

Design Principles for Co-Creating Digital Customer Experience in High Street Retail

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Abstract. While customers increasingly embrace online shopping, many retailers in high streets struggle to attract profitable customers to their stores and retain them. Establishing digital customer experiences may increase customers' value perceptions, improving the competitive position of high street retailers. Customer experience creation in retail is a multi-faceted construct that, amongst others, depends on the service interface, atmosphere, assortment, price, past experiences, and the social environment in which retail service is co-created while customers shop. However, extant customer experience theory insufficiently accounts for the transformative power of recent mobile technology that enables digital and contextual service. In a conceptual approach, we develop eight propositions to frame *digital* customer experience, enabled by mobile technologies. In line with these propositions, we propose eight design principles that enable and constrain IT artifacts for co-creating digital customer experience.

Keywords: Digital Customer Experience, High Street Retail, Context-aware Service, Location-based Service, Design Principles

1 Introduction

For centuries, city centers, with their high streets, markets, and central shopping districts, have been lively and vibrant places for social activities, culture, exchange, and shopping. High street retail now is subject to structural transformation, induced by the digitalization and by changing shopping behavior [1]. Customers increasingly turn towards digital channels to shop, which diminishes revenues for small and medium-sized independent retailers that lack a digital strategy, leaving them in a struggle to retain their market position [2]. A recent study predicts for Germany that by 2020, more than ten percent of retail stores will be shut down [3]. While many high street retailers fail to counteract this trend effectively, e-commerce strongly innovated on customer experience creation in recent years. Coming down a long road from tiny product online images and cumbersome order processes, they now offer online-fashion-magazines (e.g., *NET-A-PORTER*), personal video advisory chats (e.g., *Butlers*), and personal style guides (e.g., *Stilight*). Besides fulfilling hedonic needs, online shops yield utilitarian value [4], since they are available 24/7, provide home delivery, numerous payment options, and digital interactions with personnel and other customers through

social media. Moreover, online shops capitalize on analyzing personalized data to offer customer-specific recommendations or promotions [5].

We maintain that improving the in-store customer experience and thus better fulfilling customers' expectations is a viable path for high street retailers to retain or increase their market share, leveling some of the advantages of online retailers [1, 6]. Customer experience has been defined as "internal and subjective response customers have to any direct or indirect contact with a company" [7, p. 117] and conceptualized in a model for customer experience creation [8].

The increasing diffusion of mobile technologies profoundly transforms interactions between customers and retailers and our understanding of the conventional customer experience construct. Customers now are "online in-store" [9, p. 11] and use smart devices for price comparison, experience reports, and product search. Smart devices that access the Internet and sense situational information on location, identity, status, and time yield potentials for personalized service offerings [10, 11].

Against this background, we discuss how smart mobile technologies and contextual information on customers enable *digital customer experience creation*. Our research goal is to develop design principles that guide and constrain IT artifacts, which are required to co-create such digital customer experience in high street retail. In line with other papers that identify design principles that challenge current design theories [12], our paper is conceptual. Our research is embedded in a larger design science research project [13, 14] to design and evaluate service systems for co-creating digital customer experiences in high street retail. This paper covers the initial research stage by identifying the problem, motivating its relevance, and establishing a theoretical foundation that informs the subsequent design of IT artifacts.

In Section 2, we discuss current customer experience theory, context-aware service systems, and mobile technologies. In Section 3, we motivate updating customer experience theory by investigating the influence that contextual data supplied by mobile technology has on the determinants and moderators of customer experience. In Section 4, we sketch design principles to guide the design of IT artifacts for digital customer experience creation. In Section 5, we conclude with a research agenda.

2 Research Background

2.1 Customer Experience Theory

Companies have started to recognize the importance of actively managing the customer experience. As a multidimensional construct, customer experience comprises the customer's "cognitive, emotional, behavioral, sensorial and social responses to a firm's offerings during the customer's entire purchase journey" [15, p. 74]. Any responses result from communication between retailers and customers (*communication encounter*), from interaction with staff or service applications (*service encounter*), and from the actual use of a product or service (*usage encounter*) [16]. Verhoef et al. developed a holistic conceptual model of customer experience creation in which they identify the social environment, service interface, retail atmosphere, assortment, price

and promotions, retail brand, customer experiences in alternative channels, and previous experiences with the company as independent variables impacting on customer experience [8, p. 32]. Situational factors (e.g., type of store, location, and season) and consumers' orientation (e.g., hedonic or utilitarian) moderate the determinants' effects on an individual customer's experience [8].

