

Green Apparel Consumer Profiles Revisited: Using Two-step Cluster Analysis

Introduction The market for sustainable products is rapidly outpacing traditional markets. It is growing almost three times as fast, with a compound annual growth rate of 7.34%, compared to the 2.76% of the traditional markets (Ruiz, 2023). This growth is bolstered by over half of consumers willing to pay more for green products, indicating a significant shift towards pro-environmental consumption (Ruiz, 2023). To understand green consumers, research has suggested profiles of green consumers based on demographic characteristics (Saleem et al., 2018) and psychographic factors, such as environmental knowledge, social and ecological consciousness, environmental benefits/concerns, perceived effectiveness, and trust in and attitude toward environmental consumption (Jaiswal et al., 2020; Mehta & Chahal, 2021; Roberts, 1995), which are mostly individual-level factors. However, although the current state of green consumption has become a pan-global and large-scale issue, group/social-level factors around environmental issues have been largely overlooked. This study aims to address this gap by unveiling green consumer profiles within the apparel sector, based on both individual- and group-level psychographic factors related to sustainability, in addition to shopping attributes. Furthermore, we investigate how identified profiles differ in green apparel purchase behavior.

Literature Review A Social Identity Model of Pro-Environmental Action (SIMPEA), introduced by Fritsche et al. (2018), enhances the comprehension of pro-environmental behaviors by extending the focus from individual to collective levels. According to SIMPEA, not only individual motivations and emotions (e.g., personal identity, biospheric value, self-efficacy, and environmental norms) but also group-oriented factors (e.g., group biospheric values, social identification, and collective efficacy) affect pro-environmental actions. Central to this model is the concept of green identity, which encompasses both individual and group-level self-perceptions as environmentally conscious consumers. Biospheric value is closely associated with environmental protection (Saleem et al., 2018). Efficacy refers to the perceived capability to accomplish environmental goals as an individual or as a member in their social group, underlining the role of agency in environmental activism (Fritsche et al., 2018). Moreover, environmental norms capture the moral obligation towards environmental stewardship.

The literature on green consumers commonly segmented consumer groups based on environmental engagement intensity into low, moderate, and high segments while a price-sensitive group is also described as another main profile (González et al., 2015; Jaiswal et al., 2020; Mehta & Chahal, 2021). On the other hand, in attempts to identify green consumer profiles, scholars also utilized self-efficacy and social responsibility (Kuesten et al., 2022; Roberts, 1995). However, although large-scale environmental issues are collective nature matters, traditional approaches to segmenting green consumer profiles rely solely on individual-level factors, overlooking group-level factors (e.g., social green identity). Therefore, research is needed to revisit consumer segments for green products, reflecting both "I" and "We" motivations in sustainability, following the SIMPEA approach.

Furthermore, core traditional attributes of apparel shopping such as product availability and price sensitivity remain essential (Park et al., 2017). These criteria may become even more important to green apparel shopping, given the higher costs and limited availability of sustainable products than conventional ones (Gleim et al., 2013). Therefore, we incorporate these

key attributes to identify segments of green apparel consumers. Moreover, we examine if the identified segments exhibit differences in green apparel purchase behavior (Jain & Kaur, 2004).

Methods and Results In our study, 412 U.S. consumers were surveyed on their green consumption behaviors via Prolific, utilizing scales of biospheric values (both personal and group levels), green identity (both personal and group levels), green efficacy (both personal and group levels), environmental norms, price sensitivity, product availability, and green apparel consumption, rated on a 7-point scale (Gleim et al., 2013; Goldsmith et al., 2010; Jain & Kaur, 2004; Lee et al., 2021; Wang et al., 2021). For each construct, discriminant and convergent validity and construct reliability were confirmed. A two-step cluster analysis was applied. First, a hierarchical cluster analysis (Ward's method and squared Euclidian distance measures interval) suggested four clusters as an appropriate number of clusters. Second, K-means cluster analysis confirmed four consumer segments: Eco-champions (34%), Price-savvy Shoppers (9%), Problem Solvers (25%), and Environmentalists (32%) (Table 1). Lastly, ANOVA test confirmed that green apparel purchase behaviors are significantly different across the clusters. Eco-champions showed the highest likelihood of purchasing green apparel ($M = 4.67$), followed by Environmentalists ($M = 3.9$), Problem Solvers ($M = 3.53$), and Price-savvy Shoppers ($M = 1.96$).

Table 1. K-mean Cluster and MANOVA Results

Clusters	Eco-champions	Price-savvy Consumers	Problem Solvers	Environmentalists	
<i>n</i> (%)	141 (34%)	35 (9%)	104 (25%)	132 (32%)	<i>F</i> (3, 408)
Personal biospheric value	6.31^A	3.65 ^B	5.55^C	5.46^C	115.997 ^{***}
Group biospheric value	5.81^A	2.59 ^B	4.25 ^C	4.89^D	130.534 ^{***}
Self-green identity	5.87^A	3.03 ^B	4.71 ^C	4.79^C	105.024 ^{***}
Group-green identity	5.41	2.58	3.37	4.53	131.257 ^{***}
Self-green efficacy	5.87^A	3.22 ^B	5.47^C	4.18 ^D	145.074 ^{***}
Group-green efficacy	5.98^A	3.06 ^B	5.67^C	3.92 ^D	176.969 ^{***}
Environmental norms	5.10^A	2.09 ^B	3.98 ^C	4.00 ^C	91.404 ^{***}
Product availability	4.12 ^A	2.35 ^B	2.64 ^B	3.61 ^C	41.102 ^{***}
Price sensitivity	4.39 ^A	5.18^B	5.11^B	4.62^A	10.316 ^{***}
Age	39.21	37.22	35.52	36.32	
Gender (<i>n</i>)					
Women	82	12	52	51	
Men	57	20	51	68	
Others	2	3	1	13	

Note. Entries denote mean values; *** $p < .001$; Identical superscripts show no significant differences at $p = .05$ (Tukey's HSD post-hoc test).

Discussion This study contributed to updating green consumer profiles by utilizing both individual and group-level psychographic factors over mere demographic characteristics. In applying SIMPEA, we identified four distinct profiles: Eco-champions, Price-savvy Shoppers, Problem Solvers, and Environmentalists. Eco-champions lead in green apparel purchase behaviors, valuing product availability alongside green attributes. Environmentalists focus on biospheric values, underscoring the importance of green identity. Problem Solvers show a high regard for efficacy and price sensitivity. In contrast, Price-savvy Shoppers prioritize cost over green values or identities. Among product-related attributes, only product availability was

significant for eco-champions. These segmentation results provide valuable insights for targeted marketing strategies within the green apparel sector.

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