



A Two-Staged SEM-ANN Approach to Understand Consumers' Use of Fashion Rental Services

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Keywords: Fashion rental services, benefits, risks, SEM, artificial neural network (ANN) analysis

Introduction and Purpose In the current liquid modernity society where consumers are unstable and face constant life transitions, consumption is transitioning from being solid (e.g., purchasing permanent ownership) to being liquid (e.g., renting) (Bauman, 2013; Mimoun & Bardhi, 2022). In response, many fashion businesses are keen to offer services for temporal ownership of products. Fashion rental services represent a business that offers temporary ownership of fashion products with monetary exchange between the business and consumers (Kim & Jin, 2021). Unsurprisingly, numerous fashion business, ranging from mainstream and luxury brands to those built on the subscription business model, are increasingly interested in fashion rental services, underscoring the significance of knowledge as to what factors consumers consider important in their decision to use this new service. Due to its recency, however, research on the topic is still in the nascent stage. To our knowledge, consumer behavior research on fashion rental services is largely found in two areas. The first involves seminal works about topics, trends, and ideas about fashion rental services via systematic research reviews (e.g., Jain et al., 2022). The next stream focuses on an empirical approach to understand what affected consumer decisions to use rental services for clothing (e.g., Baek & Oh, 2021). The literature outlined such factors as benefits/facilitators (e.g., hedonic and utilitarian value, variety, Kim & Jin, 2020; Lee et al., 2021) and risks/barriers (e.g., contamination risks, psychological risk, Lang, 2018). In doing so, studies largely examined linear relationships between predictors and outcomes by applying structural equation modeling (SEM) (Baek & Oh, 2021; Lang, 2018), overlooking the possibility of nonlinear relationships (Hew et al., 2019). The purpose of this study is, thus, two-fold: to examine (1) how key benefits and risks of fashion rental services affect intention to use the services and (2) whether such relationships are linear or nonlinear.

Hypotheses Development This study focuses on two benefit and two risk factors based on the literature review. As for benefit factors, fun (hedonic value derived from searching and hunting unique items) and sustainability (value from reduced product wastes and environmental impact) are examined. Two major risks about using fashion rental services include contamination (feeling nervous or worried about products being tainted from previous usage) and psychological risks (potential negative outcomes such as losing one's self-image or uncertainty about ill-fitting). We propose the following hypotheses.

H1. Benefits of using fashion rental services (H1a: fun, H1b: sustainability) positively affect consumers' intention to use fashion rental services.

H2. Risks of using fashion rental services (H2a: contamination, H2b: psychological risks) negatively affect consumers' intention to use fashion rental services.

The second purpose is to analyze linear and/or nonlinear relationships of the proposed model. We first apply an artificial neural network (ANN) analysis to investigate the presence and extent of nonlinear relationships between the predictors and intention. Following that, we apply SEM to test the linear relationships in the predictors-intention links. Consequently, this study contributes to provide robustness in the research model by ascertaining biases in linear relationship with expanding our analysis to non-linear relationship via ANN.

Method and Results A web-based survey was administered with college students ($N=117$) at a southeastern university in U.S. (Mage = 20 years old and 82% female). Measurement items were adopted from previous studies. Fun value (e.g., "renting fashion items is a fun activity") and sustainability (e.g., "using fashion rental services means thinking about the environment") were rated on items from Kim and Jin (2020). Psychological risk (e.g., "the thought of using fashion rental services gives me a feeling of unwanted anxiety") and contamination risk (e.g., "To the extent to which do you feel products are being contaminated with fashion rental items?") were measured with items from Hwang and Choe (2020). All measures were rated on a 7-point scale.

Data analyses were performed in two steps. First, the presence of substantial non-linearity on the effects of four independent variables (two benefits and two risks) on rental service use intention was tested using ANN (SPSS 28.0; Hew et al., 2019). Next, the presence of linear structures in the proposed model was tested using SEM (AMOS 28.0). For each variable, instrument reliability, convergent validity, and discriminant validity were verified. After confirming multivariate assumptions for ANN and common method bias (CMB) tests, we ran the ANN model with four input neurons (i.e., independent variables), three hidden neurons, and one output neuron (i.e., dependent variable) (Figure 1). The model revealed a high accuracy with the mean scores of root mean squared error (RMSE) for both training and testing of 0.1437 and 0.1463, respectively. A sensitivity analysis with the ANN model calculated the normalized importance (NI) of independent variables as a percentage; sustainability was shown to be the most important predictor, followed by fun, psychological risks, and contamination risks.

Next, SEM supported H1a, H1b, and H2a but rejected H2b (Figure 2). That is, both fun and sustainability benefits of fashion rental services increase consumers' intention to use fashion rental services, while contamination risks of such service decrease their service use intention.

Discussion This study theoretically explains both linear and non-linear relationships between predictors (benefits and risks) and consumer intention to use fashion rental services by applying ANN and SEM. A sensitivity analysis further presents the order of importance in benefits and risks. The results

yield practical guidance for rental service marketing. When promoting fashion rental services, marketers can highlight how using such service supports going green and experiential shopping experience, while emphasizing how they handle returns and damages and remove contaminants to ensure zero contamination of the products being offered.

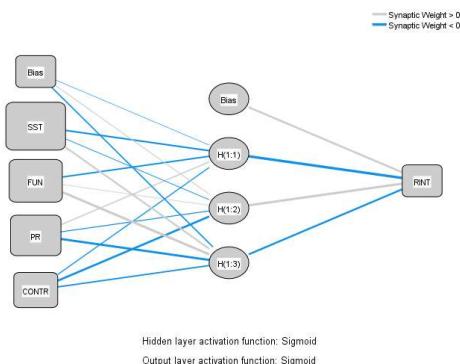


Figure 1. The ANN Model

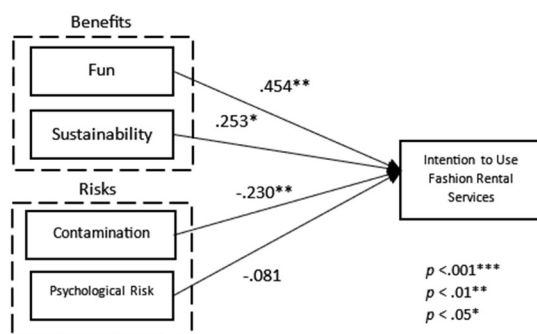


Figure 2. SEM Results

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