

Mirroring E-service for Brick and Mortar Retail: An Assessment and Survey

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Abstract. The digital transformation increasingly impacts the competitive retail market structure in favor of e-commerce and digital business models, while many Brick and Mortar (BaM) retailers are struggling to meet customers' expectations. Supported by the customer adaption of e-commerce and digital technologies, this paper applies the lens of channel complementary theory to BaM. We examine, which e-service touchpoints from e-commerce can be transferred to the physical servicescape of BaM retail to complement customer journeys. Drawing from the dominant design theory, we first assess leading e-commerce solutions to identify dominant e-service touchpoints, which are then mirrored for their application in BaM retail. Second, we surveyed 250 shoppers to elicit the likeliness of use regarding these touchpoints. Our results provide a foundation for both academia and retail to advance the knowledge of relevant e-service touchpoints in BaM.

Keywords: Brick and Mortar Retail, Omni-Channel, Touchpoint, Dominant Design Theory, Channel Complementary Theory

1 Introduction

The digital transformation is an ongoing organizational change process that leverages technology-enabled innovation to optimize existing business processes and to digitally (re-)engineer business models [1, 2]. In retail, the digital transformation increasingly impacts the competitive market structure in favor of e-commerce and digital retail business models and also bolsters customers' expectations towards e-service offerings in BaM [3–5]. In particular, small and medium-sized enterprise (SME) Brick and Mortar (BaM) retailers, which comprise the majority of stores in Germany, face strong competition with pure online players and large retail chains that embrace technological innovations [6, 7]. Over the last years, e-commerce in Germany steadily realized double-digit growth rates [8, 9], while SME retail turnovers are projected to decline by up to 30 % until 2020 in many cities [10]. To cope with the digital transformation, large retail chains are heavily investing in channel management to become omni-channel retailers that are able to seamlessly interact with customers through any physical and

digital channel expected by them [11, 12]. While selecting appropriate channels and technologies to adopt for this purpose is already challenging for large retail corporations [13, 14], it can appear like a Herculean task for SME BaM retailers [7]. However, BaM retailers that are unable to develop new (digital) strategies to address customers' expectations, are threatened to become "amazon-ed" [15]. When asking customers for their reasons to choose e-commerce over BaM retail, comparably lower prices to BaM retail (36 %, [8])—contrary to popular belief—are only one aspect mentioned, while a considerable number of customers also names comfort and ease of use (50 %, [8]), 24/7 availability (39 %, [8]), and low purchasing efforts as motivators [8, 16]. Hence, non-financial levers do exist in e-commerce that could turn out to be beneficial in the BaM context (e.g., the integration of 24/7 e-service to increase BaM store visibility).

Particular to e-commerce is the offering of *e-service touchpoints*. An e-service is understood as the application of digital competencies "through deeds, processes, and performances for the benefit of another entity or the entity itself" [17, p.26], where the "delivery is mediated by information technology" (IT) [18, p.341]. Literature differentiates touchpoints into instances and classes [19]. The former touchpoints describe moments of contact, i.e., any "instance of communication between a customer and a service provider" [20, p.846]. This contact belongs to a touchpoint class, which denotes "an abstract interaction interface to the customer" [19, p.4]. When using the term (e-service) touchpoint, we refer to a touchpoint class. Established technologies that provide access to these touchpoints in the physical servicescape of BaM retail are, for example, smartphone and in-store terminal applications (apps) [21, 22]. Against this background, it is fair to assume that *mirroring*—adapting e-service touchpoints, originally provided in e-commerce, to the physical servicescape—represents a good starting point for BaM retailers to transition towards an omni-channel environment.

Still, retailers can select from a wide variety of conceivable e-service touchpoints to offer as value propositions that potentially create value for and with the customer [17, 23, 24]. In particular, it remains unclear, whether customers in the physical servicescape of BaM retail are likely to use the same e-service offerings they are used to in e-commerce. Empirical studies on omni-channel retail are sparse [13], and BaM retailers are lacking guidance regarding the selection and mirroring of e-service touchpoints [22]. To shed light on this matter, our research question reads as follows: *What e-service touchpoints, enabled by smartphone and in-store terminal applications, should be mirrored to the physical servicescape of brick and mortar retail?*

We followed a two-step approach to answer this question. First, we identify a set of major touchpoints offered by leading e-commerce platforms, group them, and mirror them for their application in a traditional BaM retail servicescape. Second, we surveyed 250 shoppers to elicit the likeliness of use regarding these touchpoints.

The remainder of this paper unfolds as follows: Section 2 positions our study within the body of knowledge. Section 3 presents the set of mirrored e-service offerings, whereas Section 4 introduces our survey research method and the survey results. Section 5 discusses our results and relates them back to theory. We close with an overview of our contributions and an outlook on future research in Section 6.

2 Theoretical Background

Customers have become accustomed to an increasing level of digital touchpoints in all facets of their lives [25], and also expect e-service offerings in traditional BaM environments [12, 21]. In this context, the term hybrid customer interaction is used to describe a behavior, where customers are present simultaneously in both the physical and digital worlds [26]. For example, customers use their smartphones in-store as a “second screen” to compare prices, while interacting with a salesperson [27]. Phenomena such as “showrooming” [5] or using e-service touchpoints by other service providers during the store visit can be cannibalizing for BaM retailers.

