A systematic review of the effects of technologies on customer experience and behavior in physical retailing

Masoumeh Hosseinpour, Sascha Steinmann, Holger Roschk, George Tsalis

Abstract

Technologies impacted and continue to change retailing. Technologies can facilitate and inhibit customer perceptions, decision making processes, and purchase behaviors. This systematic review focuses on the effects of several technologies available in physical retailing on customer experience and behavior-related variables (i.e., customer responses). Previous literature focuses on how technologies in physical retailing affect consumer responses, rather than on what the effects of technologies in physical retailing can be on consumer responses. We will identify relevant studies by conducting a systematic search to gain an understanding of the impacts of using technology on customers affective, cognitive, and behavioral responses. The findings will contribute to knowledge on customer behavior in physical retailing. They also provide guidelines for retailers to implement appropriate technologies to facilitate consumer responses in physical retailing.

Keywords: Technology experience, physical retailing, customer behavior

Track: Retailing and Omni-channel management
1. Introduction

The 21st century has witnessed a rapid development of innovative technologies (Roggeveen & Sethuraman, 2020). Facing these changes, retailers nowadays use a variety of technologies (e.g., mobile services, voice assistants, Internet 4.0) in the hope of achieving positive effects on customer perceptions, decision-making processes, and purchase behaviors. Yet, customers differ in how they see technologies, the extent to which they feel comfortable around them, and not all customers necessarily embrace technologies for enhancing their shopping experience (Alexander & Kent, 2020; Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019; Hilken et al., 2018). Thus, technologies can both facilitate and inhibit customer perceptions, decision making processes, and purchase behaviors (Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019). Regardless of possible equivocal effects, technologies drastically impacted and continue to change retailing (Roggeveen & Sethuraman, 2020).

On the retailer’s side, technologies, such as push messages and product recommendations in mobile shopping applications, allow targeting the right consumers. On the consumer’s side, technologies, such as barcode scanning, can help in making informed decisions for selecting and buying the right products and services (Grewal, Roggeveen, & Nordfält, 2017). In addition to those changes, technologies shape the physical encounter of retailers and consumers. Technologies can create a high integration between the online and physical channels, which for example has made the physical shopping experience more convenient for customers (Grewal, Noble, Roggeveen, Nordfalt, & Noble, 2020). Other technologies provide shopping information and assist customers with their purchase, such as touch-free voice assistants (Roggeveen & Sethuraman, 2020). Food chains like McDonald’s for example provide such digital assistants so that customers can order their food by voice instead of touching an interactive scree (or using the counter in the restaurant). Another example is self-checkout that can influence the shopping experience and behavior in physical retailing. While these technologies differ in the way customers use and interact with them, they have share a common objective. They all have been implemented to enhance the overall customer experience in physical retailing and to positively influence purchase decisions, customer satisfaction, and customer loyalty.

Customer experience in physical retailing is a part of the customer journey (Lemon & Verhoef, 2016). During the customer journey technology, devices, and innovative applications have become an important touchpoint between customers and retailers (Grewal et al., 2020; Wagner, Schramm-Klein, & Steinmann, 2020). In this systematic review, we focus on those technologies that consumers can directly experience in physical retailing for
three reasons. First, contemporary in-store experiences have become highly competitive due
to e-commerce that can both threaten and strengthen retailers (Roschk & Hosseinpour, 2020).
For example, the fashion retailer ZARA announced closing nearly up to 1200 stores
worldwide in the next two years because of their e-commerce success (Hanbury, 2020). Due
to the pressure from e-commerce, retailers pay increasing attention to their physical retailing
and aim to perfect their customer experience on site. Having a unique in-store experience is
that important even some internet born retailers like Amazon recognized it and opened
physical stores to create an optimal experience for customers (Schaverien, 2018). Second,
technology is not considered anymore as a “cool idea” which customers would find in a store
(Alexander and Kent, 2020). In fact, it has become an integral part of the atmospheric cues
presented in physical environments like music and scent (Poncin & Mimoun, 2014). Third,
customers still have a high preference to shop in physical stores and, at the same time, are
interested in using and experiencing technologies and devices to support their purchase
decision (Grewal et al., 2017).

Taking these points together, it is vital for retailers to understand the impact of
technologies on customers in physical retailing as well as the interplay between the physical
and virtual or technological world. As a result, retailers can create a distinctive in-store
experience that supports customers’ decision making and purchase behavior. Thus, it is
essential to understand the effects of technologies on consumers’ experience and behavior in
physical retailing, as is also called for by recent research (e.g., Dekimpe & Geyskens, 2019).