Although the term *context* is not explicitly named in the conceptual model, both information on the situational factors and the consumer's goals characterize the situation in which a customer experience is created. Context has been conceptualized as "any information that can be used to characterize the situation of an entity. An entity is a person, place or object that is considered relevant to the interaction between a user and an application, including the user and the application itself" [17, p. 3]. Consequently, contextual information on consumers can yield insights for retailers to support customer experience creation [10].

From a Service Science perspective, contextual information is a resource that can be used to co-create value in service systems for high street retail [16–18]. The Service-Dominant (S-D) logic of marketing refers to "value-in-context" to emphasize that value is co-created using a dynamic, context-dependent configuration of actors and resources [18]. Mobile devices and other hardware must be added to and integrated with other resources in a service system so that customers can provide their contextual information and retailers can personalize their service delivery. Drawing from Dey and Abowd, we conceptualize a service system to be context-aware, "if it uses context to provide relevant information and/or services to the user" [17, p. 6], where relevancy depends on the user's situational needs.

2.2 Mobile Technology for Context-Aware Service Systems in Retail

Service designers can select from a wide range of available hard- and software technologies such as smart devices, sensors, cameras, and digital signage to augment the retail servicescape [19, 20]. Customers further carry myriads of sensor-based Internet-enabled mobile devices with them, which can also be integrated into the servicescape. Combining the customers' and retailer's devices with back-stage systems allows capturing, processing, and using contextual information anytime and anywhere.

The notion of pervasive commerce subsumes customer interaction with digital technology in-store [10]. Digital technology can augment all parts of the customer journey, including active and passive touch points [1]. Active touch points comprise person-to-person and person-to-machine interaction, where customers and retailers apply digital technology to facilitate the encounter [16]. Machine-to-machine communication between customers' and retailer's devices (e.g., Wi-Fi access points, Bluetooth beacons) augments passive touch points. In contrast to active touch points, passive touch points can initiate communication automatically in the background.

Previous work on context-aware mobile services can be related to different communication and service encounters. Smartphones can be used for mobile customer segmentation and user fingerprinting [21]. Advances in biometric face recognition and passive monitoring allow monitoring customer behavior, movement patterns, and

interaction with digital touchpoints [22, 23]. These approaches provide the means for very precisely targeted communication encounters.

In-store service encounters comprise among other things recommendations, checkout, and payment [1]. Researchers take co-creation into account and have proposed situation-aware and personalized mobile recommendation systems [24]. Kowatsch and Maass analyze, how mobile recommendation agents influence customer behavior [25]. Dahlberg et al. illustrate, how other forms of payment such as mobile payment using Near-Field Communication (NFC) technology in smart devices replace traditional payment in retail stores [26]. There is first evidence of the acceptance and positive impact of mobile services on the retail shopping experience [20].

Even against this background, research on digital customer experience creation that is enabled by the technologies mentioned above is scarce [1, 15, 27]. Widespread networked mobile devices and accompanying software systems provide the technological foundation for identifying and using contextual information to create digital customer experience. The customers' digital footprint can be recorded in-store and be interlinked to customer information from other channels. Retailers can use this strategy to adapt and further evolve digital services into the physical servicescape, which were formerly exclusive to e-commerce.

3 Digital Customer Experience in High Street Retail

Combining the benefits of e-commerce (e.g., product information, ratings, recommendations) and high street retail (e.g., immediate product availability, haptic and visual product inspection, personal advice) in context-aware service systems transforms our understanding of customer experience creation. We define digital customer experience to be the subset of customer experience that is facilitated using digital touch points [1]. Digital customer experience consequently spans across all forms of communication, service, and usage encounters that incorporate digital and mobile technology [16]. We now revisit and extend current customer experience theory [8] to include more detailed aspects of the customer's context that are provided by mobile technologies. Regarding the determinants and moderators of customer experience, we derive eight propositions on how mobile technology and digital contextual information enable digital customer experience creation in high street retail, and thus, we conceptualize digital customer experience creation based on updating the extant literature [8, 15].

