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The impact of digital transformation on the retailing value chain☆



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ABSTRACT

Consumers have traditionally made purchase decisions at the store shelf, giving institutional brick-and-mortar retailers great power to learn about and influence behaviors and preferences. With the rise of e-commerce, mobile shopping, and most recently smart technologies, new competitors threaten this long-standing supremacy. Adopting a value-creation perspective, we analyze how digitization started the erosion of institutional retailing as the primary interface to the customer. We develop a framework that identifies five new sources of value creation and propose how these advance and transform competition for this interface. Depending on the importance of the new sources of value creation (in different purchase situations), stationary retailing may prevail as an important interaction point in a multichannel decision journey. However, increasing diffusion of branded-product platforms including connected devices and online retail platforms is shifting this authority to new players. For the parties involved in this multilayered competition, acknowledging the changes and actively managing their position in the evolving eco-systems is crucial.

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1. Introduction

Retailing as a function is central to all economies: it bridges the varied needs of consumers with specialized offerings of producers. At heart, these retailing functions comprise the building of assortments, physical logistics of merchandise, legal transactions with the consumer, information provision and communication in general, and the rendering of ancillary services. Traditionally, brick-and-mortar physical retailers have taken on these functions most of the time. Although other forms of retailing have existed, such as mail-order operations, door-to-door formats, and the like (Coughlan, Anderson, Stern, & El-Ansary, 2006), physical stationary retailing has been the mainstay.

Retailing as a function is part of the retailing value chain. In its most fundamental form, this value chain includes (brand) manufacturers, institutional retailers, and consumers,¹ with institutional retailing referring to those agents whose sole or major income derives from the conduct of retailing activities. We focus our entire discussion on the impact on the *traditional stationary* retail trade

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¹ Naturally many other participants are part of the retailing value chain such as various kinds of distributors, wholesalers, agents, importers, value-added service providers. We focus on the players that are by a matter of magnitude the most important ones – the manufacturer, institutional retailer, and consumer.

(i.e., brick-and-mortar stores), because stationary retailing represents by far the largest set of players within the domain of institutional retailing (which also includes formats such as mail order or door-to-door selling).²

Within the retail value chain, the supremacy of stationary retailing is being structurally challenged as increasing portions of the retail trade are shifted from store-based formats to internet-based formats, including pure plays, manufacturer online operations, and platforms. While traditional store labels participate in that shift via multichannel strategies, a significant chunk of the trade goes to new players, most notably Amazon (Keyes, 2018). In 2017, Amazon accounted for approximately 4% of the entire US retail volume (Thomas, 2017). As Oliver Samwer, CEO of Rocket Internet, put it, “Stores only existed because the Internet hadn’t been invented.” As more and more customers prefer the convenience of digital shopping and mail-order delivery, many physical retailers are seeing foot traffic plunge (Kapner, 2016).

Multiple forces give rise to internet-based retailing’s dynamic growth. These forces include more and better information availability about a product, larger assortments, greater transparency across vendors from the consumer’s perspective, and potentially lower prices because of lower fixed-cost operations. Hence, factual acknowledgement of stationary retailing’s waning dominance is inadequate (Grewal, Roggeveen, & Nordfält, 2017). We also need to ask how and why this trend will continue. While the functions of retailing (logistics, assortment, transaction, information, service) create value for consumers and must be performed irrespective of the actual (retail) player (Coughlan et al., 2006), how the digital transformation affects that value-creation process is unclear. Traditionally, the stationary retailer has been the a priori information and transaction interface to the end customer. However, new players such as manufacturers or online platforms increasingly enter the retailing arena and challenge that interface, thereby contributing to physical retailing’s decline in importance. In other words, going forward, who will be the primary constituent that engages with the consumer? For example, the entry of internet of things (IoT) technologies into the everyday environment will allow the automation of many economic transactions so the retailer is no longer necessarily the first “address” for making a retail transaction. Hence, brands (manufacturers) themselves attempt to engage directly with the end consumer. They are able to build powerful brand ecosystems that interact with consumers via IoT applications, direct selling, engagement and experience programs, and personalized communication, which create entirely new value propositions and make brands experiential. Moreover, powerful digital retail platforms have emerged (e.g., Alibaba, Amazon Marketplace, JD) that efficiently and effectively let large numbers of sellers and buyers interact. They extract inefficiencies from existing markets, do not carry inventory, and yet profit from each transaction. Hence, we seek to understand the structural consequences of the digital transformation for the primary interaction point with the end customer. Under which conditions does it gravitate away from stationary retailers toward brand-centric or new players (platforms)? We discuss these issues to develop answers to the following questions:

1. How is the digital transformation affecting value creation in the retailing value chain?
2. Under which conditions will consumer interaction shift to either brand manufacturers or retail platforms and when will it remain with stationary retail?
3. What new research opportunities do these developments create for marketing research?

This conceptual piece makes several contributions to the literature. First, we introduce the general notion of competition for the primary customer interface. That is, we discuss competition between previously disjoint entities (brand manufacturers, online retail platforms, and stationary retailers) and analyze their relative dominance across multiple interaction points. Prior literature in retailing has typically focused on explaining channel choice and multichannel retailing (e.g., Bilgicer, Jedidi, Lehmann, & Neslin, 2015; Valentini, Montaguti, & Neslin, 2011) or on analyzing the customer purchase journey across various touchpoints (e.g., Lemon & Verhoef, 2016). It has also looked at specific format cross-channel effects, for example the impact of online on offline and vice versa (e.g. Avery, Steenburgh, Deighton, & Caravella, 2012; Pauwels & Neslin, 2015). Hence, those studies investigate either competition between specific players (e.g., online vs. offline retailers) or different interaction points with one of these players (i.e., journey analysis). Second, we conceptualize five new sources of value creation enabled by digital technologies that are likely to shape the competition for the primary customer interface. We discuss how these sources can enhance perceived customer benefits and thereby create competitive advantage. Although previous work has discussed individual sources like automation or individualization (e.g., Leeflang, Verhoef, Dahlström, & Freund, 2014; Ng & Wakenshaw, 2017), we expand these sources and integrate them into a common framework. Third, we position the proposed cause–effect mechanism in the sizeable and important retailing context. Whereas prior literature has focused primarily on use benefits through tracking, controlling, and optimizing connected products (e.g., Porter & Heppelmann, 2014), we explore the five sources’ impact more specifically at the point of purchase. Fourth, we use the five sources to explain the diffusion of an emerging customer interface – branded product platforms – and derive specific conditions under which this format may become an important retail interface.

The remainder of this paper is structured as follows. Next, we discuss the erosion of classical retail functions by digital technologies. We then present our framework for examining new sources of value creation and their effects on retail competition. We subsequently introduce these sources and discuss possible contingencies that may determine the particular nature of competition and the players involved. After that, we depict for each focal player – brands, platforms, retailers – how digital transformation is affecting its position in the retailing value chain. We close by presenting avenues for future research.

² In our writing, the term “stationary retailing” always presumes inclusion of a certain degree of online activities (i.e., multichannel or omnichannel). However, these retailers have their roots in physical stationary retailing and their economic model rests in principle on the profitability in their offline operations. At the same time, we want to point out that there is great heterogeneity behind what we call stationary retail trade.