On the other hand, hybrid customer interaction can also be leveraged by retailers, when they are able to provide own e-service touchpoints for customers to use in-store [28]. Our reasoning follows channel complementary theory [29], which explains that traditional and new media formats for implementing communicative functions may exist alongside instead of replacing each other. The theory suggests that the function is a more important consumption driver than the medium itself [29]. In our context, e-service touchpoints can be understood as such communicative functions. Some authors provide evidence of channel synergies in retail [30] and suggest a “bricks-and-clicks” approach, where insights from the BaM channel are integrated into an online channel [28]. However, the opposite direction—adapting knowledge from e-commerce to the physical BaM servicescape—has not received much attention. Further, most omni-channel initiatives focus on integrating *existing* digital and physical channels and touchpoints [5, 11–13]. Yet, particularly traditional BaM retailers that only have the stationary sales channel lack information regarding which e-service touchpoints they should provide to their customers [30]. It remains unclear, which e-service touchpoints potentially yield value for customers and would likely be used by them [31]. So far, there is a scarcity of empirical studies on omni-channel retailing [13], and only a limited amount of studies gives advice regarding digital technologies and e-service touchpoints to integrate into the physical servicescape [e.g., 3, 14, 22, 24].

This article suggests *mirroring*—complementing a traditional BaM retail channel with e-service touchpoints that have been adapted from proven designs in other channels. The lens of the dominant design theory provides us with a starting point for the investigation. The theory argues that a product category establishes a representative set of functions over time, which is then seen as standard [32]. The lens has previously been applied to technological milestones such as microprocessor designs, PC operating systems, and television systems [32, 33]. The dominance of a technology can be investigated on different levels of analysis. One level is the consideration of “technological artifacts as composed of subsystems that are linked together [...] through specific interfaces” [33, p.274]. In our context, these artifacts can comprise the whole omni-channel system or a particular digital channel such as an e-commerce solution. As e-commerce is a mature domain [3], it is fair to assume that leading e-commerce systems have set such a dominant design, which comprises a set of functions that represent the consolidated requirements of various types of users [32]. In the consequence, the e-service touchpoints offered by leading e-commerce systems should

meet customers' requirements to a large extent and provide value for them. Hence, they also might be relevant for customers shopping in the physical BaM retail servicescape.

While the mirroring approach appears promising for BaM retailers, it remains unclear, if and to what extent customers are likely to use these mirrored touchpoints. Particularly, Suárez reminds us that “a dominant design is not always that design which has greatest technological sweetness” [32, p.417].

3 Mirroring E-service Touchpoints for Brick and Mortar Retail

3.1 Identification of Dominant E-service Touchpoints

We assessed leading e-commerce solutions to identify the e-service touchpoints commonly offered in e-commerce. This assessment covers both the propriety solutions of the three German e-commerce market leaders (*amazon.de*, *otto.de*, and *zalando.de*) [34] and the five leading commercial off-the-shelf e-commerce solutions in the German market (*Shopify*, *Magento*, *WooCommerce*, *XT:Commerce* and *Shopware*) [35]. As the latter solutions can be customized by the retailers to serve their needs, we selected concrete instances. To cater for potential variances resulting from national peculiarities, customizing, and different product categories offered, we sampled three major Western European e-commerce retailers for each solution, yielding a sample of 18 online shops.

We employed a qualitative web-content analysis approach [36], where two of the authors with backgrounds in retail and service science manually simulated typical customer journeys on the online shops. In an open coding process, we inductively derived a total of 35 different e-service touchpoints that guide, support or enable the customer during its customer journey. Since we focus on the dominant design, we only kept those touchpoints that were offered by at least four online shops. Further, logistics-related touchpoints, as well as ones that require an online shop (e.g., *Click & Collect* and *Click & Reserve*), have been eliminated, because they do not constitute an independent BaM e-service touchpoint. 19 unique e-service touchpoints remained.

Figure 1 shows the identified e-service touchpoints from e-commerce and maps them to their mirrored BaM e-service counterparts. Some e-service touchpoints were mirrored into more than one touchpoint, whereas other e-service touchpoints have been merged into a single mirrored touchpoint, yielding a total of 20 mirrored BaM e-service touchpoints. Based on the type of value proposition, we grouped the touchpoints into four distinct categories that occur along the customer journey, viz., search and navigation, product information, selection and checkout, and communication and support.

3.2 Mirrored E-Service Touchpoints

Search and Navigation Touchpoints are research-supporting shopping aids [37] that help customers in the pre-purchase phase of their journey [12] to find and locate relevant products and services from the retailer's offered portfolio. These touchpoints reduce the search time and potential information overload customers might experience.

