

The Study of Humans-Artificial Agents Relationships in Retailing Contexts: The Role of Trust

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Introduction The retail industry is at the inflection point where new digital technologies, such as Artificial Intelligence (AI) and robots, are transforming not only business practices, but also the lives of consumers. At companies like Stitch Fix, AI is successfully performing tasks (e.g., developing an assortment of products for target consumers) that have historically required human decision-making abilities based on cognitions and intuition. The introduction of the ‘Amazon Go’ cashier-free store in 2017 yielded both excitement and apprehension, and now it is poised to expand across the country. In light of not only rising ethical concerns about AI technology, but also the unknown efficacy of AI in retailing contexts, it is vital to understand how consumers and AI technology intermesh in retailing contexts where the complexity of consumer decision-making is fully manifested. While scholarly research on AI technologies is abundant and fast-growing, AI research from the consumer perspective is still lacking. To address this gap, this study focuses on how consumers develop relationships with AI technology in retailing contexts.

Conceptual Development AI refers to the technologies enabling machines to perform actions or activities that require human intelligence (Kurzweil, 1990). Whereas AI is largely digital (e.g., virtual conversational agents), intelligent robots are also AI-based. For this research, we use the term Artificial Agents (AAs) to represent various forms of AI. Two theoretical frameworks are integrated to conceptualize human-AA relationships in retailing contexts. In human-AA relationships, researchers posit that AAs can become entities that create social and emotional connections with humans (Cabibihan et al., 2014). As with the “Computers Are Social Actors” (CASA) paradigm, the Theory of Social Response (TSR) explains that due to innate social orientation, humans follow the same social norms and interact with computers in the same way they do with other humans (Nass & Moon, 2000). Building on TSR, the Technology Acceptance Model (TAM) helps explain human-AA relationships. Widely applied to the context of technology adoption, TAM (Davis, 1989) identifies two primary constructs (perceived usefulness and perceived enjoyment) that impact user intention to adopt new technology.

This study further draws on the construct of trust from the consumer behavior literature. Trust is posited to influence human-AA relationships, including not only the acceptance of AA, but also the continuing relationship with AA. Following the TSR, with AA being a social actor, trust in AA is defined from an interpersonal perspective. Trust in AA refers to an individual’s willingness to be vulnerable to the actions of AA based on the expectation that AA will perform a particular action that is important to the person (Mayer et al., 1995). Trust in AA has three dimensions: (1) competence, which refers to the ability of AAs to perform the actions that meet humans’ expectations, (2) benevolence, which refers to the degree to which AAs care about the preferences of humans, and (3) integrity, which refers to the extent to which AAs conform to a set of sound principles. This study postulates that trust influences humans’ perceptual (i.e.,

perceived usefulness, perceived enjoyment, and perceived risk) and behavioral responses (i.e., intent to continue use). The underlying mechanisms of such human-AI relationships are proposed:

H1. The effect of competence on intent to continue use of AA is mediated by perceived usefulness (1a), perceived enjoyment (1b), and perceived risk (1c).

H2. The effect of benevolence on intent to continue use of AA is mediated by perceived usefulness (2a), perceived enjoyment (2b), and perceived risk (2c).

H3. The effect of integrity on intent to continue use of AA is mediated by perceived usefulness (3a), perceived enjoyment (3b), and perceived risk (3c).

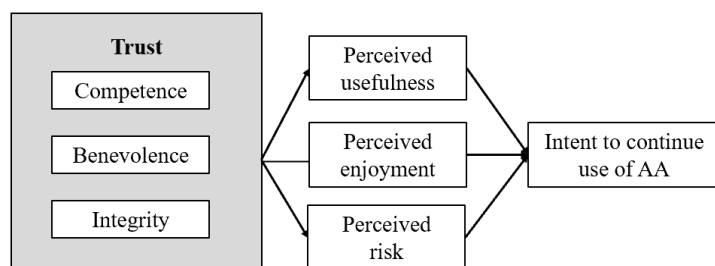


Figure 1. Research Framework

Methods and Results A web-based survey was developed and distributed to undergraduate students at a Midwest university. Measurement items of research variables were adapted from previous studies. Participants were asked to recall prior experiences of using AAs (i.e., digital assistants) and complete the questionnaire based on their experiences with the digital assistants. A total of 191 usable responses (88.5% female, 73.3% White) were used for data analyses. First, an acceptable measurement model was established using CFA with the maximum likelihood (ML) estimation in AMOS: $\chi^2(254) = 579.628, p < .001, \chi^2/df = 2.282, RMSEA = .082, IFI = .911, TLI = .894$ and $CFI = .910$. Reliabilities, convergent and discriminant validity were also confirmed. Second, to investigate the parallel mediations of perceptual responses, we conducted three PROCESS in SPSS with 5,000 bootstrapped samples (Hayes, 2013, model 4). Results revealed an indirect effect of competence on intent to continue use of through perceive usefulness ($\beta = .2341, SE = .0397, 95\% CI [.1573, .3144]$) and through perceived enjoyment ($\beta = .1090, SE = .0354, 95\% CI [.0454, .1843]$) respectively, supporting H1a and H1b. Similarly, benevolence has a significant indirect impact on intent to continue use of AA via perceived usefulness ($\beta = .2645, SE = .0424, 95\% CI [.1868, .3527]$) and via perceived enjoyment ($\beta = .1267, SE = .0399, 95\% CI [.0538, .2111]$) respectively. Thus, H2a and H2b were supported. Moreover, perceived usefulness ($\beta = .2610, SE = .0435, 95\% CI [.1835, .3536]$) and perceived enjoyment ($\beta = .1121, SE = .0294, 95\% CI [.0582, .1740]$) serve as two parallel mediators to mediate the relationship between integrity and intent to continue use of AA, supporting H3a and H3b. Nevertheless, the mediation effect of perceived risk was not significant, rejecting H1c, H2c, and H3c.

Discussion and Implications The findings of the study offer empirical evidence for the roles of trust in impacting consumers' perceptual and behavioral responses regarding AAs, specifically digital assistants in retailing contexts. Supporting the TSR and TAM models, this study demonstrates that trust in digital assistants' competence, benevolence, and integrity increased consumers' intent to continue use of AAs through perceived usefulness and perceived enjoyment. Practically, the results provide insight into how to develop and enhance relationships with customers in AA-based retail environments. For example, retailers should consider incorporating functional as well as hedonic features into the development and implementation of AAs in retailing contexts to enhance consumers' perceptions of usefulness and enjoyment.

References

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