2. Retailing functions and channel structure

Retailing channels (and channel systems in general) remain viable by performing functions that reduce the end user's search, waiting time, storage, and other costs (Bucklin, 1966). These functions encompass the building of assortments, physical logistics of merchandise, legal transactions with the consumer, information provision, and communication in general, as well as the rendering of ancillary services. Widely varying retailing formats have emerged to satisfy the demands of consumers across diverse physical, geographical, purchase, and need situations. In most instances, these retail formats take the form of physical stationary retailers, with the result that the division of labor between providers of consumer goods (manufacturers) and those engaged in distribution and sales (wholesalers and retailers) has been rather stable over a long history. At the same time, consumers have been relegated to an essentially passive role as product, price, and communication recipients. This general distribution structure has made institutional retailers the dominant provider of consumer goods in virtually all economies. Because of this dominance, they have provided value-add to the entire distribution system and have been in charge of interconnecting and maintaining relationships with the end consumer.

Owing to the multiple forces of technology evolution, digital transformation, consumers' evolving needs, and demographic changes (Grewal et al., 2017), this once-predominant structure seems to be eroding rapidly. Today, manufacturers, third parties, and consumers increasingly engage in retailing functions, generating value that institutional retail has traditionally provided. While institutional (physical) retailing will fight hard for its intermediating position, this position will continue to wear away, especially since manufacturers have been continuously reaching out to end consumers via dual distribution and vertical integration (Wang, Bell, & Padmanabhan, 2009). For example, sportswear manufacturer Adidas plans to control 60% of the brand's global retail space by 2020 through a massive rise in its own stores, flagship stores, and store-within-a-store concepts (Kell, 2016). Apple, the venerable manufacturer of IT and mobile phones, has the highest retail sales per square foot in the world (Eadicicco, 2016). Importantly, IoT technologies increasingly allow manufacturers to stay in touch with consumers over the lifecycle of their products. For example, white goods manufacturers such as Samsung or Miele now participate in the sales of consumables by enabling their washing machines to order washing detergent automatically after a given number of washing cycles.

Many reasons underlie manufacturers' push to engage in their own retailing, such as better management of the brand, more comprehensive information to consumers about the entire brand range, learning about retailing practices, learning about consumer preferences, and potentially obtaining higher margins (Osegowitsch & Madhok, 2003; Teece, 2010). Besides these more conventional strategic reasons, engaging with consumers beyond the insular transaction, in particular *during the product use*, seems to be extremely important. Since IoT technologies serve as interactive product platforms, brands can *engage* behaviorally and dynamically with individual consumers in a high value-added manner (Ramaswamy & Ozcan, 2018).

Likewise, specialized third-party service providers have been either deepening their existing specialty offerings or expanding their offerings altogether. For example, delivery companies such as DHL or UPS provide highly efficient and far-reaching logistics services that are first choice for retailers. Information and product comparison sites such as Kayak, Idealo, and Shopzilla are extremely effective in providing price information to consumers. Payment services such as PayPal and Alipay are very successfully taking over the payment function from retailers. Some of these third-party services have been highly effective at intermediating in the traditional retailer–consumer relationship, with the biggest impact probably being generated by the so-called *platforms*. Platforms are digital intermediaries that efficiently link external producers/sellers to consumers, thereby enabling value-creating interactions. Their purpose is to facilitate the exchange of goods, services, or social currency (Parker, Van Alstyne, & Choudary, 2016). Examples are Alibaba, Wish, Ebay, and Amazon Marketplace. Given that a number of platform-based companies are now some of the most valuable companies in the world (Ernst & Young, 2018) and given that they are considered a sizable threat to existing retailers (Ramaswamy & Ozcan, 2018), we specifically discuss their impact on the retailing value chain.

As a result of these combined changes, the competition for occupying the interface toward the customer is rekindled more than ever. Hence, the value chain has begun to move away from the traditional linear structure (manufacturer → retailer → consumer) toward a structure that allows each group of constituents to engage *directly* with the final consumer. This trend presently affects primarily the actual commercial transaction and the immediate process that leads to it, but ultimately will affect the ongoing interaction with the customer over the course of the product or service *use*. Given the digital transformation, the decisive question becomes which constituents (manufacturers, new entrants such as platforms, or retailers) will be front-runners for the legitimate and credible “ownership” of the primary customer interface.

Importantly, our work is related to previous research on value creation through technological advancements. For example, early conceptual work on internet technologies discusses consequences of the emerging online channel for traditional offline formats (Alba et al., 1997; Peterson, Balasubramanian, & Bronnenberg, 1997). That research has provided an initial discussion of how new electronic retail formats can create customer value through informational benefits such as search efficiency (Alba et al., 1997). Those studies also emphasized the need to consider features of the broader buying situation, such as product type or decision characteristics, to derive accurate implications (Peterson et al., 1997).

The rise of the internet and the emergence of new digital channels (e.g., mobile, social media, apps) required broadening the historical channel view to include non-interactive or indirect touchpoints (Verhoef, Kannan, & Inman, 2015) and to account for the dispersion of value-added functions such as information provision (Van Bruggen, Antia, Jap, Reinartz, & Pallas, 2010). In particular, the rise of social media facilitated not only customer-to-firm communications but also customer-to-customer interactions (Lamberton & Stephen, 2016) – a development that affected traditional value-creation structures and relationships. For example, customers can become actively engaged in value creation by promoting brands in social networks or by generating content (Leeflang et al., 2014).

Similarly, recent work highlights that the extensive adoption of mobile and wearable devices together with the emergence of the IoT not only allows customers to connect with other people or with their physical environment (e.g., through location-/geo-based apps), but also enables connection with and among objects through smart products (POP framework; Verhoef et al., 2017). This unprecedented level of connectivity enables new touchpoints and interactions, such as customer–firm interactions over IoT devices or through open networks in an ecosystem, creating customer value (Verhoef et al., 2017).

As the technological and digital advances become increasingly pervasive, not only the borders between physical and digital channels will become blurred but also the boundaries between retailers and manufacturers (Brynjolfsson, Hu, & Rahman, 2013). The evolution of such a seamless omnichannel retail environment requires reconsideration of customer value creation along the entire supply chain (Brynjolfsson et al., 2013), understanding of the role of new customer touchpoints, and a focus on customer–retail channel–brand interactions (Verhoef et al., 2015).

Consequently, in this article we focus on the entire retailing value chain, advancing previous work that discussed how retailers can create value through business model innovations in terms of customer efficiency, customer effectiveness, and customer engagement (Sorescu, Frambach, Singh, Rangaswamy, & Bridges, 2011). Our approach is to provide a systematic and holistic overview of how new sources of value creation enabled by digitization feed into the perceived benefits on the customer-level. Like previous research on multichannel retailing (Neslin et al., 2006), our article considers value creation along the different stages of the customer decision process (need recognition, search, purchase, after-sales). We propose that customers will prefer to interact with the players that best provide the benefits sought in a given buying situation (Alba et al., 1997; Peterson et al., 1997; Van Bruggen et al., 2010).

3. Framework for conceptual inquiry

The impact of digital transformation on the retailing value chain will be felt in various ways. In particular, the authority over the main interaction point(s) with consumers when preparing and realizing purchase decisions is likely to shift in many cases. These instances include the physical retail store as well as its digital equivalents (e.g., online shop, smartphone app, IoT device), which may serve as the customer's main information and transaction points. A current example illustrates this circumstance: Amazon is not only the largest online retailer and retail platform, but is also one of the most extensive product search engines (McGee, 2017). Consumers use Amazon to browse categories, compare prices, and find specific products to purchase, providing the Amazon website with the potential to exert substantial power on customer decision making, as products not listed by Amazon may not even enter the consumer's consideration set. Further, product rankings, reviews, and recommendations on the website have a strong effect on purchase decisions (Babić Rosario, Sotgiu, Valck, & Bijmolt, 2016; Senecal & Nantel, 2004), and the small step from search to transaction is facilitated by Amazon's short checkout funnel and 1-click purchase option. Frequent interaction with the interface owner can further increase brand consideration and strengthen the customer relationship (Yaveroglu & Donthu, 2008).