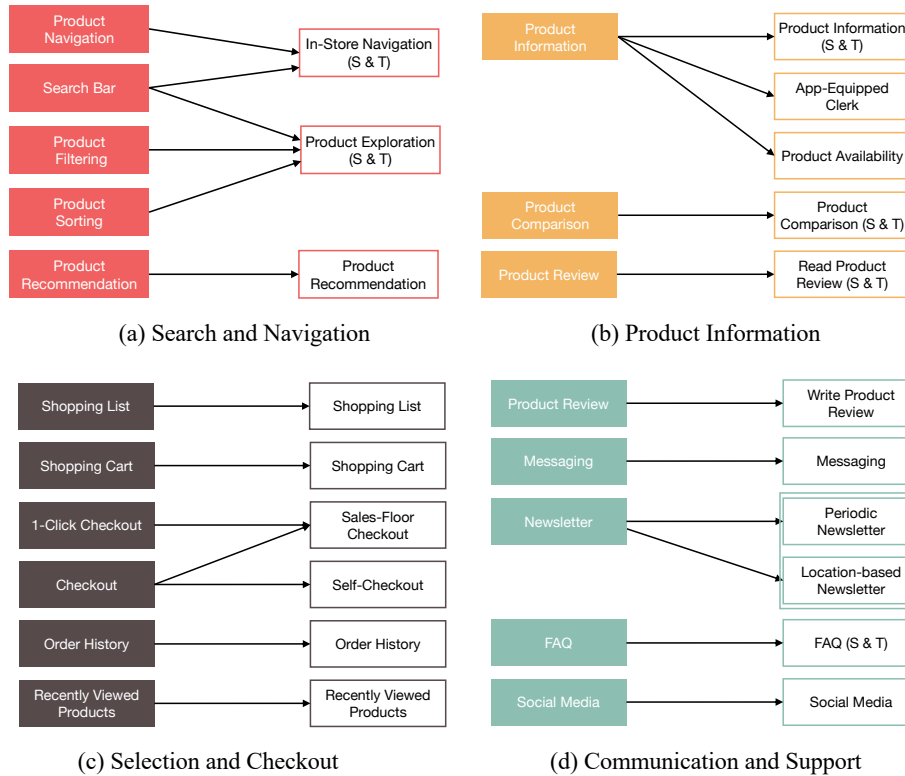


Figure 1. Mirroring of e-commerce touchpoints to BaM e-service touchpoints, grouped by touchpoint category (e-commerce touchpoint $\xrightarrow{\text{mirroring}}$ mirrored BaM e-service touchpoint)

In-Store Navigation Touchpoint: 83 % of the e-commerce solutions under consideration provide a global text search to directly track down desired products. This touchpoint is typically enhanced by auto-completion to assist with spelling and to provide first results before the search request is completed. Mirrored to the BaM context, this e-service touchpoint is particularly useful for large department stores and for customers unfamiliar with the store layout. It can support customers in locating a desired product and provides them with in-store directions. This touchpoint is feasible for both in-store terminals and smartphones. A smartphone-hosted app may use the tracking capabilities of the underlying device to provide real-time turn-by-turn navigation to a product.

Product Exploration Touchpoint: Due to their typically extensive product portfolios, online shops provide various means to browse and explore the portfolio. Sorting (e.g., lowest price or best reviews first) and filtering (e.g., product categories, brands) capabilities are provided to narrow down the product portfolio. Even though BaM stores fall short in terms of portfolio sizes when compared to online retailers [38], most retailers still offer a wide range of products. While e-commerce search touchpoints give direct product access, the portfolio might be harder to perceive in-store due to product

presentation. In effect, potential BaM customers can experience issues in their orientation and selection process. Mirroring existing product exploration touchpoints to the BaM environment is facilitated by accessing the retailer's product data through terminals and smartphones, allowing the customer to apply the known filtering and sorting operations.

Product Recommendation Touchpoint: More than two-thirds of the considered e-commerce solutions feature a product recommendation engine. Based on behavioral customer data such as order history and recently viewed products, the e-service recommends products similar to previously considered items (content filtering) or ones that customers with similar taste have bought (collaborative filtering) [39]. By now, recommended products make up to 35 % of e-commerce purchases [40]. A mirrored product recommendation service takes into account behavioral customer data such as order history, shopping lists, or even their current in-store location. A smartphone app collects this information and, in turn, makes product recommendations.

Product Information Touchpoints assist the customer with retrieving of detailed information about considered products, and aid in the product selection process. As such, they primarily take place in the pre-purchase phase of the customer journey [12].

Extended Product Information Touchpoint: Urged by the inability of customers to physically experience products online, retailers responded by providing extensive textual and multi-media product presentations, which has led to online retailers giving more detailed information than their BaM counterparts. Customers can access a mirrored product information touchpoint by scanning product tags with their smartphones to receive detailed multi-media product information. Similarly, customers can carry products to an in-store terminal, scan their tags, and retrieve the information.

App-equipped Clerk Touchpoint: Some customers prefer personal service over e-service to get product information. Typically, store associates must have basic knowledge of all products in their responsible department. In case of detail questions, they might not be able to provide a correct answer. By providing store associates with a product information touchpoint (e.g., via a smart device), they can quickly look up the requested information for the customer.

Product Availability Touchpoint: Two in three analyzed online shops inform on product availability, i.e., whether a selected item is in stock, how many pieces are left, and send notifications when an out-of-stock product becomes available again. In a BaM store, product availability is visually apparent. However, even if a product is not on display, it might be available in the back room or a nearby warehouse. Through the introduction of a product availability touchpoint, which can be accessed by scanning a product's shelf label or manually searching a product, customers can access backstage warehouse availability information, trigger a refill or get a refill notification. As such, frustration from out-of-stock situations can be mitigated.

Product Comparison Touchpoint: As seen in the extended product information touchpoint, many online stores allow to compare the information linked to different products (e.g., size, price, and technical features) in a tabular fashion to improve the customer's selection process. Hence, a mirrored e-service touchpoint may allow

scanning the tags of multiple products with a smartphone or in-store terminal app in order to obtain structured information for an efficient comparison.

Read Product Review Touchpoint: Product reviews, typically written by other customers, are one of the major information sources for online shoppers in their decision process [41]. The touchpoint can be mirrored as an extension to the product information service. In effect, the collective experience of the community in the form of ratings and reviews can be shown next to the retailer-provided product information.

