Artificial Intelligence in Fashion Customization: Consumers' Perceived Values and Barriers

Wenna Han, University of Illinois Urbana-Champaign
Xingqiu Lou, Kent State University
Yingjiao Xu, North Carolina State University

Keywords: generative AI, AI customization, desirability–feasibility framework; focus group

Introduction Generative AI refers to deep-learning models capable of generating new text, images, and other forms of content in response to specific prompts based on the data they have been trained on (Murphy, 2022). According to McKinsey and Company (2023), generative AI could add between $150 billion and $275 billion to the operating profits of the apparel, fashion, and luxury sectors. With AI lowering the barriers to fashion design by enabling the automatic generation of product designs, researchers have highlighted its potential to revolutionize customization in the fashion industry (Liu *et al.*, 2023). For example, H&M Group's Creator Studio has introduced an AI fashion customization service, enabling users to create custom clothing designs based on text input, without the need for artistic ability (BoF, 2023). While few studies have suggested that the co-creation experience with AI increased consumers' perceived product value (Lee & Kim, 2024; Sohn *et al.*, 2020), consumer perspectives of AI fashion customization have not been extensively studied. Therefore, this study aims to exploratorily investigate consumers' perceived values and barriers to adopting AI fashion customization.

Literature Review According to the desirability-feasibility framework, the likelihood of consumers adopting an innovative product or service is influenced by two main factors: desirability and feasibility (Jia *et al.*, 2012). Desirability refers to the expected benefits or values derived from using the innovation, while feasibility pertains to the perceived difficulty in adopting the innovation (Moghavvemi *et al*., 2017). Previous studies have identified values consumers associate with mass customization, including utilitarian, uniqueness, self-expressive value, hedonic, and creative achievement values (Merle *et al*., 2010). The use of AI in fashion design provides consumers with additional benefits (*perceived desirability*) that drive their adoption intention. AI allows for greater creativity and innovation in product design by generating outputs based on customer input data or prompts, moving beyond just selections from predefined options (Lee & Kim, 2024). This approach makes consumers feel actively involved in the design process and that they are collaborating with product designers (Sohn et al., 2020). Additionally, the novelty of using AI to create personalized products sparks consumers' curiosity about the technology and its design capabilities (Zhang et al., 2022). AI technology also enables consumers to apply their preferred images to the designs, allowing them to express their unique personalities and fulfill their desire for uniqueness by creating one-of-a-kind items (Sohn et al., 2020). On the other hand, certain aspects have been identified as leading to consumers' concerns about the performance and process of using AI *(perceived feasibility)*, such as low perceived authenticity and product quality, which is based on the large discrepancy between consumers' preexisting fashion design schema and AI-generated designs (Lee & Kim, 2024). By employing

a qualitative research approach, this study aims to gain insight into the values and concerns that consumers perceive when engaging with AI customization for fashion products.

Method Two focus group interview sessions were conducted with participants from diverse backgrounds. Twenty U.S. university students across various majors were recruited via flyers distributed on campus. During the focus group discussion, participants were first guided through the process of using H&M's AI customization tool, Creator Studio. Then, each of them was asked to design their clothing by providing text prompts for the tool to generate visual artwork with various preset styles that could be printed on clothing for purchase. Following this hands-on experience, two moderators conducted semi-structured, open-ended discussions to explore participants' perceived value and concerns about AI-customized fashion products and the customization process. Content analysis was performed through NVivo 14. Deductive coding processes were first used by selecting categories based on existing literature. Following this, inductive coding processes were applied to allow new codes to emerge from the interview data.