In addition, interaction with consumers while *using* products is quickly gaining importance. For example, Adidas has been reaching far into the consumer's fitness behavior (and thus use of fitness equipment) via its acquired software application Runtastic. The sports tracking app integrates tracking and sharing of physical activity with recommendations of sports equipment as well as products for a healthy diet (Reinartz & Imschloss, 2017).

Our key tenet is that the digital transformation is having a systematic structural impact on the retailing value chain in that the importance of who governs the end-customer relationship – brand, platform, or retailer – will shift radically. In other words, structural competition for the primary customer interface will increase. We adopt a perspective of value creation, and we particularly focus on novel opportunities for value creation enabled by digital transformation, which refers to the changes new digital technologies introduce to the way consumers and commercial players behave or operate (Reddy & Reinartz, 2017). Digital technologies enable new forms of market behaviors, interactions, or experiences (Lamberton & Stephen, 2016) and reshape customer relationships, internal processes, and value propositions (Capgemini, 2011) or the economic value-creation process as a whole (Reddy & Reinartz, 2017).

Our proposed framework summarizes how the digital transformation affects the retailing value chain through new sources of value creation (Fig. 1). Specifically, we identify and discuss five key sources: automation, individualization, ambient embeddedness, interaction, and transparency and control. These firm-level sources of value creation then foster – typically in combination – customer-level perceived benefits of convenience, relevance, experience, empowerment, and monetary and ecological savings.³ The magnitude and relative importance of these perceived benefits are further subject to different purchase situations and product attributes.

These developments are twofold. First, they enable the advent of branded product platforms using IoT-based retailing, i.e., the emergence of completely new customer interfaces. Second, the relative success of the three interfaces (brand-customer interface, retailer-customer interface, platform-customer interface) will depend on their relative ability to create the types of perceived benefits outlined in our analysis and to address the benefits customers seek in a given buying situation.

Next, we provide an overview of the core elements of our framework and describe the new sources of value creation and the perceived benefits they address.

³ Alternatively, one could specify the chain of effects starting from the customer's perceived benefits driving subsequent changes in new sources of value creation. Realistically speaking, both benefits (perceived by customers) and firm-level value creation drive and condition each other. Given that our framework is correlational in nature, we stick with the existing and more prevalent value-chain logic, which also corresponds with the physical flow of products and services.

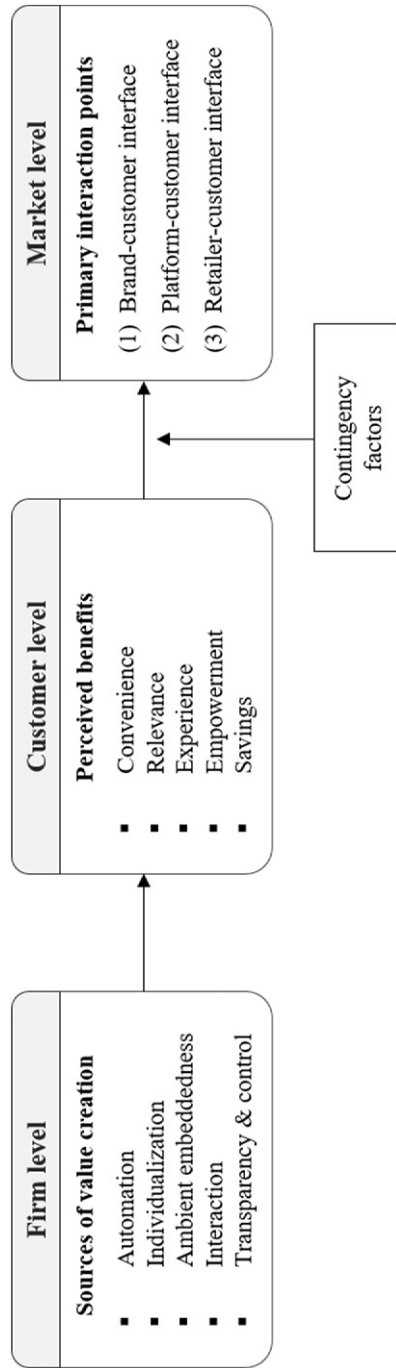


Fig. 1. Conceptual framework.

4. New sources of value creation

4.1. How the digital transformation affects long-standing customer needs

Value creation on the customer level can take place at all stages of the consumer decision process (Sweeney & Soutar, 2001; Woodruff, 1997). That is, the five sources of value creation take effect along as they occur in the pre-purchase stage (need recognition, information search, consideration or evaluation of alternatives), the purchase stage (choice, ordering, payment), and the post-purchase stage (consumption, use, engagement, service requests) (Lemon & Verhoef, 2016; Puccinelli et al., 2009). Thus, we adopt a broad understanding of customer value as an “interactive relativistic preference experience ... characterizing a subject’s experience of interacting with some object. The object may be any thing or event” (Holbrook & Corfman, 1985, cited in Babin, Darden, & Griffin, 1994, p. 645).

The digital transformation facilitates and enables new ways of value creation because it allows for the fulfilment of long-standing consumer needs in unprecedented ways. As sources of value creation, automation, individualization, ambient embeddedness, interaction, and transparency and control combine a plethora of activities and processes. The basic premise is that customers will likely prefer to interact with players that best accomplish value creation on these dimensions. Notably, although our focus lies on the fulfilment of consumption needs, we also discuss opportunities for value creation beyond the actual purchase (e.g., effects on product use value or user experience sharing).

Automation refers to all activities and processes that operate automatically, without active human input or control (Vámos, 2009). At the customer interface, automation affects value creation in two ways. First, automation of marketing processes such as automated communications (e.g., reminders, in-stock alerts, chatbots) offers customers real-time information and responses. Second, automation of consumer processes such as (re-)purchasing simplifies or eliminates routine processes for consumers. For instance, smart household appliances like washing machines, refrigerators, and printers equipped with the Amazon Dash replenishment technology or that are otherwise IoT-capable can automatically order refills when the supply is running low. Beyond purchasing, automation can also increase use optimization with smart home applications such as thermostats, light bulbs, or humidifiers that track consumers’ habits (e.g., home time, comfortable temperature) to adjust their functionalities automatically, often more accurately than the customer can (Nest, 2016).

Clearly, automation of marketing and consumer processes primarily enables value creation through *convenience*, which is typically a function of customers’ perceived investments of time and effort (Kelley, 1958). In this sense, convenience encompasses everything that promotes a state of physical or mental ease (adds comfort) or that simplifies fulfilment of customers’ functional needs or instrumental goals (saves work) (Rintamäki, Kanto, Kuusela, & Spence, 2006). With respect to the three decision stages, this pertains to different types of convenience, such as search convenience (i.e., the ease and speed to access and gather product information), purchase convenience (i.e., the efficiency and simplicity of the purchase process), and use convenience (i.e., the simplicity of product access and use) (Verhoef, Neslin, & Vroomen, 2007; Brown, 1989). Furthermore, automation allows for monetary *savings* through optimized product use and the associated savings of ecological resources (e.g., intelligent energy management).

