Confirmatory Factor Analysis of the Purchaser Style Inventory for Sport Product (PSISP)

Sungwon Bae, Texas Tech University
Eddie T. C. Lam, Cleveland State University
Man-Young (Peter) Han, SUNY Cortland

Research in consumer decision making styles, in particular consumer shopping behaviors, has become increasingly popular in recent years (Bae, Lam, & Jackson, 2009; Bae, Lam, & Rhee, 2007; Hafstrom, Chae, & Chung, 1992; Lyonski, Durvasula, & Zotos, 1996; Wang, Siu, & Hui, 2004). Sporting Goods Manufacturers Association (2006) reported that sales of sporting goods reached approximately $60 billion in 2006. For this reason, studies in consumer decision making styles play an important role in sport marketing. Specifically, studies in this area help advertisers or marketers to develop appropriate marketing strategies and to better approach new or existing consumer markets. For example, Bae and Miller (2009) demonstrated that studies in consumer decision-making styles are integral in developing marketing strategies since the sales of sport products continues to grow at a rapid pace. In 2009, Bae, Lam, and Jackson (2009) developed the Purchaser Style Inventory for Sport Product (PSISP) to identify consumers’ shopping behaviors. However, the PSISP was developed using exploratory factor analysis and it had not validated up to date. Therefore, the purpose of this study was to validate the PSISP scale using confirmatory factor analysis.

Participants (N=200) in this study were college students enrolled in a large university in the southern region of the United States who voluntary completed a questionnaire before the classes. Because of missing data, only 163 surveys were used for data analysis. To validate the nine dimensions: Quality, Brand, Fashion, Recreation, Price, Impulse, Confusion, Habit, and Endorsement Consciousness, Windows LISREL 8.80 (Jöreskog, & Sörbom, 2009) was used to perform a confirmatory factor analysis based on the PSISP formerly developed by Bae, Lam, and Jackson (2009). The following fit indices were used to examine the fit of the models: the Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980), the Standardized Root Mean Square Residual (SRMR; Bentler, 1995), the Comparative Fit Index (CFI; Bentler, 1990), and the Incremental Fit Index (IFI; Bentler & Bonett, 1980). As pointed out by Steiger (1989) and Byrne (1998), values of the RMSEA less than .05 indicate a very good fit, and values up to .08 indicate reasonable errors of approximation in the population. MacCallum, Browne, and Sugawara (1996) further commented on these cutpoints by declaring that values of the RMSEA between .08 and .10 indicate a mediocre fit, and those greater than .10 indicate a poor fit. On the other hand, the SRMR ranges from zero to 1.00 and “in a well-fitting model this value will be small – say, .05 or less” (Byrne, 1998, p. 115). Values of the CFI and IFI also range from zero to 1.00, with values larger than .90 indicating an acceptable fit, and values greater than .95 indicating a good fit (Bentler, 1990, 1992; Hu & Bentler, 1999; Marsh, Balla, & McDonald, 1988; Steiger, 1990). West, Finch, and Curran (1995) further commented that the CFI has “only a small downward bias (3% to 4%), even under severely nonnormal conditions” (p. 74).

Using the LISREL computer program, the nine-factor model (41 items) was analyzed based on the Maximum Likelihood estimation method. The chi-square statistics of the model was significant (i.e., c2 = 1,191.36, p < .01). The goodness-of-fit indexes of the model (e.g., RMSEA = .061; CFI = .91) indicated that the model provided a reasonable fit to the data. In order to improve the model, the so-called “bad” items (i.e., items with the lowest lambda values) were eliminated. In order to improve the model, the so-called “bad” items (i.e., items with the lowest lambda values) were eliminated. After eliminating four items with standardized lambda values of .40 or less (three items from Quality and one item from Price), the nine-factor model (37 items) was reanalyzed using the previous procedures. As a result, the model improved slightly and the fit indexes suggested that the final version of the model provided a better fit to the data (e.g., SRMR = .075, CFI = .93, and RMSEA = .059).

The composite reliability (CR) and variance extracted (VE) for each factor were computed based on the procedures outlined by Fornell and Larcker (1981). According to Fornell and Larcker (1981), VE is the "amount of variance captured by the construct in relation to the amount of variance due to measurement error" (p. 45). The CR of Quality, Brand, Fashion, Recreation, Price, Impulse, Confusion, Habit, and Endorsement were .85, .68, .83, .89, .60, .63, .78, .73, and .88, respectively; whereas the VE of the same nine factors were .58, .35, .50, .61, .36, .36,
0.47, 0.49, and 0.56, respectively. The results of these reliability coefficients demonstrated that such factors as Brand, Price, and Impulse were less reliable than the other factors.

In conclusion, this study supported the nine dimensions of the PSISP. However, not all factors had the same level of reliability. In addition, this study was limited to a university in the South, future studies with larger sample size in other regions should be conducted to cross validate this current study. Furthermore, it was suggested that future studies should examine such demographic variables as income, age, religion, etc. since different consumer might have a different purchasing style and a different way to obtain sport product information.