2. Conceptual Framework

Previous literature provides different frameworks for describing the effects of
customers’ experience with technology in physical retailing (Hilken et al., 2018; Inman &
Nikolova, 2017; Roggeveen et al., 2020; Roggeveen & Sethuraman, 2020). These
frameworks provide a conceptualization of how different factors, among which are for
example technological attitude, privacy concerns, satisfaction, and trust, relate to consumers
technology adoption and consumer behavior. In brief, one could say that these frameworks
describe how technologies should influence consumers. At the present, a considerable body
of literature is developing that analyzes the effects of technologies on customer responses in
physical environments. So, the question becomes of what we actually observe. As mentioned
earlier, consumers still prefer physical retailing, yet not all outcomes of technology usage in
physical retailing are necessarily positive. For example, while technologies can facilitate
purchase decisions (Alexander & Kent, 2020), they can also reduce consumers’ recall of in
store marketing stimuli and lead consumers to fail reaching their shopping goals (Atalay, Onur Bodur, & Bressoud, 2017). Thus, the aim of the paper is to synthesize existing research looking at what we actually observe from present evidence, in terms of obtaining a differentiated picture about the positive and negative customer responses to technologies in physical retail environments. In this way, integrative research presents an important reflection of current findings that can contribute to theory development (MacInnis, 2011).

Our main purpose was to develop a conceptual framework that guides us to integrate the empirical findings in the research field (see Figure 1). So, we developed this framework based on the relationships among the variables analyzed by researchers. The independent variable is the presence of technologies in physical retailing. As dependent variables we looked at different consumer responses comprising customer experience (e.g., cognitive and affective dimensions) and behavior-related variables (e.g., purchase decisions, number of items bought per shopping trip, loyalty, and word of mouth). The effects of technology on customer responses can be mediated for example by experienced emotions while using the technology, retailer innovativeness, and perceived ease of use and usefulness of the technology. Moderator variables are the type of technologies, e.g., customer innovativeness, involvement with the technology, and gender as a demographic characteristic.

**Figure 1. Conceptual Framework for the effects of technologies in physical retailing on customer responses.**

### 2.1 Presence of technologies in physical retailing

Given the wide range of technologies in physical retailing, we selected those deemed most relevant to retailers guided by two criteria. First, we considered having “control” over technologies by customers. This means those technologies which customers can get involved
with, use, or experience while being in physical retailing. Second, we considered two cases of “technology ownership” by applying the criteria from Alexander and Kent (2020) and Beck and Rygl (2015). In one case, there are technologies that both customers and retailers can own. Retail mobile phone applications are such technologies that can be installed on both customer’s personal mobile phones (customers’ ownership) and on retailers’ mobile phones (retails ownership). In another case, retailers can only own some technologies and provide them for customers in physical retailing (e.g., self-checkouts). These criteria yielded the following set of technologies – beside others – to be considered: e.g., mobile phone applications, tablets, augmented reality, virtual reality, voice search, magic mirrors, virtual fitting rooms, self-checkouts, and touch screen kiosks.

2.2 The customer experience and behavior in physical retailing

Customer experience is “holistic in nature and involves the customer’s cognitive, affective, emotional, social, and physical responses to the retailer” (Lemon & Verhoef, 2016). Customer experience happens during the customer journey. The customer journey involves three stages, namely pre-purchase, purchase, and post-purchase (Roggeveen & Sethuraman, 2020). The physical retailing is an important part of the customer journey, and it is the place where retailers can create a unique experience for their customers apart from seeing, feeling, and touching products (Mosquera, Olarte-Pascual, Ayensa, & Murillo, 2018). For instance, in the pre-purchase stage, customers interact with the brand, recognize their needs, search, and decide for purchase (Lemon & Verhoef, 2016; Roggeveen & Sethuraman, 2020).

The three stages of the customer journey exist in physical retailing and technology can also be provided on each stage. For the pre-stage, for instance, in physical retailing customers can use their smartphone to make price comparison of a product. The purchase stage is the obvious stage in physical retailing where customers decide to make the purchase or not. At this stage, they can use different technologies, such as a variety of payment methods and click and collect offers (Alexander & Kent, 2020). The post-purchase stage is related to the actions that happen after purchase mostly in relation to service or product return such, as scanning the receipt QR code on customers’ personal mobile phone.

Literature shows different customers experience and behavior with technologies in physical retailing. Some customers might enjoy using technologies and find them attractive (Grewal, Ahlbom, Beitelspacher, Noble, & Nordfält, 2018). Those customers might react positively to technologies and spend more time in physical retailing (Alexander & Kent, 2020; Hui, Huang, Suher, & Jeffrey Inman, 2013). While others get distracted when using
technologies in physical retailing leading them to deviate from shopping purposes (Atalay et al., 2017). So, for customer experience, we consider both positive and negative effects. The examples of positive effects are for customer to experience a fast and time-saving shopping or to experience an organized brand. While some negative effects are for them to experience a disappointing shopping with discounted experience to the brand (Alexander & Kent, 2020). For customer behaviors, we also consider both effects. This choice has roots in the deviating results in literatures. Alexander and Kent (2020) show that not only technology can enhance purchase behavior but it also motivates customers to revisit the retailer. However, Sciandra and Inman (2014) show that presence of technology in physical retailing leads to shopping less unplanned items.