Individualization refers to the customization and personalization of marketing efforts that are tailored to an individual’s current needs and preferences (Riecken, 2000). Digital technologies facilitate the collection of individual customer data through, for example, sophisticated databases, thus enabling profitable marketing activities (Chen & Iyer, 2002). The availability of comprehensive digital data (e.g., online reviews, social-media activities, smart products) may provide contextual information (e.g., a change in a customer’s life, such as a job transition) and can be combined with other customer data stored in a central server (Van Bommel, Edelman, & Ungerman, 2014). This capability permits truly individualized marketing efforts. Instead of merely adapting customer names on promotional e-mails, through individualized marketing efforts firms can engage in meaningful, real-time, one-to-one communication with the customer (Peppers, Rogers, & Dorf, 1999; Pine II, Peppers, & Rogers, 1995). Such efforts create additional customer value if they closely match preferences (Simonson, 2005) and account for customers’ heterogeneity in preferences (Ansari & Mela, 2003). For instance, L’Oreal’s smart hairbrush analyzes its user’s hair condition and provides individualized recommendations for hair care products (Handley, 2017). If such recommendations lead to product purchases, retailers’ influence on consumer decision making is minimal.

Notwithstanding that such a use of consumer data comes at the expense of consumers’ privacy and might be associated with potentially negative effects (e.g., intrusiveness perceptions; Van Doorn & Hoekstra, 2013; Martin & Murphy, 2017), individualization primarily enables value creation through *relevance*, which is the extent to which customers perceive information as applicable or helpful and useful (Yi & Jiang, 2007). Relevant information is valuable in a decision-making context because it reduces information overload and helps the customer make good choices (Liang, Lai, & Ku, 2006; Yoon, Hostler, Guo, & Guimaraes, 2013). For example, providing individualized and thus relevant as opposed to irrelevant content during pre-purchase search (e.g., through individualized recommendations) benefits consumers because it increases the ease and efficiency to identify their preferences, thus facilitating decision making (Tam & Ho, 2006). This efficiency increases perceptions of convenience. Furthermore, individualization can help tailor interactions to create unique and exclusive experiences. *Experiences* in general refer to a customer’s “internal and subjective response[s]” (Meyer & Schwager, 2007, p. 2) that can arise from any contact, whether direct (e.g., with products, physical store environment) or indirect (e.g., through marketing communications, packaging, reviews) during the search, purchase, or consumption phase (Brakus, Schmitt, & Zaranonello, 2009; Lemon & Verhoef, 2016; Meyer & Schwager, 2007; Verhoef et al., 2009). Experiences “provide sensory, emotional, cognitive, behavioral, and relational values” (Schmitt, 1999, p. 12). Thus, enhancing existing or creating new experiential benefits along the stages of the consumer decision process can create value for customers. To illustrate, stationary retailers may use facial recognition systems to identify consumers and tailor interactions and offerings to their mood and – if connected with purchase history data – their preferences. Apart from sensory

value, which can be created through an aesthetic ambience of the retail outlet, customized experiences can deliver emotional value (e.g., shopping pleasure and enjoyment), cognitive value (e.g., stimulating inspiration and motivation to explore novel recommendations), or relational value (e.g., feeling personally recognized and appreciated) that goes beyond value created through increased relevance.

Ambient embeddedness refers to the integration of processes, products, and communications into customers' routines, making them present in the immediate environment and an integral part of everyday life. Digital technologies can foster ambient embeddedness by, for example, connecting customer data across multiple platforms, channels, or devices and by integrating interactions seamlessly into consumers' lives. For instance, digital assistants such as Amazon's Alexa integrate voice-based shopping activities and interactions (Kharpal, 2017). Another example is geo-targeting, which facilitates the delivery of location-based push messages when a customer enters a specific geographic area (Fong, Fang, & Luo, 2015; Luo, Andrews, Fang, & Phang, 2014).

Depending on the context, ambient embeddedness enables value creation through convenience, experiences, and relevance. It allows for instant gratification of emerging needs and facilitates connecting with the right entity through any channel. By combining fragmented services on a few preferred interfaces, ambient embeddedness substantially enhances customer experience with these touchpoints. Finally, through seamless integration in consumers' lives, information from companies, people, or even devices reaches its target when it is most relevant.

Interaction encompasses all virtual and physical relations and refers to all aspects of how customers and/or firms communicate and interact, thus referring to the nature of the interaction and not to the channel where it takes place. Digital technologies can be used to enrich traditional interactions or to enable new ones along the entire consumer decision and use process, creating value beyond the fixed product exchange (Ramaswamy & Ozcan, 2018). These contacts range from technology-enriched pre-purchase interactions over digitalized product-user interactions to customer-to-customer post-purchase interactions on social media. For example, IKEA has released an augmented reality app ("Place") that allows customers to see how specific furniture would look in their homes, thus providing experiential value and improving the buying experience (Pardes, 2017). Depending on the context, interaction primarily enables value creation through experiences, relevance, and convenience.

Transparency and control refers to processes and activities that provide customers with superior information, education, and product use. Digital technologies simplify customers' access to and retrieval of comprehensive product information from various sources (e.g., online product descriptions, reviews, prices) (Verhoef et al., 2017). Further, digital technologies can facilitate the analysis of relevant data (e.g., through machine learning algorithms) and the transformation of these data into insightful information. For example, Colgate's smart electric toothbrush enables users to monitor their brushing habits and to optimize their brushing techniques through coaching (Gartenberg, 2018). Finally, users can access products remotely, giving them the opportunity to track and steer products' functionalities from anywhere (Verhoef et al., 2017). For instance, smart thermostats allow diagnostics and handling via smartphone app.

Transparency and control primarily enable value creation through *empowerment*, that is, giving customers greater command over their behaviors or choices to make more effective or better decisions (Brennan & Coppack, 2008; Broniarczyk & Griffin, 2014; Harrison, Waite, & Hunter, 2006; Wathieu et al., 2002). Empowerment pertains to both product purchase and product use. In simple words, the more information consumers can combine and the more freedom they obtain to choose and use a product, the better they can match purchase and use with their preferences (Broniarczyk & Griffin, 2014; Harrison et al., 2006). For example, transparency about other consumers' experiences with the sought product in form of ratings and reviews shifts power away from company communications to the consumer, who can make more informed purchase decisions. Remote access to and detailed control over smart devices, on the other hand, empowers consumers to tune product use to their individual consumption behavior. This often implies potential savings, as optimization of product use leads to efficiency gains.

It should also be noted that the respective value creation dimensions are almost certainly correlated to some degree, even though they are clearly distinct constructs. For example, if a firm is better at individualization, it is very likely to be better at interaction activity. Not only do we have these bivariate links, the various dimensions do also interact and amplify. For example, the effect of individualization on customer benefits obtained is likely to become larger in the presence of offering interactions that are ambiently embedded. Yet, a development of a systematic scheme of these possible conditioning and interaction effects is beyond the scope of this article. As these evolve in numerous and highly context-specific ways, we leave them to future research.

In summary, the five sources of value creation give rise to perceived benefits on the customer-level along the entire decision process. Table 1 provides a comprehensive overview of representative processes and examples. Importantly, value creation often occurs through combinations of activities originating from different sources. For instance, location-based mobile advertising (third row) is usually implemented automatically through personalized marketing messages.

4.2. Contingency factors

While maximizing value creation through all five customer-level perceived benefits equally seems preferable, the interaction interfaces naturally differ in their potential and the extent to which they can create value through specific types of benefits. To understand the relative superiority of particular interfaces, we emphasize that not all types of perceived benefits are always of equal importance to customers. Instead, customers might value certain benefits in their decision process more highly than others depending on the decision situation.

Frameworks of buying behavior (e.g., the Engel-Kollat-Blackwell model or Howard-Sheth model) generally acknowledge that situational variables can affect decision making at all stages of the decision process (Blackwell, Miniard, & Engel, 2005; Howard & Sheth, 1969). For instance, customers may engage in less effortful decision making in conditions of low (vs. high) purchase involvement because

Table 1
Sources of value creation and customer benefits.