Person-to-person service encounters co-create value in interpersonal actions [11]. Store personnel, other customers in the store, and the own peer group [28] make up the *social environment* in which customer experience is co-created [8]. Customer experience is influenced by interactions of customers with service staff and other customers, even if not all of these persons are physically present in the front-stage of the service system (i.e., in a store), but remain in the back-stage (e.g., at home) [16]. With mobile technology such as smartphones, customers can reach out to a much larger social environment. On the one hand, customers can go online in the store to access user-generated online reviews and online communities [9], a reference group of

acquaintances and strangers. On the other hand, customers can connect to their known and trusted reference group comprised of family, friends, and acquaintances that remain back-stage, during shopping in a retail store. While it is fair to say that people are embedded in the value- and belief-systems upheld by them and their social references groups, we argue that the ability to communicate with other people synchronously or asynchronously goes beyond these belief-systems. For instance, the ability to chat with family members on whether to buy some jeans might have a more immediate effect on a purchase decision than has a feeling that buying the jeans is consistent with (or deliberately contradicts) the general belief system held by one's family. Based on the observation that a person's social environment is an important factor for customer experience creation [8], mobile technology provides an opportunity also to take a person's digital social environment into consideration.

Proposition 1. *Mobile technologies enable connecting customers with their social reference groups and with acquaintances and strangers in online communities, even if these people are not physically present in the same retail store.*

As regards *service interfaces*, mobile technologies provide means to personalize interactions between customers and retailers [25] and to extend service interfaces beyond the physical boundaries of stores. Potentials for digital customer experience creation arise in the identification of customers and their location within the store, through new touch points for communication and service encounters, indoor navigation, the collection of behavioral information, and the automatic interaction with in-store hardware [20, 22, 23]. Collected contextual data can be combined with socio-demographical information. Given the technical means to identify customers across different channels, information on past service encounters as well as information on the customer's shopping history that originates from other channels such as online shops can be analyzed in back-stage processes. These processes comprise techniques from customer relationship management, data analytics, and recommender systems [24, 25]. Customers can receive personalized content such as recommendations or special offers directly on their smart devices. At the same time, service personnel can be supplied with behavioral information on the customer to better tailor their service interactions to the customer's needs [1]. On the other hand, customers can check product reviews and prices online, beyond the retailers' influence. For both reasons, retailers must consider the different influences that digital channels can have on the in-store service interface.

Proposition 2. *Mobile technology enables digitized and personalized interactions between customers and service persons, informed by data analytics in the back-stage of a service system.*

Customer self-service on smart devices, info terminals, and self-checkout augments the *retail atmosphere* with technology. Info terminals and digital signage can automatically react to identified customers and initiate an interactive session with the customers and their devices [23, 29]. Audio-visual installations can highlight specific products and support navigation. Whereas traditional customer touch points are located in-store, beacon technology enables retailers to reach into the community space outside their store [30]. Nearby customers can receive personalized offerings on their mobile devices, for instance, rewarding their loyalty and luring them into the store. Inside a store, mobile technology can augment the servicescape, for example with virtual reality.

The success of these digital channels can be measured easily, for example by the number of people that have received notifications and by the number of people that subsequently participated in these communication encounters [16].

Proposition 3. *Mobile technology augments the physical servicescape in stores with virtual environments. Thus, it extends the servicescape into community spaces, beyond the physical boundaries of stores.*

E-commerce benefits from the low marginal costs of storage space, which allows for “long tail” business models in which the available *assortment* exceeds the product palette of physical stores by far [31]. Customers value product diversity and large assortment sizes but can be overwhelmed as to which product alternative to choose from [31]. Online shops support product discovery and product selection processes by providing advanced search technologies and recommendations. Moreover, online marketplaces such as Amazon or eBay aggregate and integrate the product ranges of many online retailers to increase their assortments even further [32].

