to the generalizability of the results of the study that attempted to understand the consumer's decision-making process toward eco-conscious apparel by investigating the hierarchical relationship among eco-conscious apparel knowledge, eco-conscious apparel attitudes and perceived characteristics of innovation and eco-conscious apparel purchase behavior. As the product under investigation was eco-conscious apparel, the results from this study may not be generalizable to other eco-conscious products in general. Researchers interested in understanding consumers' knowledge, attitude and behavior toward other eco-conscious product may employ the theoretical framework used in this study to see if the theory holds true for other eco-conscious products as well.

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Appendix A - Survey Instrument

TERMS OF PARTICIPATION: Please understand this project is research, and that your participation is completely voluntary. **This survey will take you approximately 15 minutes to complete**. By completing this survey you are indicating your consent to participate in this research study. Please complete the survey to the best of your ability describing what you think and feel. You may withdraw your consent at any time, and stop participating without explanation.

SURVEY INSTRUMENT

Part I

Please indicate your level of agreement (1=Strongly disagree to 5=Strongly Agree) for each of the statements to the best of your knowledge.

	Statement	Strongly Disagree				Strongly Agree
1.	When I see a product somewhat different from the usual, I check it out	1	2	3	4	5
2.	I am often among the first people to try a new product	1	2	3	4	5
3.	I like to try new and different products	1	2	3	4	5

1. Please indicate your gender

Male	
Female	
Other	

Part II

Instructions: Below are two shopping scenarios presented to you. Please place yourself into each of these given scenarios by carefully reading the context information and "shop" using the visual and product information provided.

Scenario 1: You need a new t-shirt. However, you have been unable to find time to go to your local department store to shop. Therefore, you decide to search the department store's online offerings to meet your needs. While browsing through the available selections online, you have come across the t-shirt below. You review the information provided carefully in order to make a decision about purchasing this particular t-shirt. After you read through the information provided you will be asked to answer a series of questions….

GREEN TOUCH

SHORT SLEEVE T-SHIRT
Style # B4650
Price: $ 30.00
Fabric & Care
– 100% Organic Cotton
– Machine Wash

Available colors:

Available Sizes:

XS	S	M	L	XL	XXL

RN # GF0465

GREEN TOUCH

SHORT SLEEVE T-SHIRT
Style # B4650
Price: $ 30.00
Fabric & Care
- 100% Organic Cotton
- Machine Wash

Available colors:

Available Sizes:

| XS | S | M | L | XL | XXL |

RN # GF0465

Based on the information you read about this t-shirt, what is the likelihood that you would purchase this t-shirt?

0%	25%	50%	75%	100%

Based on the information provided about the t-shirt, please indicate your level of agreement (1=Strongly disagree to 5=Strongly Agree) to the following statements to the best of your judgment to help us understand the factors that may have influenced your decision regarding the t-shirt.

		Strongly Disagree	Neither agree Nor Disagree			Strongly Agree
1.	I could NOT determine whether the materials used in manufacturing this t-shirt (e.g., fibers and dyes) were	1	2	3	4	5

	harmful to the natural environment.					
2.	It is evident that processes (e.g., dyeing, finishing, construction) used in manufacturing this t-shirt are less harmful to the environment.	1	2	3	4	5
3.	I am skeptical of claims regarding the reduced environmental impact(s) associated with this t-shirt.	1	2	3	4	5
4.	It was obvious that this t-shirt has been certified as environmentally safe.	1	2	3	4	5
5.	Information provided is NOT sufficient to understand the environmental effect of this t-shirt.	1	2	3	4	5
6.	It is NOT evident how caring for the t-shirt (washing, drying, etc.) can reduce the environmental impact.	1	2	3	4	5
7.	For a t-shirt with the characteristics and features listed above, this price seems to be about right.	1	2	3	4	5
8.	It is important for me to interact (touch it, try it on, etc.) with the t-shirt before I make a decision to buy.	1	2	3	4	5
9.	I am not willing to pay this price for the t-shirt.	1	2	3	4	5
10.	I trust that this t-shirt will NOT have harsh chemical residues from manufacturing processes that may be harmful to my welfare.	1	2	3	4	5
11.	I believe wearing this t-shirt will accurately portray my self-image.	1	2	3	4	5
12.	Wearing this t-shirt, with the features listed above, will meet with approval from my friends and family.	1	2	3	4	5
13.	As described, this t-shirt does NOT meet my standards of quality.	1	2	3	4	5
14.	This t-shirt suits my life-style.	1	2	3	4	5
15.	This t-shirt does not communicate who I am.	1	2	3	4	5
16.	Based on the information provided, buying this t-shirt will make me feel I contributed to helping the	1	2	3	4	5

environment.	

Please provide any information that may influence your likelihood of purchasing this t-shirt.

Below is the **SECOND** shopping scenario presented to you. Please place yourself into the given scenario by carefully reading the context information and "shop" using the visual and product information provided.