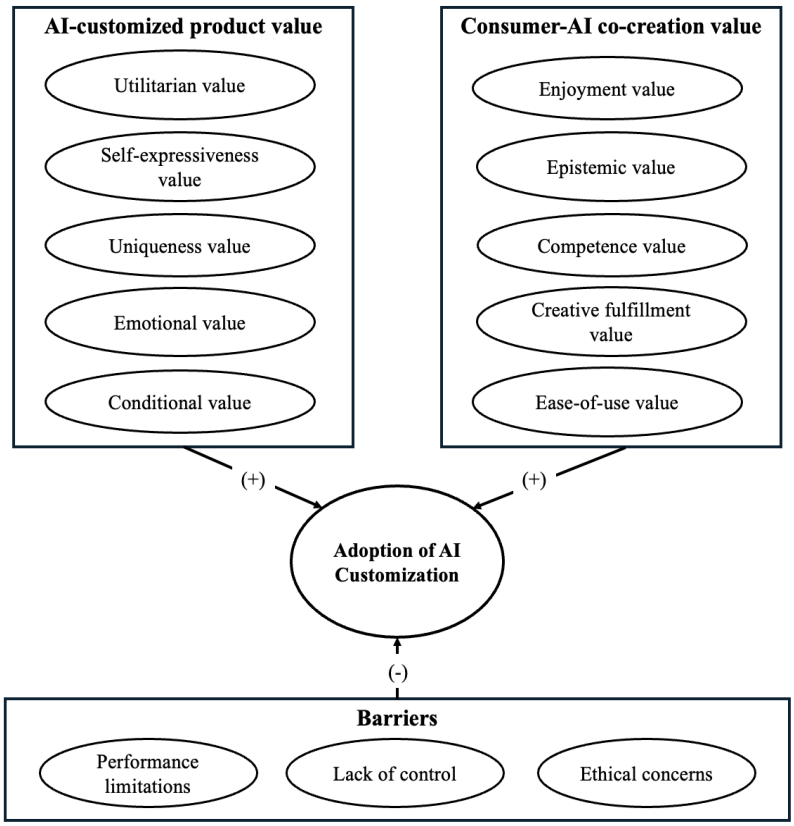

Figure 1. Perceived Values and Barriers of AI Fashion Customization

Results and Discussions Overall, the majority of respondents expressed positive sentiments toward AI fashion customization, describing the experience as fun, easy, intriguing, and satisfactory. However, some respondents voiced negative perceptions, such as feeling a "lack of control" and the output "not meeting their expectations." The results revealed five AI-customized product values, five consumer AI co-creation values, and three barriers associated with AI customization (Figure 1). The findings are consistent with the customization literature (Merle *et al.,* 2010), with participants perceiving AI-customized fashion products as offering *utilitarian, self-expressive,* and *uniqueness*, *conditional*, and *emotional* values. Regarding the co-creation process, participants identified values that include *enjoyment, epistemic, competence, creative fulfillment*, and *ease of use*. Notably, epistemic and competence values emerged as unique to AI customization, which was not discovered in the traditional mass customization context. The

innovative process aroused participants' curiosity and satisfied their desire for novelty. Additionally, AI customization presented an optimal challenge, fostering a sense of achievement and pride of authorship upon completing the design task, thus fulfilling competence needs. Remarkably, the creative fulfillment value was emphasized, as AI's power allowed consumers to unlock their creativity, realize design ideas, and receive inspiration.

However, several barriers preventing consumer adoption were identified, including *performance limitations, lack of user control*, and *ethical concerns*. Respondents reported unsatisfactory outputs such as homogeneous designs across attempts, unrealistic renderings, and inaccurate interpretations of prompts. The lack of control over modifying specific design details also emerged as a barrier. Ethical concerns centered around the opaque nature of the AI's training data, raising questions about potential infringement of existing works. Consumers also expressed concerns regarding copyrights, worrying their creations could be used without consent.

Conclusions and Implications Theoretically, this study extends the understanding of the novel practice of AI fashion customization from a consumer perspective. Managerially, it highlights the potential benefits for strategic integration and marketing of AI customization by fashion companies, while suggesting that AI fashion customization firms should enhance output quality, user control, data transparency, and intellectual property practices to drive consumer adoption.

References

BoF (2023). H&M Group's New AI Tool Lets Anyone Play Designer. Retrieved from https://www.businessoffashion.com/articles/technology/hm-group-is-using-ai/

Moghavvemi, S., Phoong, S.W., & Lee, S.T. (2017). Impact of perceived desirability, perceived feasibility and performance expectancy on use of IT innovation: Technology adoption decisions and use behavior. *Vidyodaya Journal of Management, 3*(1), 43–76.

Merle, A., Chandon, J. L., Roux, E., & Alizon, F. (2010). Perceived value of the mass-customized product and mass customization experience for individual consumers. *Production and operations management*, *19*(5), 503-514.

Murphy, K. P. (2022). *Probabilistic machine learning: an introduction*. MIT press.

Jia, H., Wang, Y., Ge, L., Shi, G., & Yao, S. (2012). Asymmetric effects of regulatory focus on expected desirability and feasibility of embracing self-service technologies. *Psychology & Marketing*, *29*(4), 209-225.

Lee, G., & Kim, H. Y. (2024). Human vs. AI: The battle for authenticity in fashion design and consumer response. *Journal of Retailing and Consumer Services*, *77*, 103690.

Liu, L., Zhang, H., Zhou, D., & Shi, J. (2023). Toward Fashion Intelligence in the Big Data Era: State-of-the-Art and Future Prospects. *IEEE Transactions on Consumer Electronics*.

Sohn, K., Sung, C. E., Koo, G., & Kwon, O. (2020). Artificial intelligence in the fashion industry: consumer responses to generative adversarial network (GAN) technology. *International Journal of Retail & Distribution Management*, *49*(1), 61-80.

Zhang, H., Bai, X., & Ma, Z. (2022). Consumer reactions to AI design: Exploring consumer willingness to pay for AI-designed products. *Psychology & Marketing*, *39*(11), 2171-2183.