Extending the Technology Acceptance Model to Consumer Perceptions of Fashion AI

Yuli Liang, Seung-Hee Lee, Jane E. Workman, Southern Illinois University, USA

Keywords: Fashion Artificial Intelligence, Technology attitudes, Purchase intention

Background and Purpose: Technological advancement has brought dramatic changes to consumers' consumption behaviors. Consumers' self-awareness and sense of fashion are being transformed by technology. Because combinations of fashion and digital innovations are emerging, it is critical for researchers as well as retailers to understand consumer responses to new technologies. Artificial Intelligence (AI) has emerged as an important frontier of technological innovation (Hager et al., 2017). As retailers study consumers' shopping behavior and promote the future of on-demand manufacturing, AI is being used as a new application in the fashion industry. Because the development and application of fashion AI are still at a beginning stage, literature is deficient concerning strategic design and consumer acceptance of this type of product. This research aims to analyze consumers' acceptance and purchase intention towards a fashion AI device so as to predict how consumers' fashion sense will be affected by new technologies. By analyzing what belief is the best predictor of adoption intention of a technology innovation, this research will provide theoretical and managerial implications for future technology development.

Conceptual Framework: A research model and hypotheses were developed with the Technology Acceptance Model (TAM) as the theoretical framework (see Figure 1). TAM (Davis, Bagozzi, & Warshaw, 1989) has been widely used for understanding user acceptance of technology applications in retailing (e.g., Kim et al., 2017). Apart from the two primary beliefs, perceived usefulness and perceived ease of use; performance risk (Lee & Moon, 2015) and positive technology attitudes (Rosen

Figure 1. Conceptual Framework

et al., 2013) were added to extend the original TAM. Fashion involvement was added to test its moderating effects across groups of higher (vs lower) fashion involvement. **H1:** Perceived usefulness will positively influence consumers' attitude toward Echo Look. **H2:** Perceived ease of use will positively influence consumers' attitude toward Echo Look. **H3:** Performance risk will negatively influence consumers' attitude toward Echo Look. **H4ab:** Positive technology attitudes will positively influence consumers' (a) attitudes and (b) purchase intention toward Echo Look. **H5:** Consumers' attitude toward Echo Look will positively influence consumers' purchase intention toward Echo Look. **H6:** The salience of the path would be different across consumers with higher fashion involvement and with lower fashion involvement.

Method: This research was conducted in the top 10 metropolitan areas in the US. An online self-administered questionnaire was created using Qualtrics and a subject pool was
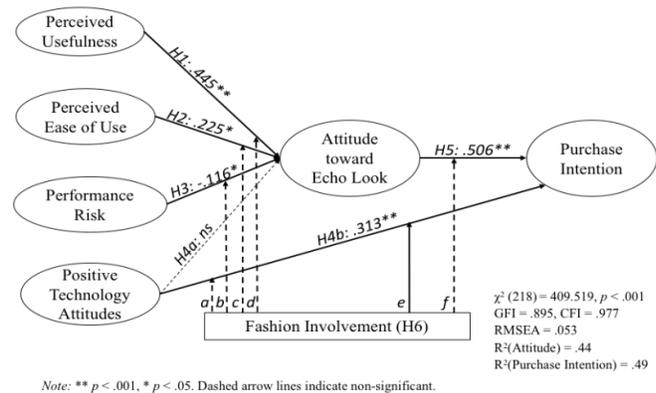
recruited via Qualtrics Panel services. The Echo Look was used as the stimulus. Participants were asked to watch a short video about Echo Look and complete the questionnaire, which included measures from established research of perceived usefulness, perceived ease of use, performance risk, positive technology attitudes, attitude toward Echo Look, purchase intention of Echo Look, and fashion involvement; all items were accompanied by 7-point scales. A total of 313 valid responses were obtained over one-week period. The majority of respondents were female (61%) and 50.8% ranged between 25 and 44 years old (range =18 to 65). Participants were categorized into two fashion involvement groups (low, n=163; high, n=150).

Results: Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to ensure construct validities. Items with low loadings or high-cross loadings were removed in the EFA. Varimax rotation resulted in 26 items that measured 6 factors, with 85.06% of total variances explained, and item loadings ranging from .748 to .932. Cronbach's alpha ranged from .785 to .982. After dropping the items of high modification indices in CFA, twenty-three items within six factors remained, with the reliability and validities achieved. Path analysis with a good model fit (χ^2/df = 1.88, p < .001, RMSEA = .053, CFI = .977, and GFI = .895) was used to test hypothesized relationships (see Figure 1). Multiple group comparison was conducted to examine any differences between two groups of fashion involvement. The results indicate that the relationship between technology attitude and purchase intention is significantly different (with 99% confidence) for consumers of high vs low fashion involvement.

Discussion/implications: Proposed hypotheses H1, H2, H3, and H4b were supported, and H6 was partially supported (see Figure 1). Research findings suggested that consumers value the functions of new fashion technology; further development of functions such as enabling instant sharing through social media, providing guidance on apparel purchasing, and adding virtual try-on will generate a higher consumer acceptance level. Moreover, retailers could constantly upgrade the platforms of this new fashion technology device to keep it in a user-friendly interface. Increasing the presence and demonstration of this device in fashion shows, trade shows, magazines, and social media would attract the attention of consumers of higher fashion involvement and decrease consumers' concerns of risk. Theoretically, this study contributed to the TAM model by extending this model to a new advanced fashion technology. Moreover, positive technology attitudes were incorporated within the TAM framework and the test results indicated positive influences to purchase intention.

<div align="center">

References

</div>

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

Hager, G. D., Bryant, R., Horvitz, E., Mataric, M., & Honavar, V. (2017). Advances in artificial intelligence require progress across all of computer science. *arXiv preprint arXiv:1707.04352*.

Kim, H.-Y., Lee, J. Y., Mun, J. M., & Johnson, K. K. (2017). Consumer adoption of smart in-store technology: assessing the predictive value of attitude versus beliefs in the technology acceptance model. *International Journal of Fashion Design, Technology and Education, 10*(1), 26-36.

Lee, H.-H., & Moon, H. (2015). Perceived risk of online apparel mass customization: Scale development and validation. *Clothing & Textiles Research Journal, 33*(2), 115-128.

Rosen, L. D., Whaling, K., Carrier, L. M., Cheever, N. A., & Rokkum, J. (2013). The media and technology usage and attitudes scale: An empirical investigation. *Computers and Human Behavior, 29*(6), 2501-2511.