Consumer decision process	Source of value creation					Representative processes and activities	Examples	Main perceived customer benefits						
	Automation	Individualization	Ambient embeddedness	Interaction	Transparency & control			Convenience	Relevance	Experience	Empowerment	Savings		
Pre-purchase	x					<ul style="list-style-type: none"> Automated communication Automated consumer processes 	<ul style="list-style-type: none"> Reminders, in-stock notifications, and price alerts Amazon's subscribe & save service, other subscription providers (Hello Fresh, Petbrobia) 	+++					+	
	(x)	x				<ul style="list-style-type: none"> Individualized communication & recommendations Individualized product search 	<ul style="list-style-type: none"> Recommender systems (Netflix, Spotify) Individualized advertising (e.g., on Facebook) Online product filtering (e.g., Zalando) 	++	+++		+++			
	(x)		x			<ul style="list-style-type: none"> Embedded communication (right time, right device, right channel) 	<ul style="list-style-type: none"> Geo-targeting; Location-based push messages (Whole Foods partnering with Thinknear) 	++	++					
				(x)	x	<ul style="list-style-type: none"> Technology-enriched pre-purchase interactions 	<ul style="list-style-type: none"> Virtual style assistant (Amazon Echo Look) Instant messaging style assistant (Zalon by Zalando) 	+		+++	++			
					x	<ul style="list-style-type: none"> Technology-enriched pre-purchase interactions also enabling purchase 	<ul style="list-style-type: none"> Virtual & augmented reality for trying out products (IKEA Place app, Lowe's) Virtual fitting (Adidas using fits.me) Share product considerations on social media (Karl Lagerfeld photo booth in fitting room) Interactive digital window shopping (Adidas NEO) 			++	+++			
						x	<ul style="list-style-type: none"> Easy access to comprehensive product information 	<ul style="list-style-type: none"> Combination of information sources (product description, reviews, comparisons, etc.) 				+++		++
						x	<ul style="list-style-type: none"> Technology-enabled product discovery & recognition (also enabling purchase) 	<ul style="list-style-type: none"> Music recognition (Shazam) Fashion recognition (ASAP54; Neiman Marcus app feature Snap. Find. Shop) 	+	++		+++		
Purchase	x						<ul style="list-style-type: none"> Dash replenishment service 	+++						

(continued on next page)

Table 1 (continued)

Consumer decision process	Source of value creation					Representative processes and activities	Examples	Main perceived customer benefits				
	Automation	Individualization	Ambient embeddedness	Interaction	Transparency & control			Convenience	Relevance	Experience	Empowerment	Savings
	(x)	x		(x)		<ul style="list-style-type: none"> ■ Automated (re-) ordering ■ Personalized POS/Website 	<ul style="list-style-type: none"> ■ Smart connected products (Miele washing machine, LG Smart Fridge) ■ Automated customer identification and communications (Walmart facial recognition, cookie-based identification) 	+	++	+++		
			x	(x)		<ul style="list-style-type: none"> ■ Embedded transaction (anywhere, anytime, any channel) 	<ul style="list-style-type: none"> ■ One-click buying (Amazon Dash button) ■ Voice-based shopping assistants (Amazon Alexa, Google Assistant) ■ Instant buying (Purchase through Facebook 100flowers) ■ In-app/in-game purchasing (WeChat; Xbox One) 	+++				
				x		<ul style="list-style-type: none"> ■ Innovative store formats: Guidesshops, pop-up and concept stores, showrooms 	<ul style="list-style-type: none"> ■ Company-owned experience stores (Apple's physical stores) ■ Concepts focused on (individualized) service and experiences (Sephora Studios, Nordstrom Local, Bonobos) 			+++		
Post-purchase	x					<ul style="list-style-type: none"> ■ Predictive maintenance ■ Automated use (decisions) 	<ul style="list-style-type: none"> ■ Smart home appliances that automatically adjust functionalities (e.g., Henkel's smart mosquito repellent dispenser or Ecobee's smart thermostat) 	+++				++
	(x)	x			(x)	<ul style="list-style-type: none"> ■ Individualized use recommendations ■ Individual use optimization 	<ul style="list-style-type: none"> ■ Smart products that provide feedback (L'Oreal's smart brush, Colgate's E1 smart toothbrush, Babolat's smart racket, Thermos's smart hydration bottle) 		+++		+++	
			x			<ul style="list-style-type: none"> ■ Integrate different products to holistic eco-system ■ Seamless service access (anywhere, anytime, any channel) 	<ul style="list-style-type: none"> ■ Add alliances to create eco-system around products (Adidas acquired the fitness app Runtastic which likely will sync with smart clothing from Adidas) ■ Integrated eco-system (Amazon Fresh, Video, Kindle, Echo, Dash, etc.) 	++		+++		
				x		<ul style="list-style-type: none"> ■ Share use and product experiences 	<ul style="list-style-type: none"> ■ Peer-to-peer review sites (TripAdvisor.com) 				+++	
				(x)	x	<ul style="list-style-type: none"> ■ Learn from machine decisions and use recommendations ■ Track continuously ■ Check and handle from remote ■ Review and rate products 	<ul style="list-style-type: none"> ■ Smart home appliances that offer users control via smartphone (Nest's smart thermostat for heating, Philips's Hue for home lighting, Amazon's Cloud Cam for home security) 			+++	+++	+++

Notes: x = primary source of value creation; (x) = secondary source of value creation.

Effects of new sources of value creation on consumer benefits: + = moderate; ++ = strong; +++ = very strong.

involvement can be associated with situations that entail, for example, a relatively low (vs. high) product importance, a low (vs. high) level of perceived risk (e.g., lower price, less complex products), or a repeated (vs. novel) purchase of a product (Beatty & Smith, 1987; Hoyer, 1984). In these situations, customers seek an effortless, simple, and speedy decision process, characterized by little motivation to engage in extensive information search, limited consideration of alternatives, or the employment of simplified choice tactics (Beatty & Smith, 1987; Deshpande, Hoyer, & Jeffries, 1982; Hoyer, 1984). Thus, customers will particularly value perceived benefits that contribute to saving time and effort, such as embedded transactions, automated (re)ordering, or automated (individualized) communications that are conveniently integrated into their everyday lives. In contrast, when customers devote more effort to the decision-making process, they evaluate more products and actively seek information or try out products to find the best match with their preferences – as is often the case in high-involvement situations (Clarke & Belk, 1979; Deshpande et al., 1982; Hoyer, 1984). In such instances, customers will particularly value perceived benefits such as experience, empowerment, and relevance, which help optimize the final decision. These benefits are obtained from, for example, the provision of highly relevant information, sensory product experiences, or individualized use recommendations in the post-purchase phase. This reasoning demonstrates how situational variables can affect which specific benefits customers seek and thus drive their relative importance in the decision process. Our key premise is that the interfaces that will most likely govern the decision process are those that excel in value creation by providing the required benefits in a given situation. Notably, a number of other aspects could be discussed along these lines, such as specific product attributes (e.g., search vs. experience goods, hedonic vs. utilitarian products, convenience vs. specialty products), customer characteristics (e.g., personal goals, product expertise), or purchase-related aspects (e.g., purchase occasion, purchase urgency). As the mere number of potential contingency factors precludes accounting for the role of each of them, we instead explicate the link between selected situational variables (contingency factors) and the respective benefits customers seek.

5. Consequences for the retailing value chain

We use the value creation reasoning and the retailing value chain as frameworks against which we put forth possible consequences for the management of the customer interface. Thus, our objective in this section is to highlight predictions and implications for possible future developments that result from shifts in value creation structures.