Scenario 2: You need a new t-shirt. However, you have been unable to find time to go to your local department store to shop. Therefore, you decide to search the department store's online offerings to meet your needs. While browsing through the available selections online, you have come across the t-shirt below. You review the information provided carefully in order to make a decision about purchasing this particular t-shirt. After you read through the information provided you will be asked to answer a series of questions….

ECO-WEAR
Making the mark in organic apparel

SHORT SLEEVE T-SHIRT
Style # B4650
Price: $ 30.00
Fabric: 100% Certified Organic Cotton

Available colors:

Available Sizes:

XS	S	M	L	XL	XXL

Our original organic cotton short sleeve tee. The easy fit and pleasing feel of the fabric is sure to make this t-shirt a favorite for everyone!

The best part, it is made right here in the USA.

Track this t-shirt back to the field using the RN number and view its organic certification under the environmental initiative page of our company website

RN # GF0465

ECO-WEAR
Making the mark in organic apparel

SHORT SLEEVE T-SHIRT
Style # B4650
Price: $ 30.00
Fabric: 100% Certified Organic Cotton

CERTIFIED TO OE 100 STANDARD

Made in the USA

Available colors:

Available Sizes:

| XS | S | M | L | XL | XXL |

Our original organic cotton short sleeve tee. The easy fit and pleasing feel of the fabric is sure to make this t-shirt a favorite for everyone!

The best part, it is made right here in the USA.

Track this t-shirt back to the field using the RN number and view its organic certification under the environmental initiative page of our company website

RN # GF0465

ADDITIONAL PRODUCT INFORMATION

At **ECO-APPAREL** we take utmost care in making each product using natural and sustainable materials in a wind and solar powered factory. All our fabrics are made using organically certified fibers and low-impact dyes. We take care of environmental effects of our products at each and every step of the production and distribution process. We understand that ethical fashion is about fairness. Hence, our factories are frequently audited by relevant authorities to ensure we meet the quality standards and fair working conditions. Our products are produced in the USA to ensure products travel less distance in our fuel-efficient vehicles – reducing Co2 emissions. We encourage responsible end-of-life practices for our clothes by providing a postage-paid return label upon request so our customers can send back Eco-Wear items ready for discarding to be recycled.

Result?

Our clothes

- Have eco-label rating "**A**"
- Are soft and kind to skin.
- Last longer.
- Are designed to have minimum effect on the environment and thus help protect our environment and improve the quality of life.

WE DID OUR PART, NOW IT'S YOUR TURN. HOW?

Wash with cold cycle. Avoid bleach. Use environmentally safe detergent. Tumble dry low. If necessary, iron on low. Do not throw Eco-Wear items away after becoming unacceptable due to wear and tear, Just visit our website, print off a prepaid mailing label, pack it and return to us so that we can recycle it using best methods.

Based on the information you read about this t-shirt, what is the likelihood that you would purchase this t-shirt?

0%	25%	50%	75%	100%

Based on the information provided about the t-shirt, please indicate your level of agreement (1=Strongly disagree to 5=Strongly Agree) to the following statements to the best of your judgment to help us understand the factors that may have influenced your decision regarding the t-shirt.

		Strongly Disagree	Neither agree Nor Disagree		Strongly Agree	
1.	I could NOT determine whether the materials used in manufacturing this t-shirt (e.g., fibers and dyes) were harmful to the natural environment.	1	2	3	4	5
2.	It is evident that processes (e.g., dyeing, finishing, construction) used in manufacturing this t-shirt are less harmful to the environment.	1	2	3	4	5
3.	I am skeptical of claims regarding the reduced environmental impact(s) associated with this t-shirt.	1	2	3	4	5
4.	It was obvious that this t-shirt has been certified as environmentally safe.	1	2	3	4	5
5.	Information provided is NOT sufficient to understand the environmental effect of this t-shirt.	1	2	3	4	5
6.	It is NOT evident how caring for the t-shirt (washing, drying, etc.) can reduce the environmental impact.	1	2	3	4	5
7.	For a t-shirt with the characteristics and features listed	1	2	3	4	5

	above, this price seems to be about right.					
8.	It is important for me to interact (touch it, try it on, etc.) with the t-shirt before I make a decision to buy.	1	2	3	4	5
9.	I am not willing to pay this price for the t-shirt.	1	2	3	4	5
10.	I trust that this t-shirt will NOT have harsh chemical residues from manufacturing processes that may be harmful to my welfare.	1	2	3	4	5
11.	I believe wearing this t-shirt will accurately portray my self-image.	1	2	3	4	5
12.	Wearing this t-shirt, with the features listed above, will meet with approval from my friends and family.	1	2	3	4	5
13.	As described, this t-shirt does NOT meet my standards of quality.	1	2	3	4	5
14.	This t-shirt suits my life-style.	1	2	3	4	5
15.	This t-shirt does not communicates who I am.	1	2	3	4	5
16.	Based on the information provided, buying this t-shirt will make me feel I contributed to helping the environment.	1	2	3	4	5

Please provide any information that may influence your likelihood of purchasing this t-shirt i.e.,

What characteristics influenced you to buy or not buy this t-shirt.

