

Profiling Second-hand Clothing Shoppers with Decision Tree Predictive Model

Md. Mostafa Zaman¹, Theresa Hyunjin Kwon¹, Katrina Laemmerhirt², and Youn-Kyung Kim¹
University of Tennessee, USA¹
TMP Worldwide, Chicago, IL, USA²

Keywords: Sustainability, Second-hand Shopping, Decision Tree, Segmentation

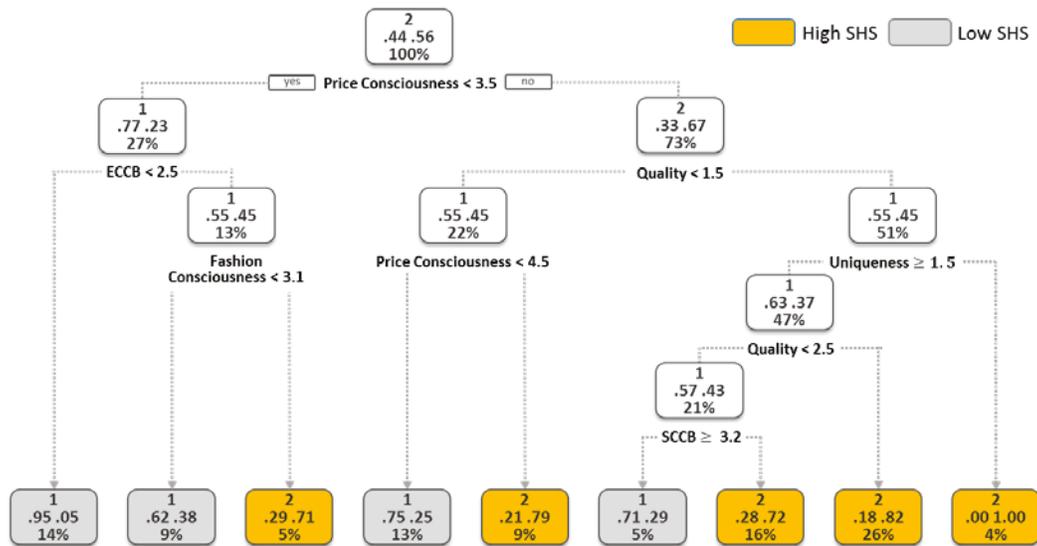
Research Background In the last twenty years, second-hand clothing market has drastically grown. Second-hand shopping is defined as “the acquisition of second-hand objects through methods and places of exchange that are generally distinct from those for new products” (Guiot & Roux, 2010, p. 356). Price sensitivity or frugality was commonly discussed as the main motivating factors to second-hand clothing consumption. Besides, environmentalism, vintage look (motivated by fashion consciousness), nostalgia proneness, uniqueness, recreational, hedonic value, and treasure hunting were identified as factors that influence consumers to shop second-hand clothes (e.g., Ferraro et al., 2016; Guiot & Roux, 2010; Roux, & Guiot, 2008). All these explanatory factors can be categorized as product attributes (e.g., quality and uniqueness) or personal orientation, which can be either self-oriented (e.g., fashion consciousness and price-consciousness) or others-oriented (e.g., environmentally conscious consumption behavior (ECCB) and socially conscious consumption behavior (SCCB)). However, previous studies did not look at the factors that influence second-hand clothing shopping from these two perspectives. In addition, the relative importance of the determinants of second-hand clothing shopping is unclear. To fill this void, this study attempts to determine whether and which factors influence second-hand clothing shopping behavior based on product attributes and personal orientations. This goal will be accomplished by utilizing Recursive Partitioning (RPART) method, an analytic tool that determines important variables that describe the target variable by explanatory power and variance.

Method and Results A total of 218 responses were collected from an online survey using Qualtrics. Product attribute factors (i.e., quality, uniqueness, and timeless style), self-oriented personal orientation factors (i.e., fashion consciousness and price-consciousness) and other-oriented personal orientation factors (i.e., ECCB and SCCB) were measured with a 7-point Likert scale. Participants included both genders (63.3% female) and age ranged from 18 to 55. Participants were mainly full-time students (53.7%) pursuing bachelor’s degree (84.4%) and had income less than \$10,000 (74.8%).

A binary decision tree of second-hand shopping (SHS) was created using RPART. Total responses were partitioned into testing data set (70%, n = 152) and validating data set (30%, n = 66). Analysis elicited nine terminal nodes: five high SHS segments and four low SHS segments (See Figure 1). In decision tree analysis, nodes are divided by factors in the order of importance. The root node split into two branches by price-consciousness (< 3.5 , 27%; ≥ 3.5 , 73%), demonstrating that price-consciousness is the most crucial factor in predicting SHS. The largest segment of high SHS (26%) was characterized by high price-consciousness (≥ 3.5), average to high-quality importance (≥ 2.5) and uniqueness importance (≥ 1.5). The second largest high SHS

segment (16%) was described by high price- consciousness (≥ 3.5), average to high uniqueness importance (≥ 1.5), low-quality importance (< 2.5) and low SCCB (≤ 3.2). Furthermore, the suggested model’s performance was tested by receiver-operating characteristic (ROC) analysis with the validating data set. Results indicated appropriate accuracy (AUROC 0.646), which is equivalent to medium effects (Cohen’s $d = .509$) (Rice & Harris, 2005).

Figure 1. Decision Tree of Second-hand Clothing Shoppers (n=218)



* ECCB (Environmentally Conscious Consumption Behavior); SCCB (Socially conscious consumption behavior)
 * “1 (low SHS group)” or “2 (high SHS group)” denotes which group is dominant in the node

Conclusion and Implications This study extends previous research on second-hand clothing by demonstrating the joint effect and the relative importance of product attributes and personal orientation factors (self-oriented and others-oriented) on second-hand clothing shopping. Results show that price-consciousness, quality, and uniqueness are the most important factors that characterize high second-hand clothing shopping. Although price-consciousness is the most crucial factor that determines second-hand clothing consumption behavior, clothing attributes (quality and uniqueness) are also important to consumers. Surprisingly, high fashion consciousness, jointly with low price- consciousness and high ECCB described high second-hand shopping segment. Therefore, practitioners should keep in mind that second-hand shoppers value the uniqueness of the clothing besides price and quality and that they could be fashion conscious. Furthermore, low SCCB explained a partial segment of second-hand clothing whereas a high level of ECCB was associated with high second-hand clothing. Such finding suggests that practitioners may focus on message appeals that speak to environmental consciousness rather than social consciousness; however, this decision should be carefully made considering the joint effect of SCCB or ECCB with other factors.

References Available upon request.