The novel sources of consumer value give rise to substantial shifts in competition for the primary customer interface, and these shifts in “Who provides the customer perceived benefits most effectively?” will drive the superiority of a particular interface, namely one that is governed primarily by the brand (manufacturer), by the emerging retail platform business model, or by institutional retailers. We discuss these changes and derive specific conditions about their main consequences for competition.

5.1. Rising importance of the brand–customer interface

Branded goods manufacturers have been naturally mediated from the end customer, and for reasons of distribution efficiency retailers represented a powerful interface. For a number of years, increasing levels of vertical integration by branded manufacturers have characterized the retailing environment (Kim & Chun, 2018). With the rise of social media and smartphone usage, brands started to engage in direct interaction with end consumers through their own mobile applications (Bellman, Potter, Treleven-Hassard, Robinson, & Varan, 2011; Kim, Wang, & Malthouse, 2015). Such apps have been shown to increase customer engagement and drive online and offline sales (Dinner, van Heerde, & Neslin, 2015). In some services industries (e.g., hotels, airlines), apps have even become an integral part of the service experience. This trend is now amplified and expanded by the evolution of IoT technologies. By employing emerging technologies, manufacturer brands may engage with consumers at one or more of the purchasing funnel stages, including the critical stage of product use. For example, smart refrigerators will allow consumers to not only check their stock levels via a smartphone app but also predict consumption patterns and pre-emptively re-order groceries (Ricker, 2017). Hence, through a branded durable (or digital good), the manufacturer is now able to connect to the customer during the use stage. Such connection leads to the “product platformization” of formerly single-product markets (Porter & Heppelmann, 2014), with these products serving as hubs to market complements. The distinctive feature is the existence of a physical or virtual good (the *branded product platform*⁴), which may provide standalone value (Lee & O’Connor, 2003) but also gathers use data to give specific recommendations for – or even automate the use and purchase of – additional products (the *complements*). Often, these components are loosely connected within an eco-system built around specific need categories, such as sports, hair care, or cosmetics. Table 2 provides some examples with core complements and (potential) extensions.

Having the ability to complement the original durable good with ancillary products/services, the durable goods manufacturer is now in a much better position to more closely connect and interact with the customer during the actual use and experience stage, strengthening its position as an important decision interface. The primary sources of value creation leveraged through product platforms are automation, individualization, and ambient embeddedness. In the use phase, the platform allows for savings of connected consumables owing to monitoring and controlling product operation (Porter & Heppelmann, 2014). The gathered data may be put to use through individual advice for optimized handling or complete automation, as with intelligent heat and energy management. Regarding the purchase decision, branded product platforms may facilitate or automate (re-)ordering (Hill, 2006). They are also able to recognize demand immediately by tracking and controlling supply and to predict demand on the basis of individ-

⁴ The branded product platform can be subsumed under the class of digitalized interactive platforms (DIP) (Ramaswamy & Ozcan, 2018) and may be a branded durable in the form of a smart, connected product (Porter & Heppelmann, 2014) or in the form of branded digital services (like Adidas’s Runtastic software). Note that we distinguish these types of platforms from the previously discussed online retail platforms.

Table 2

Examples of physical and digital branded product platforms.

Branded product platform	Core complement(s)	Extended complement(s)
Game console	Games	Movies, music, TV streaming, computer software
Refrigerator	Food, beverages	Cooking videos, movies, music
Washing machine	Washing detergents	Pre- and post-treat laundry equipment (e.g., ironing, stain removal)
Hairbrush	Hair care products	Hair salons, nutrition supplements, food, beverages
Pet activity tracker	Pet food	Veterinary clinics, physical exercise equipment
Sports tracking application	Sportswear	Food, beverages, specialty sports equipment

ual consumption patterns (Verhoef et al., 2017). Consequently, product platforms can significantly shorten the shopping process and transform it into a click-of-a-button or voice confirmation of prepared shopping lists. Purchase and especially re-purchase may then be more like using Amazon's Dash button than the traditional trip to the retailer or online shop (Grosman, 2017). Thus, branded product platforms become relevant especially as an interface for habitual, repeat purchases of products, for which customers value quick fulfilment and no friction (i.e., low-involvement decisions). In addition, brands are now able to connect with customers via their own interactive apps providing portable, convenient, and interactive engagement opportunities, allowing customers to interact with the brand on a habitual basis (Kim et al., 2015).

Branded product platforms may also serve as interfaces for cross-selling, up-selling, and brand switching. The power of those platforms hinges on the purchase context and product attributes: low-involvement situations typically imply a lower degree of risk taking by consumers (Deshpande & Hoyer, 1983; Punj & Staelin, 1983), making them susceptible to simplified, heuristic, and spontaneous decision making guided by external cues (Deshpande et al., 1982; Zuckerman, 1991). Branded product platforms can motivate such decisions using recommendations, targeted price promotions, or bundling. Further, low-involvement situations provide lower levels of stimulation, increasing the likelihood of consumer variety seeking (Van Trijp, Hoyer, & Inman, 1996). Drawing on preference learning, branded product platforms can selectively support variety seeking by recommending new products or product categories. Lastly, consumers will benefit more from product platform-based decision making for goods dominated by search attributes: Algorithms can significantly shorten the extensive evaluation process by quickly comparing objective features and accurately predicting the product's fit with individual preferences (Huang, Lurie, & Mitra, 2009).

The degree of product-platform attractiveness depends on how *comprehensively* the eco-system emerging around the product platform addresses customer perceived benefits through the sources of value creation. Thus, embedding a multitude of platform functionalities to address category needs more broadly expands customer value and increases eco-system dependence (lock-in). For example, game consoles have been expanding their scope to serve as optical disc players, data storage devices, software shops, and video streaming platforms. They strive to become entertainment hubs rather than single-purpose products. The more value is added by embedding the fulfilment of different category needs, the greater the chance to become a dominant customer interface.

To provide such comprehensive value and foster lock-in, branded product platforms may coordinate with and join other branded product platforms. For example, a smart home system includes many durables (e.g., refrigerator, thermostats, lights) and complements (e.g., energy, food), and provides extensive benefits by tracking the supply and use of consumables, predicting shortages, and automating re-purchase. Combining these platforms on a single physical or virtual interface, what we term a *meta-platform*, unleashes additional value to the customer through ambient embeddedness. Less comprehensive applications are particularly subject to being integrated into such a meta-platform or "system of systems" (Porter & Heppelmann, 2014), bundling the value of connected products around a larger need category. One way of creating a meta-platform is by integrating software directly into the physical platform. As more durables integrate the same software (e.g., Apple's HomeKit), the eco-system of that software grows, combining the use of different products while being able to analyze customer preferences across behaviors in multiple product categories. The single hardware owner's power is likely to diminish as the software moves to the center of the eco-system. Thus, branded durable platforms with limited value creation potential through the new sources are likely to be controlled by or combined into larger meta-platforms. The more value these meta-platforms bundle, the more extensive their owner's authority over the customer interface.

5.2. Rising importance of the platform–customer interface

Online retail platforms have been successfully established as another constituency that claims the primary customer interface in the retailing value chain. Examples are Amazon Marketplace, Alibaba, eBay, and JD. These platforms employ digital technologies as intermediaries in the exchange of products and services between buyers and sellers (Perren & Kozinets, 2018). Hence, from the viewpoint of economic exchange mechanisms, they are similar to the branded product platforms introduced in the previous paragraph. Unlike branded product platforms, however, these platforms operate *across* product brands and they are focused on the *exchange* of goods rather than on providing ongoing interaction value in the post-purchase phase. As a major point of distinction from institutional (online) retailing, the seller retains sovereignty over its product offerings (e.g., assortment, pricing), whereas the platform owner acts as a matchmaker between the parties.