Selection and Checkout Touchpoints support customers by helping them to plan future purchases, retaining control of the current purchase process, facilitating the checkout process, and keeping track of the past purchases [12].

Shopping List Touchpoint: E-commerce solutions frequently allow registered customers to create shopping lists or wish lists to save product references for later consideration. Interestingly, this touchpoint does not have its origins in the digital realm but was previously mirrored from traditional paper-based lists from the offline world. Now, the e-service implementation can be mirrored back to the physical realm. Customers can use a smartphone app to add selected products to a shopping list. Besides remembering relevant products, shopping lists allow for easy access to recurring purchases and to prepare store visits in advance.

Shopping Cart Touchpoint: Similar to shopping lists, shopping carts first had a physical representation before getting implemented in e-commerce. Digital shopping carts (or shopping bags) contain all selected products, display the subtotal and commonly allow to search and filter their contents. Mirrored back as an e-service for BaM, customers scan selected products before placing them into the physical shopping cart. Using their smartphones, customers can keep track of their projected spending and compare their selection to previously created shopping lists.

Sales-Floor Checkout Touchpoint: In e-commerce, customers do not have to wait in a queue or depend on a cashier to complete the checkout process, which renders it very efficient. One way to mirror a more efficient checkout to the physical realm lies in equipping store associates with smart devices to scan products and check out the customer on the sales floor. Hereby, the queue at the sales counter can be skipped.

Self-Checkout Touchpoint: Another way to digitally increase checkout efficiency is self-checkout. While these systems originally were introduced as a means for retailers to reduce labor cost [42], they can also facilitate efficiency gains for customers (e.g., skipping queues). In conjunction with the shopping cart touchpoint, a mobile self-checkout becomes feasible, where customers would only have to complete their purchase with electronic payment. This touchpoint satisfies shoppers' demand for "sofortness", similar to what they are used to from e-commerce.

Order History Touchpoint: In online shops, registered users usually can access prior orders to find out what has been bought. Mirrored to a smartphone app in the physical realm, a digital order history can help to keep an overview of what has recently been bought, and also to support recurring purchases such as groceries. The touchpoint also supports keeping track of the spending over time.

Recently Viewed Products Touchpoint: During online shopping, customers often interact with dozens if not hundreds of different products, which makes it hard to keep

track of the items recently viewed. Respective touchpoints support customers by caching the accessed items. While BaM store portfolios are not as extensive as their online counterparts, they might still be sufficiently large to make it difficult for customers to keep track of all viewed products and retrieve the most desirable one (e.g., make a choice from different tried-on clothes). Again, customers can use their smartphone to scan the tags of considered products.

Communication and Support Touchpoints are used throughout the whole customer journey [12] to facilitate marketing, customer engagement, and customer care.

Write Product Review Touchpoint: Besides customers digitally consuming reviews, providing ratings and reviews themselves can also be mirrored by means of a smartphone app to the BaM context. By providing their opinion, customers support other shoppers and may also help retailers to adjust their product portfolio w.r.t. the customer reviews.

Messaging Touchpoint: Even though online retailers do not have the traditional shop-floor personnel, many of them provide customer service by means of a (video-)chat interface. Mirrored to a BaM store, an instant messaging touchpoint can ease interactions with store associates, especially when no associate is nearby.

Newsletter Touchpoint: Newsletters typically inform about a retailer's special offers or events. In contrast to conventional mass mailing such as catalogs, digital newsletters can be personalized. Personalized digital newsletters in a BaM environment can be viewed by the customer through a smartphone app. Further, a location-based newsletter touchpoint can exploit the smartphone's technological capabilities to enable location-based proactive newsletters that are sent out when a customer is passing by the store.

FAQ Touchpoint: Beyond product-related information, online retailers typically provide a list of answers to so-called "Frequently Asked Questions" (FAQ), which deal with topics such as warranty handling, delivery times, return policies or payment methods. Since FAQs are not customer-specific, this touchpoint can be mirrored both via smartphone and in-store terminal. An FAQ touchpoint helps to clarify time-consuming questions in advance that might otherwise be asked during consultations with store associated or at the checkout counter.

Social Media Touchpoint: At its beginnings, online shopping was a mere functional activity without a prevalent social component. With the rise of social media, the concept of "social commerce" emerged [43], where customers share their shopping experiences with others. While customers in BaM can directly interact with friends and other shoppers in-store, access to social media would enable interaction with a much larger group of acquaintances and strangers online. A retailer-provided social media touchpoint can, for example, facilitate discussions between customers or enable customers to showcase newly bought items.

