

An exploratory eye-tracking study of consumers' online purchasing behaviors of sustainable apparel products

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A limited number of studies has investigated the relationship between consumers' views on apparel related ethical and sustainability issues and their purchasing behaviors of sustainable apparel products (Kozar & Hiller, 2013; Lee, 2011). Kozar and Hiller (2013) reported that consumers' knowledge and attitude of social and environmental issues can well predict their socially and environmentally responsible purchasing behavior, such as purchase of sustainable apparel. However, there is a lack of purchasing behaviors of sustainable fashion products from consumers, although there has been an increasing awareness of the adverse impact of the apparel industry and a growing interest in transforming unsustainable practices in apparel production and consumption to sustainable ones (Beard, 2008; Clark, 2008; Goworek, Fisher, Cooper, Woodward, & Hiller, 2012). Therefore, further investigation is required to address this discrepancy.

A common limitation of existing studies is the exclusive use of self-reported data. Consumers may give positive responses that may or may not match their purchasing behaviors (Auger & Devinney, 2007; Chung & Monroe, 2003;). Some researchers argued that eye tracking technologies could provide beneficial additional information, such as response times on a moment-by-moment basis, to self-reported data (Eckstein, Guerra-Carrillo, Singley, & Bunge, 2017). Therefore, one potential solution is to pair self-reported data with objective data. On the other hand, there has been an increase in online purchases, and online apparel purchases represent a significant portion of online consumption (Goldsmith & Goldsmith, 2002). However, a limited number of studies have been conducted on online shopping behaviors of sustainable apparel. Therefore, this study aims at addressing the following research question: What is the relationship between consumers' online purchasing behaviors and their existing environmental concern levels of the negative impact of the apparel industry? Three hypotheses were phrased accordingly:

H1: There is no correlation between consumers' existing environmental concern levels and their online purchase decisions of sustainable apparel products in online environment.

H2: There is no correlation between consumers' existing environmental concern levels and their attention on the sustainability attributes of sustainable apparel products online.

H3: There is no correlation between consumers' online purchase decisions of sustainable apparel products and their attention on the sustainability attributes of a sustainable apparel product in an online environment.

Method. To address this research question, a two-phase, mixed research method was employed. In phase I, an electronic questionnaire was developed to measure participants' demographics and their base-line levels of environmental concerns on the negative environmental impact of the apparel industry. Specifically, participants had to respond to five statements relevant to the environmental impact of the apparel industry. These statements used a 7-point Likert scale ranging from strongly disagree (-3), neutral (0) to strongly agree (3). In Phase 2, there was an eye-tracking experiment and a post-experiment survey. In the eye-tracking experiment, one pair of

male leggings and one pair of female leggings were selected from the websites of two well-known brands. The brands and leggings were carefully selected to ensure the ones from one brand were more sustainable than their counter parts from the other brand, and the leggings were compatible in terms of price and style. In addition, the researchers ensured that sustainability attributes of the more sustainable leggings were available on the product webpages to participants, but not available online for less sustainable leggings. Each participant was instructed to wear a pair of Tobii Pro Glass 2 eye-tracker when they were evaluating both the leggings. Men's leggings were only presented to male participants, and women's leggings were only presented to female participants. Besides, leggings were presented to participants in a random sequence to avoid any bias created by the order. During the process, the participants were instructed to look at these web pages in a relaxed way and not move or talk. There was no limit in decision time. After completing the eye-tracking session, the researcher provided each participant with a post-eye tracking survey for indicating which pair of leggings they would be most likely to purchase.

**Results and Discussion.** One hundred and sixty-three participants completed the phase 1 online questionnaire over the span of one month. They are mostly students, staff, and faculty at a four-year institution located in the Midwestern USA. Then, summation of each participant's responses to the environmental concern questions was calculated. Respondents were arranged according to their environmental concern scores, from highest to lowest order. Then, the top one third participants who had the highest scores were categorized into the high environment concern group, and the bottom one third participants who had the lowest score were categorized in to the low environment concern group. A Mann-Whitney' Wilcoxon test reported significant difference in the levels of environmental concern between the two groups ( $P < 0.01$ ). Eleven participants in each group participated the phase 2. Eye movement metrics such as dwell time, eye fixations, and area of interests (AOIs) were analyzed. Besides, heat maps and gaze data maps were also created and saved as images. In general, this study found no correlation between consumers' online purchasing behaviors and their existing environmental concern levels of the negative impact of the apparel industry. All three hypotheses were supported. These findings are contradictory to previous research findings (Kozar & Hiller, 2013; Meyer, 2001;). Two possible explanations are 1) participants did not trust the sustainability information provided by the brand; and 2) most of the sustainability attributes appeared at the lower part of a webpage, which caused the loss of attention from consumers, particularly from consumers with high baseline levels of environmental concerns. However, further investigation is needed.

**Conclusion.** This study is novel in two aspects. First, a limited number of existing studies has explored the effect of the online presence of the sustainability attributes of an apparel product and how that presentation influences consumers' online purchasing behaviors. Second, this study is a pioneer in utilizing a new mixed research method in a multidisciplinary research project. It testified the possibility of using eye-tracking technologies, together with survey-based self-reported data, in apparel related research. This study also provides additional information to environmentalists, educators, and industry professionals on how to effectively modify existing or develop new marketing and education programs to promote the consumption of more sustainable apparel products.

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