2.3 Mediators and moderators of the impact of technology in physical retailing

Mediator variables are retailer innovativeness, customers’ experienced emotions while using technology in-store, perceived ease of use and usefulness of the technology. Retailer innovativeness refers to the retailer’s ability to introduce new technologies and applications and make them useable for customers in physical retail environments. Customers perceive the retailer’s innovativeness differently. If a retailer can provide the technology which can be perceived as more innovative, it may lead to received better responses from customers (Lin, 2016). Customers’ express emotions when using technology. These emotions are customers’ reactions when using technology that changes their normal routines (e.g., using self-checkouts instead of paying at the cashier; Poncin & Mimoun, 2014). Generally, there are four emotions in relation to technology usage, namely achievement (e.g., happiness, pleasure), challenge (e.g., excitement, arousal), loss (e.g., anger, disappointment), and deterrence (e.g., anxiety, fear) (Beaudry & Pinsonneault, 2019). Customers, who have more positive emotions as a result of using technologies in physical retailing, may show greater responses to those technologies. Perceived ease of use is the degree to which a customer believes using a technology in retail store would be easy. Perceived usefulness is the degree to which a customer believes using a technology could facilitate his/her performance. Studies show positive effects of perceived ease of use and usefulness on customers’ intention to use a technology (Natarajan et al., 2017). We examine these variables as mediator variables to test their effects on the relationship between technologies in physical retailing and customer responses (Hosseinpour & Terlutter, 2019).

Moderator variables are the type of technologies, customer innovativeness, involvement with the technology, and gender as a demographic characteristic. Naturally, the
technologies in physical retailing are different in terms of functionality or usage. For instance, functionality and usage of self-checkout are different from voice assistant. Generally, customers show better responses with the type of technologies which appear to be more convenient for them (Mosquera et al., 2018). This means that the more convenient the type of technology is, the more positive can be the effects of that technology on customer experience and behavior (Voropanova, 2015). Innovativeness of customers describes customers’ willingness to embrace new technology and adopt new ideas (Rogers, 2003). Customers who have higher perceived innovativeness might show more positive levels of experience and behavior in relation to the presence of technology (Natarajan, Balasubramanian, and Kasilingam, 2017).

Customers’ involvement with products or services is defined as feelings of interest and passion with those products or services (Goldsmith & Emmert, 1991). Higher involvement with products or services typically generates more positive attitudes and usage of those products or services (Lee, Chiu, Liu, & Chen, 2011). Transferring this logic to customers’ involvement with technologies, higher involvement with technologies may lead to different (i.e., more positive) experience and behavior. Gender is one of the most common studied demographic characteristics and appears relevant in relation to technologies. Literature shows differences between females and males in terms of using and reacting to technologies. For instance, in terms of using virtual fitting rooms, Mosquera et al. (2018) show that females use virtual fitting rooms to ask for advice from the room, while males use them rather to look out for other sizes and colors.

3. Methodology

3.1 Literature search

To reach the aims of this paper, we will perform a systematic integration of prior literature in which we will conduct a comprehensive bibliographic search using keywords, such as “technology experience,” “technologies,” “technology infusion,” “in-store experience,” “customer experience,” “retailing”, and their combinations. We also use the selected technologies as keywords. The searched databases will comprise, EBSCO Business Source Complete, Science Direct, Springer, and the Social Science Citation Index.

3.2 Selection criteria

A study will be qualified for our systematic review if it uses a qualitative, quantitative, or mixed-methods approach, focusing on at least one of the specified
technologies in physical retailing, and provides sufficient information to derive conclusions on the effects of technology on consumer responses in physical retailing. We do not consider a study if it (a) focuses on the technologies that were not available in physical retailing (e.g., Chabot) or (b) focuses on technologies used in physical retailing that are intended to facilitate internal processes of the retailer (e.g., RFID). In this case customers are not enabled to have a direct experience of the technology in physical retail environments.

4. Discussion

Technologies rapidly change retailers. When there is a technology, retailers often get excited to implement that technology for their customers or use it only because their competitors have it available (Roggeveen & Sethuraman, 2020). Yet, retailers should be aware that not all customers accept and have positive attitudes towards technologies (Alexander & Kent, 2020). This paper can provide some insights about what the effects of technologies in physical retailing are on consumer responses providing a guideline for retailers to choose the right technologies in relation to facilitating consumer responses. The main implication of this paper is to show retail managements which of the selected technologies create positive or negative customer experience and behavior. This implication helps retail managements to improve their customer experience and brand management by focusing on those technologies that create more positive experience and better customer behavior. It also help them to know the technologies, which create negative responses so that to plan managing the negative responses.

References
Dekimpe, M. G., & Geyskens, I. (2019). Retailing research in rapidly changing times: On the