4 Assessment of Mirrored E-Service Touchpoints

4.1 Survey Research Approach

Quantitative survey research [44] was employed to identify the shoppers' likeliness of use regarding the mirrored e-service touchpoints. We conducted a hypothetical thought experiment where participants were asked to imagine being in a fictitious "smart store", instead of presenting and surveying particular instances of the envisioned touchpoints. In an online survey, the participants were first introduced to the study context and the four categories of touchpoints that the fictional smart store will offer to complement traditional store operations (see Section 3). Afterward, each e-service was briefly introduced in one paragraph. Given the nature of the study where touchpoints were presented on a rather abstract level, we did not apply measures such as the Technology Acceptance Model [45], which are focused on well-specified particular instances of technology. Instead, for each touchpoint, we surveyed its likeliness of use by means of a single item five-point Likert-scale (e.g., "how likely would it be for you to use such a product availability service?"). When applicable, the question was asked twice—both for accessing the touchpoint in-store through a smartphone and through an in-store terminal. Finally, participants had to provide demographic information. In light of the overall relevance of BaM retail in society, we did not limit the survey to a particular audience. Instead, we recruited a diverse sample of more than 300 participants of at least 18 years of age from the Western world using *prolific.ac*. The recruiting platform aims at providing researchers with representative samples of users regarding age, gender, and educational level. An attention check question (adapted from [46]) was used to filter inattentive participants, which yielded 250 valid responses. The mean age of the respondents was 32.69 years (median 31 years, SD 9.96 years) and 53.60 % were female. Participants countries of origin were the United Kingdom (145), the United States (52), Canada (12), Portugal (9), the Netherlands (4) and sixteen other European countries (28). The average completion time for the survey was 9 minutes and 37 seconds. Participants were rewarded £1.15.

4.2 Survey Results

Figure 2 provides the distribution of the likelihood of use of the mirrored e-service touchpoints. The touchpoints are grouped by the four categories, and within each category, the e-service touchpoints are sorted in descending order by their average rating. The global average rating is 3.58 points. The social media service ranked worst with an average of 2.23 points, while the self-checkout service ranked best with an average of 4.35 points. An inter-group comparison revealed that respondents are most likely to use selection and checkout touchpoints (\bar{O} 3.92 points). Product information touchpoints (\bar{O} 3.79 points) and search and navigation touchpoints (\bar{O} 3.73 points) ranked similarly, whereas respondents are much less likely to use communication and support touchpoints (\bar{O} 2.94 points). The social media ($\sigma^2 = 1.71$; $\sigma = 1.31$), periodical newsletter ($\sigma^2 = 1.64$; $\sigma = 1.28$), location-based newsletter ($\sigma^2 = 1.60$; $\sigma = 1.27$), and messaging touchpoints ($\sigma^2 = 1.48$; $\sigma = 1.22$) were also the most controversial ones.

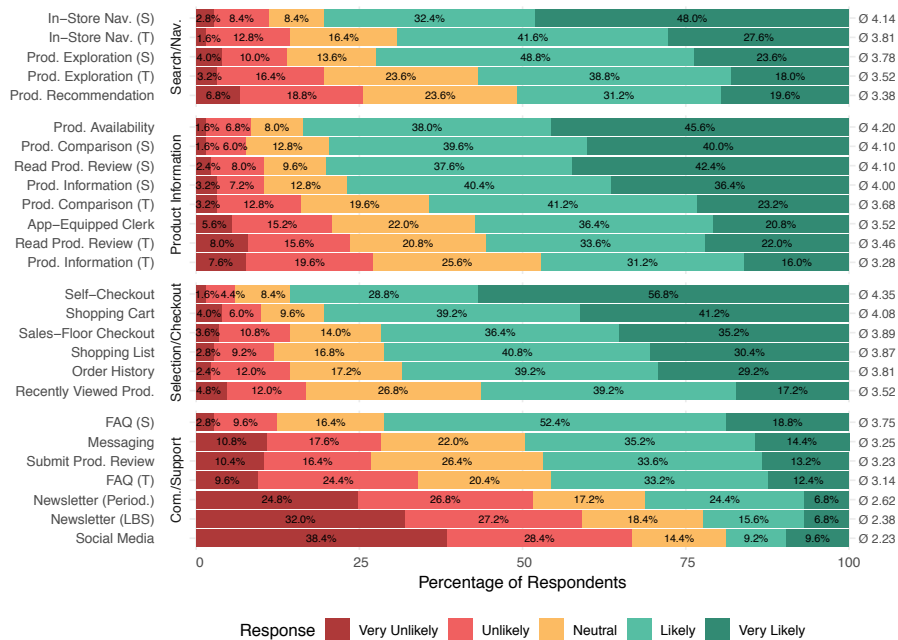


Figure 2. Distribution of likelihood of use per e-service touchpoint (grouped by touchpoint categories; within groups ordered descending by average score)

Pairwise Spearman’s rank coefficients ρ between each e-service and the respondents’ age indicated no significant relationships for most touchpoints, except for product comparison via in-store terminal ($\rho = .48$; $p < .001$), reading product reviews via in-store terminal ($\rho = .45$; $p < .01$), and accessing FAQs on an in-store terminal ($\rho = .39$; $p < .01$), which all show a positive relationship to increased age. On the contrary, the social media service ($\rho = -.43$; $p < .01$) has a negative relationship to increased age. Regarding relationships between the respondents’ gender and their answers, Kendall’s τ_b did not indicate significant relationships, except for a weak positive relationship between female respondents and the messaging service ($\tau_b = .16$; $p < .01$). However, women on average voted .08 points higher than men. Although not statistically significant, women, in particular, had a higher likeliness to use a smartphone (.31 points) or an in-store terminal (.38 points) to read product reviews compared to male respondents.

Six e-service touchpoints were surveyed regarding the two service interfaces smartphone (denoted (S) in Figure 2) and in-store terminal (denoted (T) in Figure 2). Results show that respondents prefer smartphones over terminals by an average of .50 points, and every e-service was ranked higher when accessed via a smartphone app. Differences were lowest for the product exploration service (.26 points) and highest for the extended product information service (.71 points). No unfamiliarity effects regarding mobile devices and e-commerce were evident, which could have influenced participants’ responses. 99.20 % of respondents report owning a smartphone and 182

participants (72.80 %) report using their smartphone or tablet in-store. All but one respondent (99.60 %) have purchased goods and services online at least once. Nine participants (3.60 %) use e-commerce on a daily basis; 105 participants (42.00 %) report weekly e-commerce activities; whereas every second participant roughly shops online once a month. Ten participants use e-commerce as infrequently as once a year.

