



## Constituents and consequences of smart customer experience in retailing



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### ABSTRACT

Smart retail technologies have the potential to improve the customer retail experience by providing superior and personalized retail services. However, when shoppers have to deal with technologically sophisticated retail services, concerns arise regarding the customers' adoption and their psychological reactions towards smart retail technologies. This study explores the factors which constitute customers' experience with the smart retail technologies and examines an innovative construct (i.e. *smart customer experience*) in retailing. The development of a conceptual model explores smart customer experiences and their consequences on smart technology, customer, and retailer-level outcomes. Guided by technology adoption research, this research examines the relationships between smart customer experience, customer satisfaction, perceived risk, behavioral intentions, word-of-mouth intentions, stickiness to retail store, shopping effectiveness, and consumer well-being. This study uses a multi-phased research approach. Findings indicate that smart customer experience directly enhances satisfaction and reduces perceived risk towards smart retail technologies. Customer satisfaction increases behavioral intentions, word-of-mouth intentions, stickiness to retailer, shopping effectiveness, and customer well-being. Perceived risk reduces behavioral intentions, word-of-mouth intentions, shopping effectiveness, and stickiness to retailer. Finally, customer satisfaction and perceived risk both mediate the relationships between smart customer experience and outcome variables.

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## 1. Introduction

“Smart” has become a new buzzword in the contemporary business landscape. It describes the socio-economic and technological developments fuelled by rapid advancements in information and communication and connected technologies (Demirkan and Spohrer, 2014; Dennis et al., 2014). Recently, retailers have deployed a number of smart technologies such as interactive displays, smart shopping carts, radio frequency identification systems (RFID), shopping assistant systems, near field communication systems (NFC), and augment-reality interactive technology (ART) in stores worldwide. The implementation of such smart technologies benefits the retailers by offering better customer experience, improved firm management, cost reductions, and ultimately increased business profitability (Renko and Druzijanic, 2014). The emerging idea of “smart retailing” reflects a platform in which

retailers and customers use smart technologies to reinvent and reinforce their roles in the sharing service economy and improve the quality of customer experiences (Belk, 2010; Pantano and Timmermans, 2014). Smart retail technologies have the potential to improve the customer retail experience by providing superior and personalized retail services (Hoffman and Novak, 2015; Wunderlich et al., 2013). According to a recent report, investments in smart retail technology (SRT) are estimated to have been around \$14 billion in 2015, a figure which will likely grow by 20% annually to \$36 billion by 2020 (Research and Markets, 2015). However, as shoppers begin to encounter with technologically sophisticated retail services, there have been concerns regarding customer adoption and their psychological reactions towards the smart retail technologies. Therefore, exploring the factors which constitute customers' experience with the smart retail technologies is an important research issue.

Within this context, the Marketing Science Institute's 2014–2016 *Research Priorities* emphasizes the need for further research measuring and managing customer experience in the new technological environment (MSI – Marketing Science Institute, 2014). Both researchers and practitioners underscore the importance of improving customer experience

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in the rapidly changing context. With smart retail technologies, customers enjoy greater autonomy in creating their own experience, which calls for more research into understanding the constituents of customer experience (Ostrom et al., 2015). Customer experience measurement and management is a promising area to meet the challenges posed by the changing marketing landscape (Homburg et al., 2015). A recent report by Gartner (2014) estimates that 89% of firms intend to compete on customer experience, making experience one of the important attributes of innovative firms.

However, there is no consensus in the literature on the constituents of customer experience (Homburg et al., 2015). In particular, there is a lack of rigorous empirical studies investigating the *smart customer experience* in the contemporary marketing and retailing landscape which has been triggered by smart retail technologies. As Pantano and Viassone (2014) argue that technological innovations in retail stores should respond to the shoppers' expectations and preferences, understanding the shopper experience and outcomes of smart retail technology innovations is important for retail managers. Hence, motivated by these trends, the overall aim of this study is to investigate the concept of customer experience in the smart retailing context. For the purposes of this study, we have defined a *smart customer experience* as an important component of smart retailing focusing specifically on the technology-mediated (e.g. smart technology) retailing experiences and their enhancement through personalization, interaction, real-time monitoring, perceived control, and relative advantage. We seek to examine this innovative construct (i.e. *smart customer experience*) in retailing from the customer perspective. Although researchers have explored the smart retail technologies such as augmented reality, shopping assistants, and RFID technology (Huang and Liao, 2015; Müller-Seitz et al., 2009), and provided insights regarding the factors that drive customer adoption of these smart retail technologies (Evanschitzky et al., 2015), there remains no thorough examination of customer experiences with smart technology and its consequences in smart retail setting (e.g. Chuah et al., 2016). Thus, we have pursued the following objectives in this study:

- (1) To identify the constituents of smart customer experience
- (2) To model the outcomes of smart customer experience at the smart technology, customer, and retailer levels

The findings of this study contribute to both information systems and marketing literature. First, this study contributes to the literature by empirically investigating smart technology in the retail context. Our second contribution lies in examining the *constituents* of customer experience with smart retail technology and identifying the key dimensions of smart customer experience. Finally, we contribute to smart technology and service innovation in the retail industry by empirically examining the consequences of the smart customer experience. Implications exist for retailers adopting smart technology, giving way for successful implementation of SRT and offering several suggestions to enhance customer experiences with smart technologies.

The structure of this paper is as follows. The next section contains a discussion of theoretical background and presents the research model with associated hypotheses. Next the research methodology, data analysis and results are discussed. The next section contains a discussion of the findings in terms of managerial and theoretical implications. Finally, the limitations of the study are acknowledged and directions for future research are discussed.

## 2. Theoretical background

### 2.1. Smart technology

Advancements in Internet technology have led to the increased possibility of remotely connecting to the products, which has given rise to the new form of devices or objects that are 'smart' (Wunderlich et al., 2013). The concept of smart has emerged from the development of

smart cities. Past researchers commonly related smart with intelligent or digital objects. Baz (1996) defined smart as any object or system having the twofold ability of sensing and controlling. In addition to the sensing and controlling capabilities, smart technology includes connectivity with other devices and networks (Haque et al., 2013). Giffinger et al. (2007) consider awareness, flexibility, transformability, synergy, individuality, self-decisiveness, and strategic behavior to be key attributes of smart technology.

Harrison et al. (2010) associated smart with instrumented, interconnected, and intelligent objects. Smart technology captures real-time data through use of digital objects or devices, integrates the data, and allows stakeholders to make better operational decisions. Gretzel et al. (2015a, 2015b) describe smart technology as "technologies supporting new form of collaboration and value creation that lead to innovation, entrepreneurship and competitiveness (p. 179)." Höjer and Wangel (2015) argue that "the novelty is thus not so much the individual technologies, products or services but the interconnection and the synchronization of these and the systems they include, so that they work in concerted action (p.4)." Thus, smart technology can be defined as value-creating connected and synchronized smart objects or devices that interact with one another, sense the environment, and guide and control their functions autonomously.

### 2.2. Smart retailing

Smart retailing is certainly a distinct step in the evolution of ICT in retailing wherein the physical and the digital dimensions of retailing are merged (Kim et al., 2016; Pantano and Priporas, 2016; Pantano and Timmermans, 2014). While traditional retailing (including e-retailing) primarily emphasizes retail channels (touchpoints) and a dyadic interaction (between firm and customers), smart retailing underscores the interactions among the customers, smart objects, products (brands), retailer, and retail channel (touchpoints) (see Table 1 for major differences between e-retailing and smart retailing). Smart retailing describes the presence of smart objects or devices that are connected with each other through wireless technology (Atzori et al., 2010). By augmenting the physical retail world with intelligent objects possessing the ability to sense, communicate, and compute, smart retailing creates a collective network (Guo et al., 2013). Smart retailing provides a sense of flexibility not offered in traditional retailing. Furthermore, by connecting the physical and digital worlds, smart retailing allows real-time interaction with the customers (Gregory, 2015). This enables retailers to acquire new capabilities in terms of monitoring, controlling, optimization, and autonomy (Porter and Heppelmann, 2014). Retailers have the opportunity to utilize each of these capabilities to create value for customers and define their value propositions (Kim et al., 2016). These capabilities also allow retailers to iteratively develop their business models and create an augmented shopping experience for

**Table 1**  
Key differences between e-retailing and smart retailing.

Attributes	e-Retailing	Smart retailing
Space	Digital	Bridging digital and physical
Core technology	Websites	Innumerable sensors, smartphones, and apps
Nature of interactivity	Between customers and webstores; customer to customer	Customer to retailer Customer to customer Customer to products (brands) Products (brands) to retailers Machine to machine (touchpoint to touchpoint)
Nature of experience	Online shopping experience	New personalized and seamless customer experience emerges as a result of the nature of interactivity.
Service provision	Always-on services	Always-responsive services which is context specific

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