Technological advances now allow bringing the concept of online marketplaces to physical shopping districts. When information on the physical product ranges of local retailers is digitally available, groups of local retailers can combine their inventory data in digital marketplaces that serve as shared digital front-end for all connected stores. In effect, customers in shopping districts would get access to an extensive assortment available in their immediate physical proximity. Therefore, we propose to combine the benefits of online marketplaces (large assortment, advanced search technologies) and high street stores (immediate product availability, haptic and visual inspection). Based on shared inventory data, retailers might even recommend products provided by other local retailers on a commission basis and generate cross-selling effects [1]. For example, a tailor might recommend matching shoes from a nearby store to a customer by sending a product link to the customer’s smartphone. Furthermore, retailers connected to such digital marketplaces might provide combined offers such as receiving a 20% coupon on shoes when buying a suit. Also, out-of-stock situations and resulting customer frustration can be mitigated, when retailers can refer customers to nearby stores that have a product in stock. Lastly, hybrid offline-online offers such as digital shelf space can mitigate the problem of limited shelf space. That is, a high street retail store has the most popular items in stock and an extended product range available at a remote warehouse [11], which can be shipped directly to customers’ homes.

Proposition 4. *Mobile technology enables groups of retailers to combine their assortments to overarching assortments in high street retail. Besides, retailers can establish hybrid offline-online assortments.*

High street retailers face high overhead cost and *price* pressure from rival e-commerce offerings [31]. Based on mobile technologies, retailers can perform customer segmentation and use contextual information for price differentiation (e.g., discounts and personalized promotions for loyal customers) [21]. For instance, the location-based service provider *Foursquare* measures loyalty regarding “check-ins”, i.e., how often a customer has actively visited a place and checked-in online on his mobile device. Additionally, smart devices equipped with NFC technology can free up space in the customers’ wallets by replacing traditional code- or radio-frequency-based loyalty/reward cards [26] to identify the client as a member in the loyalty program.

Proposition 5. *Mobile technology enables price differentiation among identified customers as well as implementing loyalty programs on an individual level of detail.*

About *previous customer experiences*, current offline retail falls behind online retail for two reasons. First, since service encounters are not documented, and customers seldom give vocal feedback on their experiences, retailers do not know how satisfied customers were in previous encounters. Thus, they lack knowledge on the quality and crucial elements of their service. Apart from stores that use loyalty programs to identify their customers or the stores that “know” their customers on a personal basis, customers remain anonymous for most offline retailers [11]. This anonymity prevents identifying their previous experiences [7, 15]. With mobile technologies, retailers might identify customers and link them to customer reviews provided on online rating platforms, such as *Yelp*. Therefore, retailers can compensate bad experiences in the past or further strengthen customer loyalty. Besides, retailers might also access experiences their customers have had in other stores or with online shops.

Proposition 6. *Mobile technology enables a more focused development of customer loyalty, based on identifying customers and reviewing their past customer experiences in offline stores and online shops.*

Customers increasingly use multiple *channels* to interact with retailers, i.e., the customer’s journey spans across online and offline channels as well as person-to-person and self-service encounters [33]. Tightly integrating information flows between these channels is necessary to get a holistic picture of the customer [7] and to provide personalized service [11]. The identification of the customer at all communication and service encounters, even across different channels, is a crucial prerequisite for omnichannel retail in general and for integrating mobile technology and digital contextual information in a service system in particular. In traditional person-to-person service encounters, customers can identify themselves by stating their names or through loyalty cards, so that the store personnel can look up the customer in their information systems. The technologies mentioned above provide capabilities for machine-to-machine communication, where the information systems in the store can automatically interact with smart devices the customer carries while browsing through the store [20, 30]. To identify a particular customer, the customer’s devices must be linked to the client’s central account. This linkage can be set up when the customer installs the store’s app on his smartphone and logs in with his account. To sum up, our propositions for creating digital customer experience require customer identification and data integration across all personal and non-personal, online and offline touch points [29], which can be done through mobile technology. With omnichannel strategies [33] the online channel can support in-store shopping through digital services.