5 Discussion, Limitations, and Future Research

We mirrored e-service touchpoints for their application in BaM, and assessed shoppers' likeliness to use them to complement traditional service. Our findings offer several implications for academia and practice.

First, an overall positive response towards complementary e-service touchpoints provides support for channel complementary theory in the BaM retail domain [29] and supports the assumption that customers have a positive sentiment towards e-service in BaM retail. The results show that customers are likely to use e-service touchpoints in the physical retail servicescape to complement and improve their customer journey. In particular, selection and checkout touchpoints have a very positive response. It is fair to assume that most customers are used to the well-rated self-checkout touchpoint [47] and a mere-exposure effect might have occurred, i.e., respondents rated the touchpoint well just because of familiarity [48]. Nevertheless, most well-rated touchpoints comprise research-supporting and solution-oriented shopping aids [37], which increase customers' shopping effectiveness (find the right products) [22] and efficiency (fast service with high quality) [31, 49].

Next, the customers' age has a positive impact on the likeliness to use in-store terminals instead of smartphone apps. Also, it has a negative impact on the use of social media. These findings support prior studies on the use and adoption of self-service technology [42, 47, 49]. According to these studies, technology anxiety and effort expectancy have been found to determine the intention to use self-service technology. In-store terminals closely resemble other well-established self-service technologies such as ATMs or ticket machines that are common for a few decades. Consequently, also older customers are familiar with these types of technology and might be more confident in using them [47]. The proliferation of smartphones, on the contrary, has just started in the last decade, which implies comparably less experience with this technology [42] and potentially higher technology anxiety [49]. Nevertheless, customers overall prefer smartphone apps to access e-service touchpoints. While location-independence, the degree of customer-retailer connectivity, and perceived control over the shopping process are known influences on the use of smartphone apps in retail [21], future research is needed to clarify the determinants of in-store smartphone app usage. Lastly and in line with Yoo and Gretzel [50], female customers are more motivated to provide product reviews (e.g., to help other customers).

As with any research, our work comes with some limitations. Inherent to the survey research method are potential negative side effects or biases. Considering the rather "demanding" responses from the survey, some respondents might suffer from a "good-subject effect" where participants try to guess the purpose of a survey to give pleasing

answers [51]. Additionally, we did not survey participants' prior experiences with the non-mirrored touchpoints, which will likely have influenced individual responses. This leaves room for further research on the influence of prior experiences in one channel on other complementary channels. As regards the unit of analysis of our study, we assessed the likeliness of use regarding the mirrored e-service touchpoints, without providing concrete touchpoint implementations and contextual factors. The relevance of e-service touchpoints is likely to differ, among others, based on the categories of goods sold and the size of the store. For example, an in-store navigation service might be more useful in a large fashion store that sells a plethora of different articles, than in a small delicatessen store where customers can find products easily without digital support. Also, the relevance of product information touchpoints might also be related to the complexity of the product, i.e., customers might require less information on a broom than on a robot vacuum cleaner. Nevertheless, our assessment provides a foundation and justification for BaM retailers to conduct individual, detailed analyses of e-service touchpoints that are feasible and economically viable for them.

Omni-channelling and e-service touchpoints in BaM are still emerging and developing at a fast pace [14, 24], leaving ample room for further research. First, retailers require instruments for decision support regarding the introduction of e-service touchpoints, as there is a variety of opportunities that can be considered by BaM retailers. In particular, SME retailers with limited financial resources require support, as high the upfront cost is known as a strong inhibitor for the adoption of digital channels [7]. This raises the question of whether the introduction of novel e-service touchpoints is feasible for SME BaM retailers. Further empirical work is required to investigate retailer-sided adoption and customer acceptance of e-service touchpoints in BaM retail with special consideration on the categories of goods sold, the size of the store, and the retailer's competitive strategy (e.g., individualization vs. cost optimization) [22]. Such research could result in a decision calculus that embeds impact, adoption, and success factors. Second, besides in-store terminals and smartphone apps, there are other digital technologies that enable the implementation of e-service touchpoints in the physical servicescape [14, 22, 24]. Further research could compare and contrast these partly complementary technologies w.r.t. the e-service touchpoints provided and effects on the customers observed. Third, in the long run, a set of common e-service touchpoints in the physical servicescape might eventually prevail. Using the multiple case study method, research can then identify a dominant design [32] of BaM e-service touchpoints to further support touchpoint management in BaM retail. However, even with such a dominant design, ongoing research is needed due to the continuous nature of the digital transformation [1]. As illustrated in our discussion of the different e-services in Section 3, e-commerce and BaM retail mutually stimulate each other in terms of digital innovation. First, e-commerce tried to introduce touchpoints similar to those known from BaM (e.g. social components). Now, e-service touchpoints get introduced to the physical servicescape. This interplay provides an interesting area for ongoing investigations.

