Should We Be Afraid of Artificial Intelligence? Consumer Willingness to Share Personal Information with Fashion Sales Robots

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Background: Retailers have traditionally employed AI robots solely in service settings and to expedite the manufacturing processes. With advancements in AI, retailers have begun to utilize these robots as fashion stylists, AI product advisors, and shopping assistants (Murphy, Gretzel, & Pesonen, 2019). AI robots collect data that are crucial to improving service and sales performances in fashion retail industries (Zaheer & Trkman, 2017). However, recent research on the use of robots in fashion retail settings presents a wide-spread concern among consumers regarding privacy risks and malfunctions in financial security in service experiences (Kim et al., 2020). This research speculates that such apprehensions likely prevent consumers from sharing information with AI robots (Stock & Nguyen, 2019), which negatively affects fashion retailers' abilities to gauge their consumers' desires. Consumers' willingness to share (WTS) information helps fashion businesses make strategic marketing decisions (Zaheer & Trkman, 2017). Through a literature review and implementing personal interviews and a focus group, this study identifies seven factors that may lead to high and low WTS information with AI fashion robots. Following the framework of Constant et al. (1994), we classify these factors into two dimensions of motivations for WTS and proposed our conceptual framework (figure 1): (1) rational self-interest/reciprocity (service quality, enjoyment, usefulness, and ease of use) and (2) social interaction (trust, sociability, and collaborativeness). We then build a decision tree predictive model to identify important motivational factors of WTS with AI fashion robots.

Theoretical framework: The foundation of this study is based on Constant et al.'s (1994) information sharing theory, which states that consumers' WTS is driven by their rational self-interest or reciprocity and the social determinants of information sharing. These motivational factors affect their sharing attitude of "why I should share information." Both categories of psychological factors are known to shape behavioral patterns in information sharing and influence the acceptance of robot technology in fashion retailing (Zaheer & Trkman, 2017).

Methods and analytic strategies: This study uses both qualitative and quantitative methodological strategies. Our qualitative methods included conducting a literature review and implementing 13 personal interviews and a focus group interview (n = 12) to identify the influential factors in WTS. Furthermore, we developed scripts and video clips of an AI Fashion robot as a stimulus and performed two pretests. For a quantitative approach, we used decision tree modeling with empirical data using R statistical software. For the main test, we conducted an online survey that was administered to the consumer panelists of a market research agency. A total of 464 responses were retained for the decision tree analysis. The respondents were evenly distributed between genders (51.7% female), and their median age was 40. To determine the

most important factors of consumers' WTS, we used the following analytic strategies: (1) generating a classification tree using R statistical software; (2) cross-validating the model on two independent data sets (N = 464); (3) using a sampling strategy of 70/15/15 by partitioning 70% as the training dataset (n = 324), 15% as the validation dataset (n = 70), and 15% as the testing dataset (n = 70); and (4) using the error matrix and receiver-operating characteristic (ROC) to evaluate the model's accuracy and performance. To create the classification tree, the target variable, WTS information, was split into a high and a low group based on the median of 4.50.

Results: We conducted a confirmatory factor analysis (CFA) to validate the measurement model and evaluate construct validities. All factor loadings were greater than 0.50 with a range of 0.74 to 0.96. Using R statistical software, we created an optimal classification tree model (Figure 2) and identified four important variables by rank and their optimum combinations that lead to high and low WTS groups: *service quality*, *enjoyment*, *usefulness*, and *trust*. Remarkably, the largest segment (n = 147, 45%), categorized as a high WTS group, is explained by service quality (≥ 4.9) and enjoyment (≥ 4.8) with the strongest predictive power (*prob* = 0.90). Furthermore, a low level of service quality (< 4.9) accurately predicts a low WTS group (n = 131, 40%, *prob* = 0.89). The cross-validated result of the ROC analysis and the error matrix on the validation sets indicate an AUROCC of 0.996, precision rate of 94.0%, and overall error rate of 5.8%, demonstrating the model's exceptional accuracy (Chirouze et al., 2002). Finally, we assess the model's performance against the testing dataset (n = 70, AUROCC of 0.911) and validate its accuracy and precision.

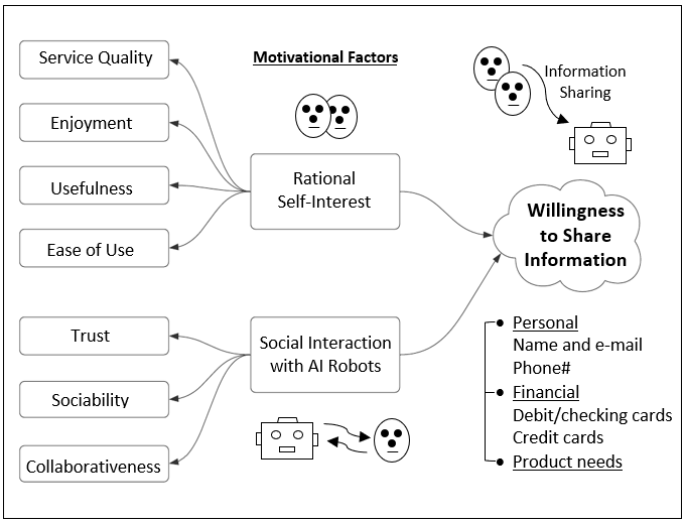

Figure 1. Framework

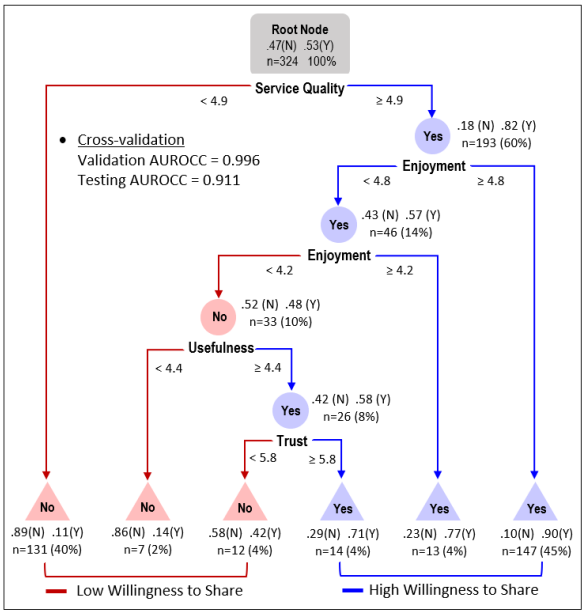

Figure 2. Decision Tree

Conclusion/Implication: Our findings indicate that the rational self-interest/reciprocity factors of service quality, enjoyment, and usefulness, and social interaction factor of trust predict the WTS information with AI fashion robots. Thus, ensuring that consumers understand the benefits AI robot use, including easier and more enjoyable shopping experiences, will increase their interactions with robots. We also suggest that marketers prioritize a transparent data strategy to allay customers' fears of privacy leaks and the vulnerabilities to the emerging cybersecurity threats to AI robots. To build customer trust, fashion retailers should proactively take steps to protect data, communicate responsible data policies, regularly update security measures, and utilize third-party audits. This targeted effort may convert the fear of AI into the increased demand for robots. This study makes an important theoretical contribution to the literature on information sharing with AI robots in the fashion retail sectors. Furthermore, this study provides an analytical application of decision tree modeling of consumers' WTS information with fashion sales robots.

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