Proposition 7. *Mobile technology enables retailers to identify customers at all touch points and allows them to implement omnichannel strategies.*

With the proliferation of mobile technologies, *situation moderators* become detectable as digital context information. Contextual information provided by mobile technology includes information about the person carrying the devices, about the location of these devices, and about the distance of persons/devices to other persons/devices [10]. With these data, high street retailers can implement entirely new data-driven service. For instance, aggregating contextual data enables analyzing how

groups of people move along high streets [1], an analysis that is unfeasible in non-digital environments, whereas it has been performed for many years in online retail. Likewise, due to personalized Information Systems, *consumer moderators* can be assessed with mobile technology.

Using and analyzing contextual information is bounded by the willingness of customers to provide data on their context to other actors. Literature reminds us that customers often draw a fine line between positive experience through added-value and privacy concerns through misuse of data [34]. The EU General Data Protection Regulation, effective May 2018, aims at decreasing privacy issues through transparency. It mandates service providers to inform users of the purpose and terms of personal data processing before data are collected in a more comprehensive and user-friendly way [35]. Previous research further underlined that customers are more willing to consent to provide contextual information if they are fully informed of the app's behavior regarding data collection, processing, and sharing with third parties [36]. When customers understand why sensitive information is needed and what their benefits are, they can give informed consent.

Proposition 8. *Given that sufficient levels of data security and privacy are complied with, mobile technology can elicit situational moderators and consumer moderators that influence customer experience, enabling retailers to personalize service and analyze the behavior of customers and groups of customers in downtown areas.*

4 Design Principles for Digital Customer Experience Creation

Our overall goal is to design service systems that foster digital customer experience creation in high street retail. Engineering these service systems requires developing innovative IT artifacts that enable the actors involved to engage in experience co-creation. To inform the design of these IT artifacts, we now identify design principles that build on the propositions we developed in the preceding section.

Design principles (DP) are justified statements or rules that guide and constrain design actions [12–14]. In the spirit of design science research, design principles are inferred from kernel theories that inform how useful and relevant IT artifacts need to be designed and implemented [37]. Building on the notion of a service system [38], we systematize our design principles with a framework (see Fig. 1) in which digital customer experience is co-created by networked customers and networked retailers.

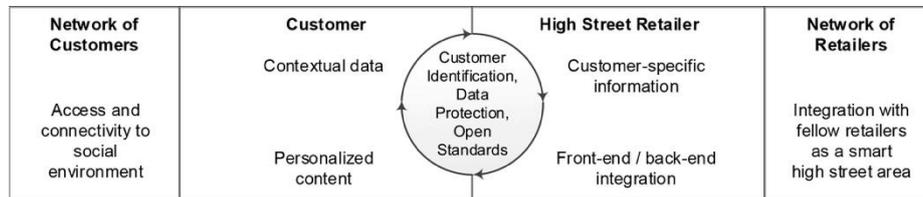


Figure 1. Service system for digital customer experience creation in high street retail

By introducing mobile- and self-service technology to the servicescape, retailers transform existing touch points and add digital touch points to the service interface

(propositions 3, 7). To provide personalized service (propositions 2, 5, 6, 8), every touch point should (a) identify the user, (b) access contextual information, and (c) collect data on the current encounter. It is fair to assume that customers expect the same seamless and convenient interaction they know from online shops from service encounters with mobile- and self-service technology. Thus, all devices involved in customer interactions should identify users automatically. For instance, when customers enter the store, they would receive a welcome message on their phone (service front-stage), while the visit is logged at back-stage systems. While browsing the store, they can read personal recommendations on info terminals. Finally, the point of sale terminal at the check-out recognizes the user and updates the customer's record.

DP 1. IT artifacts must seamlessly identify customers at all digital touch points.

European and national data protection laws restrict businesses from collecting and processing data on customer behavior without prior consent. Also, customers might easily feel overwhelmed and out of control, when digital technologies automatically collect their data. Consequently, fair use of information, transparency on data processing practices, and data protection policies have to be major features when developing IT artifacts and setting up the service system (proposition 8).