6 Conclusion

Given that many traditional BaM retailers struggle to keep up with the digital transformation and the induced competitive disadvantage, this paper offers two primary contributions to research and practice: First, we applied dominant design theory to identify major e-service touchpoints that are commonly implemented in leading e-commerce software solutions, grouped them according to their value proposition, and mirrored them to complement the physical servicescape of BaM. Second, we assessed these touchpoints by means of an online survey. In support of channel complimentary theory, results showed that customers are likely to use e-service touchpoints in-store. Customers preferred touchpoints that aid in product search, information, and selection as well as facilitate an efficient customer journey. Communication, social and support services, on the contrary, were surprisingly undesirable. In line with related studies, in-store terminals have been identified as the preferred choice of the older generation, while smartphones are the overall favorable method to access e-service. Future research can build upon these insights to design and implement pilots for the most promising e-service touchpoints together with retail organizations. Subsequent empirical studies can then shed light on the advantages provided by, and customer acceptance and use of these mirrored e-service touchpoints.

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References

1. Matt, C., Hess, T., Benlian, A.: Digital Transformation Strategies. *Bus. Inf. Syst. Eng.* 57(5), 339–343 (2015)
2. Gray, J., Rumpe, B.: Models for the digital transformation. *Softw. Syst. Model.* 16(2), 307–308 (2017)
3. Kumar, V., Anand, A., Song, H.: Future of Retailer Profitability: An Organizing Framework. *J. Retail.* 93(1), 96–119 (2017)
4. Hagberg, J., Sundstrom, M., Egels-Zanden, N.: The Digitalization of Retailing: an Exploratory Framework. *Int. J. Retail Distrib. Manag.* 44(6), 336–368 (2016)
5. Verhoef, P.C., Kannan, P.K., Inman, J.J.: From Multi-Channel Retailing to Omni-Channel Retailing. Introduction to the Special Issue on Multi-Channel Retailing. *J. Retail.* 91(2), 174–181 (2015)
6. Bollweg, L., Lackes, R., Siepermann, M., Weber, P.: The Role of E-Intermediaries in Local Retail Hyperlink Networks: A Hyperlink Network Analysis. In: *Proc. MKWI 2018*. pp. 514–525. Lüneburg, Germany (2018)
7. Betzing, J.H., Beverungen, D., Becker, J.: Design Principles for Co-Creating Digital Customer Experience in High Street Retail. In: *Proc. MKWI 2018*. pp. 2083–2094. Lüneburg, Germany (2018)

8. Statista: Handel: Offline vs. Online: Entwicklung, Vergleiche, Konsumenten (2017), <https://de.statista.com/statistik/studie/id/43363/dokument/>, last accessed 2018-11-19
9. Heinemann, G.: Die Neuerfindung des stationären Einzelhandels: Kundenzentralität und ultimative Usability für Stadt und Handel der Zukunft. Springer Gabler, Wiesbaden, Germany (2017)
10. Eichholz-Klein, S., Preißner, M., Lerch, C., Brylla, T.: Stadt, Land, Handel 2020. Tech. rep., IFH Köln, Cologne, Germany (2015)
11. Saghiri, S., Wilding, R., Mena, C., Bourlakis, M.: Toward a three-dimensional framework for omni-channel. *J. Bus. Res.* 77, 53–67 (2017)
12. Lemon, K.N., Verhoef, P.C.: Understanding Customer Experience and the Customer Journey. *J. Mark.* 80(6), 69–96 (2016)
13. von Briel, F.: The future of omnichannel retail: A four-stage Delphi study. *Technol. Forecast. Soc. Change* 132, 217–229 (2018)
14. Inman, J.J., Nikolova, H.: Shopper-Facing Retail Technology: A Retailer Adoption Decision Framework Incorporating Shopper Attitudes and Privacy Concerns. *J. Retail.* 93(1), 7–28 (2017)
15. Cahn, J.: Don't Let Your Industry, Job Or Company Get Amazon-ed (2018), <https://www.forbes.com/sites/jamescahn/2018/04/24/dont-let-your-industry-job-or-company-get-amazon-ed/>, last accessed 2018-11-19
16. Lu, Q.S., Pattnaik, C., Xiao, J., Voola, R.: Cross-national variation in consumers' retail channel selection in a multichannel environment: Evidence from Asia-Pacific countries. *J. Bus. Res.* 86, 321–332 (2018)
17. Vargo, S.L., Lusch, R.F.: Why 'service'? *J. Acad. Mark. Sci.* 36(1), 25–38 (2008)
18. Rowley, J.: An analysis of the e-service literature: towards a research agenda. *Internet Res.* 16(3), 339–359 (2006)
19. Heuchert, M., Barann, B., Cordes, A.K., Becker, J.: An IS Perspective on Omni-Channel Management along the Customer Journey: Development of an Entity-Relationship-Model and a Linkage Concept. In: *Proc. MKWI 2018*. pp. 435–446. Lüneburg, Germany (2018)
20. Halvorsrud, R., Kvale, K., Følstad, A.: Improving service quality through customer journey analysis. *J. Serv. Theory Pract.* 26(6), 840–867 (2016)
21. Faulds, D.J., Mangold, W.G., Raju, P., Valsalan, S.: The mobile shopping revolution: Redefining the consumer decision process. *Bus. Horiz.* 61(2), 323–338 (2018)
22. Betzing, J.H., Hoang, A.Q.M., Becker, J.: In-store Technologies in the Retail Servicescape. In: *Proc. MKWI 2018*. pp. 1671–1682. Lüneburg, Germany (2018)
23. Voorhees, C.M., Fombelle, P.W., Gregoire, Y., Bone, S., Gustafsson, A., Sousa, R., Walkowiak, T.: Service encounters, experiences and the customer journey: Defining the field and a call to expand our lens. *J. Bus. Res.* 79, 269–280 (2017)
24. Willems, K., Smolders, A., Brengman, M., Luyten, K., Schöning, J.: The path-to-purchase is paved with digital opportunities: An inventory of shopper-oriented retail technologies. *Technol. Forecast. Soc. Change* 124, 228–242 (2017)
25. Straker, K., Wrigley, C., Rosemann, M.: Typologies and touchpoints: designing multi-channel digital strategies. *J. Res. Interact. Mark.* 9(2), 110–128 (2015)
26. Nüesch, R., Alt, R., Puschmann, T.: Hybrid Customer Interaction. *Bus. Inf. Syst. Eng.* 57(1), 73–78 (2015)
27. Hosseini, S., Röglinger, M., Schmied, F.: Omni-Channel Retail Capabilities: An Information Systems Perspective. In: *Proc. ICIS 2017*. Seoul, South Korea (2017)
28. Herhausen, D., Binder, J., Schoegel, M., Herrmann, A.: Integrating Bricks with Clicks: Retailer-Level and Channel-Level Outcomes of Online-Offline Channel Integration. *J. Retail.* 91(2), 309–325 (2015)