Part III- APPAREL ENVIRONMENTAL KNOWLEDGE

Please indicate, to the best of your knowledge, whether each statement is True or False.

1.	Production and processing of natural fibers like cotton and wool are not harmful to the environment.	True/False/Don't know
2.	The environmental impacts of growing conventional cotton are similar to that of growing organic cotton.	True/False/Don't know
3.	Though it takes little to no water to produce synthetic fibers, it consumes large amounts of energy.	True/False/Don't know
4.	An estimation of around 20 % of total industrial water pollution is generated from textile dyeing and finishing treatments.	True/False/Don't know
5.	Synthetic fibers such as nylon and polyester are produced from by-products of renewable petroleum resources and are easily biodegradable.	True/False/Don't know
6.	Given the right conditions, all natural fibers are easily biodegradable.	True/False/Don't know
7.	Water contaminated from textile waste and chemical effluents can be treated back to 100 % purity.	True/False/Don't know
8.	Use of chemicals and synthetic dyes during textile processing directly and/or indirectly has an adverse effect on all forms of life.	True/False/Don't know
9.	Chemical effluents and waste-water from textile industries are discharged into water streams polluting water and creating harm to ecosystems.	True/False/Don't know
10.	Due to the global nature of the clothing industry, the distance apparel products travel throughout the supply chain significantly contributes to CO_2 emissions leading to air pollution.	True/False/Don't know
11.	The least environmental impact throughout the apparel product life cycle is attributed to the consumer care phase (i.e., laundering) of the apparel products.	True/False/Don't know
12.	A large amount of postconsumer textile waste is disposed of into trash that ends up in municipal landfills.	True/False/Don't know
13.	It is as easy to recycle clothing into new products as it is to recycle plastic bottles and aluminum cans into new products.	True/False/Don't know

14.	Blending of fibers during textile manufacturing makes it difficult to separate the fibers for recycling or disposal.	True/False/Don't know

Part IV: APPAREL ENVIRONMENTAL ATTITUDES

Please indicate your level of agreement (1=Strongly disagree to 5=Strongly Agree) with each of the following statements.

		Strongly Disagree	Neither agree Nor Disagree			Strongly Agree
1.	Eco-apparel prices are very high.	1	2	3	4	5
2.	I prefer purchasing clothing in stores compared to online/internet because I can interact with the product.	1	2	3	4	5
3.	Unlike organically grown food, wearing eco-apparel does not provide any direct health benefit.	1	2	3	4	5
4.	It is hard to find eco-apparel in the stores where I frequently shop.	1	2	3	4	5
5.	There is not enough information provided about eco-apparel at point-of-purchase (hangtag, care label etc.) to easily determine the products' impact on the environment.	1	2	3	4	5
6.	I would choose an eco-apparel product even if it was priced 25% higher than conventionally produced clothing.	1	2	3	4	5
7.	I always like to feel and try-on products before I buy.	1	2	3	4	5
8.	I would like to have product information to differentiate between eco-apparel and non eco-apparel to help me make a more responsible purchase decision.	1	2	3	4	5
9.	Wearing eco-apparel is better for your skin.	1	2	3	4	5
10.	I get overwhelmed and distracted when too much information is provided about the product.	1	2	3	4	5

11.	In general, I believe that eco-apparel products are of poorer quality.	1	2	3	4	5
12.	It is important for me to know about environmental certification of materials and processes used in manufacturing eco-apparel before I make a purchase.	1	2	3	4	5
13.	Price is not a factor for me when purchasing eco-apparel.	1	2	3	4	5
14.	When I wear eco-apparel I feel it communicates who I am.	1	2	3	4	5
15.	While shopping, I do not mind reading as much information as can be provided to understand how an eco-apparel product reduces environmental impact.	1	2	3	4	5
16.	Eco-apparel does not meet my preference for current fashion styles.	1	2	3	4	5

Part V

1. Please indicate your age

18-24	
25-34	
35-44	
45-54	
55-64	
65 and over	

2. Please indicate your level of education completed

some high school	
High school diploma	
Some college but no degree	
Associate/Bachelor degree	
Master/Doctorate degree	
Other	

3. Please indicate your annual household income

Less than 15,000	
$15,000 to $24,999	
$25,000 to $34,999	
$35,000 to $49,999	
$50,000 to $74,999	
$75,000 to $99,999	
$100,000 to $149,999	
$150,000 to $199,999	
$200,000 or more	

Thank you for taking time to answer questions in this survey. This survey is about understanding consumers' attitude and purchase behavior towards eco-apparel. Completely this survey is important, as the information you provide will help eco-apparel manufacturers in better cater to the needs of consumers who purchase eco-apparel. Upon successful completion of the survey you will be awarded e-reward points. Your anonymous responses will be used only for statistical purposes and will be confidential.

Appendix B - Scholarly Manuscript

Fulfillment of this requirement of the dissertation has been met by providing a scholarly manuscript based on the findings of the study to the student's major advisor, Melody L. A. LeHew. This manuscript will be submitted for review to the *Clothing and Textiles Research Journal.*