DP 2. IT artifacts must comply with international and national data protection laws. They need to inform users of data processing practices and request the informed consent of a user. Data protection regulations and ethical standards must be respected.

Connecting people and digital entities with each other is a prerequisite for creating digital customer experiences. Network configurations are ever changing, since network participants, IT services, and mobile technologies change and evolve at fast speed. Open standards and protocols build the foundation for designing IT artifacts that interface with these technologies and adapt to their evolution at the same pace (propositions 1, 2, 4, 7).

DP 3. IT artifacts should use open standards and protocols to interact with both external IT services and mobile devices via direct communication.

With the consent of a customer (proposition 8), mobile technology provides contextual data, including the customer's current location, trajectory, preferences, and past purchases in offline or online channels, creating an omnichannel shopping experience (propositions 3, 6, 7). In-store-hardware automatically connects to the user's devices to obtain and send data, connecting stores with customers.

DP 4. IT artifacts must network customers' mobile devices with in-store hardware, to obtain contextual data from customers and to send data to their devices.

Traditional person-to-person encounters benefit from contextual data. Service personnel should be provided with the collected data on customers entering their store, to provide personalized service encounters (proposition 2, 6). In a similar vein, information on past encounters with the customer allows for individual price differentiation, e.g., by rewarding the customer for his loyalty (proposition 5).

DP 5. IT artifacts that support service persons should present user-specific information, if available, automatically upon service encounters.

Integrating IS in the front-stage and back-stage of a store is a prerequisite for creating digital customer experiences. For instance, mobile technology requires access to the retailer's inventory control systems to run product availability checks, issue

reservations, use payment services, or access augmented reality applications (propositions 2, 3, 7).

DP 6. *IT artifacts require access to systems in the back-end of retail stores.*

Digital customer experience unfolds its full potential only when reaching beyond single retailers. The combination of inventory data from multiple retailers to an integrated high street assortment yields cross-selling potentials by extending product recommendation across stores and cross-promotion potentials (propositions 2, 4). For instance, when buying a suit at a boutique, the service person can recommend matching shoes from a nearby store. This approach can also mitigate out-of-stock situations by referring customers to another retailer that has the requested product in stock. Therefore, IT artifacts that enable digital customer experience should allow for easy integration of multiple participants.

DP 7. *IT artifacts should be designed for networks of retailers, allowing them to create a seamless digital customer experience in a smart high street.*

Customer experience is also influenced by a customer's social environment. Based on mobile technology, customers interact with their peers through social networks and online customer review services (proposition 1). Retailers can tap into these data to elicit their customers' experiences, even if not identifying individual customers. For example, a digital shopping adviser can build on online reviews on digital platforms. Linking customers to their reviews is another way of providing better-personalized service to them (proposition 6).

DP 8. *IT artifacts should explore the customers' social environment, including interfaces to online social networks and online review platforms.*

5 Conclusion

Improving in-store customer experience is a viable path for high street retailers to rebuild a competitive edge. With the omnipresence of smart mobile technologies, interactions between customers and local retailers are transformed, allowing additional communication channels and service encounters. However, current customer experience theory [8, 15] insufficiently accounts for the transformative power of digital and context-aware service systems in high street retail.

We contribute to theory by suggesting avenues to conceptualize *digital* customer experience creation, based on revisiting and extending (conventional) customer experience theory. We developed eight propositions for digitizing the customer experience construct. Building on these propositions, we postulated eight design principles that guide and constrain the design of IT artifacts that serve to co-create digital customer experience. Also, we contribute to practice by highlighting how digital customer experiences can be fostered with current mobile technologies.

In future work, we will design and evaluate IT artifacts that enable digital customer experience in high street retail. We imagine a community platform that brings together retailers and customers and considers the peculiarities of the individual high street. It comprises a customer-facing shopping companion app and a back-end system for retailers to plan, issue, monitor, and evaluate digital interactions with their customers.

In a cyclic action design research approach, we will design and evaluate all IT artifacts in close cooperation with retailers and customers in four city centers in Germany.

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