Chapter 61
User Acceptance of IoT Applications in Retail Industry

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ABSTRACT

With the rapid advancements in the internet technology, many retailers are embracing internet of things technology to enhance customer experience and improve efficiency. Specifically, many customer-facing IoT technologies such as augmented reality, smart shopping carts, smart displays, and RFID tags are expected to change the way customers experience retailing shopping. Drawing on the technology acceptance model, trust perspective, task-technology fit, and organizational reputation perspective, this study examines the customer adoption of IoT applications in retail setting. Responses collected from 289 actual retail shoppers were analyzed using structural equation modeling. Results reveal that perceived usefulness, perceived ease of use, task-technology fit, retailer reputation, and initial trust are significant predictors of customer attitude and intentions to use IoT in retail stores. The study findings have key implications for academicians and retailers in improving customer acceptance and in delivering superior customer experience.

INTRODUCTION

The advancements in information technology is rapidly transforming the retail industry. Especially, the emergence of internet of things (IoT) is providing strategic opportunities for retailers to engage customers and transform their shopping experience. IoT is a novel technology that involves delivery

of retail services to users through smart or intelligent objects or devices. IoT is considered as a distinct step in the evolution of the retail industry as it combines the physical and virtual dimensions of retail environment to create a seamless and personalized shopping experience tailored to the customer's need (CBR, 2016). It is argued that the implementation of IoT in the retail industry is expected to bring out substantial increase in efficiencies for retailers and customers in terms of cost reduction, time savings, and increased accessibilities. Moreover, IoT enhances value through interconnectedness and networking, augmented intelligence, and augmented behavior (Kambies et al., 2016). According to Gartner (2015), IoT is identified as one of the top strategic technology trends that is expected to reshape retail opportunities through 2020. Some of the notable applications of IoT in retail industry are Radio Frequency Identification (RFID) tagged products, smart shopping carts, near field communication systems, smart shopping carts, and virtual mirrors etc. Given the rapid growth of IoT in the retail industry, it is critical for academicians and retailers to understand the adoption process.

The technology acceptance model (TAM; Davis, 1989) provides one means by which customer acceptance of new technology can be investigated. TAM is a robust yet parsimonious model which is widely used to understand the role of technology beliefs in customer attitude and intentions to use new technology. Although TAM is a useful model for explaining user acceptance, it is argued that there is a need to integrate it with other constructs that are related to the contextual factors and factors from other theories (King & He, 2006). As IoT is still in its early stages of implementation, this study considers initial trust (individual characteristic), retailer reputation (organizational characteristic), and task-technology fit (task characteristic) along with TAM technology beliefs to investigate customer adoption of IoT in a retail context. Since customers have limited experience and information with IoT technology, this study considers initial trust as the expectations of the user with the IoT technology (Li, Hess, & Valacich, 2008). Similarly, retailer reputation can act as a cue or signal for consumers to evaluate the quality of services offered by the retailer (Morgan-Thomas & Veloutsou, 2013). Finally, task-technology fit suggests that a fit between the technology features and task requirements might motivate customers to adopt new technology (Goodhue & Thompson, 1995). As there is limited research in regards to customer acceptance of IoT technology in the retail industry, this study proposes and examines an integrated model of customer acceptance of IoT products in retail stores based on technology acceptance model (Davis, 1989), task-technology perspective (Goodhue & Thompson, 1995), initial trust perspective (Li, Hess, & Valacich, 2008), and retailer reputation (Morgan-Thomas & Veloutsou, 2013). Specifically, this study centered on the following research questions:

- What are the predictors of adoption intentions of IoT technology in retail stores? Specifically, which factors (perceived usefulness, perceived ease of use, task-technology fit, initial trust, and retailer reputation) explain the adoption intentions of IoT technology in retail stores?

The rest of the article is structured as follows. The next section presents the background on internet of things, retail IoT, technology acceptance model, initial trust perspective, task-technology fit, and retailer reputation. The research framework and hypothesis development are presented in section 3. The methodology, results, and discussion of results follow, and finally conclusion and limitations of the study are presented in the last section.

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