Platform businesses have revolutionized many retailing markets and forced traditional players to exit the market or consider far-reaching strategy adaptation. Transformative business model innovations often become necessary, because competing head-to-head on product sales with fully grown retail platforms is almost always a lost cause (Parker et al., 2016). Consequently,

platforms have come to dominate online retail sales. In 2017, the platform business on Amazon, Amazon Marketplace, accounted for more than 50% of all of Amazon's e-commerce revenues, corresponding to an annual growth rate of 39% (Statista, 2018). Owing to easy scalability at virtually zero marginal costs (that is, adding another supplier to the platform), online retail platforms are growing much faster than institutional online or multichannel retailers (Parker et al., 2016; Hosseini & Schmidt, 2018).

As with other forms of two-sided markets, retail platforms give rise to network effects because the platform's overall value to sellers and buyers increases with a growing user base on either side (Katz & Shapiro, 1984). Hence, large platforms tend to grow even more while small competitors are pushed out of the market, resulting in winner-take-all outcomes (Dubé, Hitsch, & Chintagunta, 2010).

The surviving players' sheer size builds the basis for leveraging the new sources of value creation, particularly individualization and transparency of product information. First, by combining virtually endless shelf space and advanced search algorithms, retail platforms can tailor a wide variety of offerings to individual consumer needs. Owing to their superior assortment depth and width, platforms provide better matches between supply and demand than either vertically integrated manufacturers or institutional retailers can offer. This matching capability increases the relevance of the displayed product subset and fosters savings and convenience through lower product and transaction costs (Perren & Kozinets, 2018). Individualization is thus critical for assortment manageability. Second, platforms deliver transparency gains by bundling and comparing product information from different sources (e.g., prices, features, consumer reviews), empowering consumers to make better choices. Third, learning from vast data on customer and seller behavior in browsing and transacting, the retail platform can deliver accurate recommendations for cross- and up-selling.

Like branded product platforms, retail platforms are especially suited to combine objective, searchable information to improve consumer decision making. Retail platforms are unique in consolidating an otherwise overwhelming variety of suppliers and product alternatives. The integration of consumer and expert reviews adds some experiential information, but falls short of first-hand sensory experiences and personal interactions (e.g., with service personnel or experts). Therefore, complex, high-involvement, and thus high-risk product decisions are less likely to be dominated by the retail platform–consumer interface. Furthermore, as retail platforms are in the “single-product” business and accommodate many categories, they are less able to offer ancillary services and comprehensive solutions or build category-specific experiences (as branded product platforms or specialized retailers may). Rather, their position is that of a digital department store with limited power to provide rich, intense shopping interactions. Retail platforms realize efficiency gains by tailoring the interaction to their business model: fast, easy, frictionless, and product-focused. Consequently, the platform–customer interface is stronger for decision situations that profit from a high degree of convenience, such as routine purchases and one-stop shopping endeavors spanning multiple product categories. Especially one-stop shopping gives online retail platforms a competitive advantage over branded product platforms, which are still relatively restricted in fulfilling consumer needs across categories.

5.3. Remaining importance of the retailer–customer interface

The erosion of physical retailing through the rise of online and mobile shopping has placed institutional retail under significant pressure to redefine its position in the omnichannel environment (Verhoef et al., 2015). At the same time, despite gloomy predictions, brick-and-mortar stores have not vanished. In fact, although many retailers with physical stores are struggling, others continue to thrive. For example, H&M's fashion venture &Other Stories has experienced enormous success with its inspiration-driven store concept, focusing on looks and combinations of styles instead of displaying only compartmentalized merchandise. Pure online retailers like Zalando, Bonobos, and even Amazon have opened offline stores. Warby Parker, the New York-based eyeglass company, has invested heavily into physical retailing, increasing its local presence by almost 40% to 68 stores in 2017 (Warby Parker, 2018). These examples show that stationary retail formats in combination with an integrated online channel foster channel synergies rather than cannibalization (Herhausen, Binder, Schoegel, & Herrmann, 2015).

The value of physical retailing in a digital world lies mainly in empowering better decision making and creating superior, multi-sensory experiences (Grewal, Levy, & Kumar, 2009; Verhoef et al., 2009). That is, for a range of purchase situations, direct product interaction and comparison still provide superior informational and experiential value, which virtual shopping can address to only a limited extent (Gardiner, 2011; Rigby, 2011). Further, fast service and personal encounters may foster convenience and possible savings of time, money, and effort, depending on the type of inquiry (e.g., product exchange, specific diagnostics).

Institutional retailers with a physical presence are especially powerful in more involving purchase situations, as consumers tend to engage in extensive information search and rely on cognitive decision making (Deshpande et al., 1982). Also, products of higher complexity and associated risks of purchase as well as those with a prevalence of experience attributes benefit more from offline and multichannel approaches (Grewal et al., 2009; Jahn, Nierobisch, Toporowski, & Dannewald, 2018). Notwithstanding the continued value-added features of physical stores, online shopping has captured much of the value once uniquely provided by stationary retailing (Brynjolfsson et al., 2013; Thomas, 2017). Especially department stores, with their wide but shallow assortments across categories, have faced a steady decline (Whaba, 2017). The one-stop shopping approach, a vital part of those stores' value proposition, is much better suited to online retail platforms with limitless shelving and ample cross-buying opportunities. In addition, the digital consumer demands virtually instant gratification, being much less inclined to plan comprehensive shopping trips that cover different product categories (Brynjolfsson et al., 2013). Instead, decision making is focused on specific and very contemporaneous needs. With ongoing penetration of digital purchasing, the value of brick-and-mortar department stores is likely to diminish further. As low-involvement transactions and demand for search goods move online, physical retailing will mainly market products characterized by extensive and experiential information search. This transition will also lead to less impulse buying in the store and fewer opportunities for cross-selling – activities that are critical for the profitability of physical stores' operation. Still, all that being said, one should keep in mind that consumer heterogeneity with respect to preference for brick-and-mortar store patronage certainly exists (De Keyser, Schepers, & Konuş, 2015). This means that despite these general developments,

a non-trivial segment of customers still prefers to shop in the physical store regardless of the type of transaction (Konus, Verhoef, & Neslin, 2008).

In contrast to department stores, specialized retailers – whether offline- or online-focused – have the ability to tailor the customer experience to a specific need category. Particularly for high-involvement products, this advantage is increasing as new sources of value creation gain importance. Specialization may thus not only provide a competitive advantage against classical department stores but also effectively shield against the power of online retail platforms. For example, the European online optician Mister Spex offers dedicated tools (e.g., true-to-scale virtual try-on), expert advice (e.g., chat with certified opticians), and multi-channel services (e.g., visibility test and frame adjustments at local partners) to facilitate and enrich the digital purchase of glasses and sunglasses. While Amazon also sells sunglasses through its websites, the value proposition of specialists is difficult to match, as general retailers' infrastructure and services have to incorporate a plethora of different products and unrelated categories. Hence, for purchases driven by rich interactions and the need for high pre-purchase information transparency, specialized retailing is likely to increase at the expense of more general retailing formats.