29. Dutta-Bergman, M.J.: Interpersonal communication after 9/11 via telephone and internet: A theory of channel complementarity. *New Media Soc.* 6(5), 659–673 (2004)
30. Wagner, G., Schramm-Klein, H., Steinmann, S.: Effects of cross-channel synergies and complementarity in a multichannel e-commerce system. *Int. Rev. Retail. Distrib. Consum. Res.* 23(5), 571–581 (2013)
31. Blázquez, M.: Fashion Shopping in Multichannel Retail: The Role of Technology in Enhancing the Customer Experience. *Int. J. Electron. Commer.* 18(4), 97 – 116 (2014)
32. Suárez, F.F., Utterback, J.M.: Dominant designs and the survival of firms. *Strateg. Manag. J.* 16(6), 415–430 (1995)
33. Suárez, F.F.: Battles for technological dominance: an integrative framework. *Res. Policy* 33(2), 271–286 (2004)
34. Statista: B2C-E-Commerce: Ranking der Top 100 größten Online-Shops nach Umsatz in Deutschland im Jahr 2016 (2016), <https://de.statista.com/statistik/daten/studie/170530/>, last accessed 2018-11-19
35. Datanyze: E-Commerce Platforms Market Share Germany (2018), <https://www.datanyze.com/market-share/e-commerce-platforms/Germany>, last accessed 2018-11-19
36. Mayring, P.: *Qualitative Content Analysis. Theoretical Foundation, Basic Procedures and Software Solution.* Beltz, Klagenfurt, Austria (2014)
37. Angela Chang, C., Kukar-Kinney, M.: Effects of shopping aid usage on consumer purchase decision and decision satisfaction. *Asia Pacific J. Mark. Logist.* 23(5), 745-754 (2011)
38. Brynjolfsson, E., Hu, Y.J., Simester, D.: Goodbye Pareto Principle, Hello Long Tail. *Manage. Sci.* 57(8), 1373–1386 (2011)
39. Balabanovi'c, M., Shoham, Y.: Content-Based, Collaborative Recommendation. *Commun. ACM* 40(3), 66–72 (1997)
40. MacKenzie, I., Meyer, C., Noble, S.: How retailers can keep up with consumers. Tech. rep., McKinsey & Company (2013)
41. Floyd, K., Freling, R., Alhoqail, S., Cho, H.Y., Freling, T.: How Online Product Reviews Affect Retail Sales: A Meta-analysis. *J. Retail.* 90(2), 217–232 (2014)
42. Dean, D.H.: Shopper age and the use of self-service technologies. *Manag. Serv. Qual.* 18(3), 225–238 (2008)
43. Hajli, N.: A study of the impact of social media on consumers. *Int. J. Mark. Res.* 56(3), 387 (2014)
44. Recker, J.: *Scientific Research in Information Systems: A Beginner's Guide.* Springer, Berlin, Heidelberg (2012)
45. Davis, F.D.: Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Q.* 13(3), 319 (1989)
46. Oppenheimer, D., Meyvis, T., Davidenko, N.: Instructional manipulation checks: Detecting satisficing to increase statistical power. *J. Exp. Soc. Psychol.* 45(4), 867–872 (2009)
47. Wang, Y.S., Shih, Y.W.: Why do people use information kiosks? A validation of the Unified Theory of Acceptance and Use of Technology. *Gov. Inf. Q.* 26(1), 158–165 (2009)
48. Zajonc, R.B.: Attitudinal Effects of Mere Exposure. *J. Pers. Soc. Psychol.* 9(2), 1–27 (1968)
49. Meuter, M.L., Ostrom, A.L., Bitner, M.J., Roundtree, R.: The influence of technology anxiety on consumer use and experiences with self-service technologies. *J. Bus. Res.* 56(11), 899–906 (2003)
50. Yoo, K.H., Gretzel, U.: What Motivates Consumers to Write Online Travel Reviews? *Inf. Technol. Tour.* 10(4), 283–295 (2008)
51. Nichols, A.L., Maner, J.K.: The Good-Subject Effect: Investigating Participant Demand Characteristics. *J. Gen. Psychol.* 135(2), 151–166 (2008)