The physical point of sale has been undergoing dramatic changes as well. If consumers can buy from anywhere and enjoy near-instant gratification, the store becomes largely obsolete as a transaction enabler (Reinartz & Imschloss, 2017). The main question, therefore, should not be how to impose digitization on the POS (e.g., by installing tablets, digital price tags, in-store navigation apps and so forth), but how to effectively integrate and anchor the POS into the consumers' purchase journeys. Put differently, what unique assets does the physical store offer? Those players who best orchestrate *complementary* value creation through physical retailing within multichannel concepts will be the ones dominating the customer interface (Kumar, Anand, & Song, 2017; Verhoef et al., 2015). The new physical retail environment emphasizes showrooming and customer support to drive loyalty and complement other transaction channels. By displaying only a few product versions and reducing the number of check-out locations, stores can decrease retail space significantly to save costs (Satell, 2017). Sales associates are freed up to improve customer service (Zebra, 2017) as “the retail industry [shifts] toward a concierge model geared toward helping consumers, rather than focusing only on transactions and deliveries” (Brynjolfsson et al., 2013, p. 24). Examples range from designer rental company Rent the Runway to electric mobility provider Tesla, which build on the successful experience-driven retail model originally introduced by Apple stores. Ron Johnson, former VP for retail at Apple and the creative mind behind the stores, has stated that “[i]f the store just fulfills a specific product need, it's not creating new types of value for the consumer. It's transacting. Any website can do that” (Gardiner, 2011). Accordingly, we observe a shift in stationary retailing from a transaction-oriented POS to one that is experience-oriented. At the same time, the revenue-generating ability of an experience-focused presence needs to be carefully maintained. This arrangement is likely to work only with a performant multichannel offering.

6. Implications for future marketing research

Digitization breaks up retail's monopolistic ownership of the customer interface and provides opportunities for new gatekeepers to emerge. It shifts traditional retail functions to different players, rendering the creation of competitive advantage based on these functions increasingly difficult. However, digitization also gives rise to new sources of value creation, which address long-standing customer needs more effectively than previously possible. The players can orchestrate value creation through the new sources to ensure their place in the retailing arena. What are fruitful strategies and tactics for managing this process? And how do these differ across products and players?

6.1. Stationary retailers

In this new environment, many retailers recognize that they will not be able to compete efficiently on the price or the assortment dimension with pure online retailers or with platforms. Hence, they increasingly focus on customer experience and sensory and haptic engagement. The trend toward smaller stores, pop-up stores, or experience stores in high-frequency environments speaks to this fact. For example, the car brand and retailer Audi now builds digital showrooms in inner metropolitan districts (e.g., downtown London) to interactively and virtually engage customers with the brand and the product. However, the challenge is whether and how retailers (and brands) are still able to convert those experiences into the requisite revenues. Also, the move of physical retailing toward showrooms and service hubs creates a need for more product and technical experts, which in turn requires investment in more sophisticated personnel and training and gives rise to new retail jobs like styling advisers (in fashion) or garden planners (in DIY). Further, true omnichannel touchpoint management asks for competent experts not only on site but also in the chat and call center.

Linked to that challenge is the question of whether sensory and haptic experiences generate sufficient value to consumers to enable retailers to compete effectively. Researchers could explore how physical stores can exploit their exclusive value-creation potential in terms of providing experiences and empowerment, enabling them to succeed in an increasingly digital world. For example, studies could develop measurements of experiential customer value and assess which of the various in-store experience attributes (sensory, emotional, cognitive, behavioral, relational) (Schmitt, 1999) contribute most to perceptions of customer value. How do these perceptions depend on product characteristics (e.g., category or price) or customer traits (e.g., need for attachment or stimulation), and what is the role of in-store technologies for value creation? Hence, questions for future inquiry are:

- If stores serve only as experience hubs, how does revenue generation work in the future?
- Does the generation of sensory and haptic experiences actually work to compete against the efficiency of platforms?

Many physical retailers struggle to remain in business, as exemplified by the many mall closures in the US or failures of prominent established retailers (Blockbuster, Radio Shack, American Apparel, ToysRUs). At the same time, retailers are an essential part of maintaining attractive and vital inner cities. Retailers attract shoppers, visitors, and tourists who then patronize restaurants, attractions, and leisure facilities. When the vitality and attractiveness of neighborhoods and inner cities dwindle, collateral effects are highly likely, often taking the form of lower housing prices, rising crime rates, and less neighborhood upkeep – which all represent societal costs (Chang & Jacobson, 2017).

Another aspect of retail structure is the global victory march of the hard discounting concept (Steenkamp & Sloot, 2018). Practically all mature retailing environments in the UK, US, Australia, and throughout Europe are characterized by the success of companies such as Aldi, Lidl, and Primark. These formats compete heavily on price and are always price leaders in their respective category. Hence, cost control is absolutely essential for these formats. Most interestingly, these banners rarely have e-commerce activities, as these would be too expensive to create and operate next to the physical stores. In other words, routes to success seem to exist in physical retail, even without engaging in digital offerings. The unanswered question is whether the sale of essential consumables will transfer to automated online branded-platform formats – thereby threatening this hugely successful retail format. Further research questions thus arise:

- What are the societal implications of a diminishing physical retailer presence?
- Is the extremely successful retailing format of hard discounting (Aldi, Primark) shielded against digitization?

6.2. Branded product platforms

The goal for branded platform owners is differentiation from rival platforms, establishment of a stable, private eco-system, and creation of a lock-in for existing customers through the platform's intrinsic and extrinsic benefits. Value creation may come through (re-)purchase offerings, inherent use values, complements, or partners. Particularly interesting is the advancement of need recognition and fulfilment in the direction of true solution selling. Insights into customer habits, preferences, and experiences can help create personalized recommendations not only for single products or product bundles but for entire activities. For instance, a travel app could analyze users' profiles to predict the next backpacking trip. It could then suggest options, such as how to prepare for a three-month trip to South America, and advertise the requisite equipment such as tents and sleeping bags. The promotion might include backpacking equipment and accommodation arrangements, along with local tour recommendations and a crash course in Spanish. Another example is Adidas's Runtastic: while the app is currently limited to tracking and analyzing single sports activities, in the future it may produce highly individualized training schedules and equipment recommendations on how to run a marathon. The closer platform owners move to these core consumer needs, the more locked-in users become in the respective eco-system. In essence, the brand nudges the consumer from very simplistic product transactions to much deeper and ongoing interactions, essentially providing a real solution to customers' problems. Several research questions are related to this activity:

- What are the mechanics to lock customers into the brand platform? What is the role of the experience/use stage versus the transaction stage? How do solutions fit in?

The collateral effect of lock-in and the importance of brand equity become apparent for competing brand platforms. The risk of being locked out of the customer's consideration set increases as platforms begin to serve as the primary interface for interaction and gaining direct access to those customers becomes difficult. In traditional retailing environments, all brands had, *ceteris paribus*, access to all customers at the point of sale. Likewise, in the traditional communication environment, all brands could send their messages via mass distribution more or less equally. In the new brand platform eco-system, the focal customers become notoriously hard to reach for competitors. This difficulty might arise because customers simply do not pay attention to competing brand platforms or because purchases are being automated (e.g., Samsung's IoT-based laundry detergent re-order technology). Hence, competitors often simply do not have access to those customers for either the transaction or the communication and have to struggle much harder to gain legitimate access to consumers' minds and hearts.

- If customers lock into brand platforms and more purchases become automated, how can competition dislodge customers? What is the role of marketing communication?

In brand platforms, consumers engage more in subscription-based and automated transactions. While value is generated across the entire search, transaction, and consumption cycle, consumers likely reduce their choice set and may also pay higher prices per transaction than under the old retailing model. In other words, a new balance is likely to emerge involving a shift from a multitude of diverse product transactions in the traditional sense to a transaction that focuses on fewer but more encompassing brand-customer relationships where the transaction itself is immersed into the entire relationship.

- What is the impact of automated transactions on customers' choice making and prices paid? What do customers value more within the larger relationship context?

Finally, future studies could examine how IoT products and branded-platform eco-systems affect consumers and consumer-firm relationships. These technologies enable firms to get very close to customers' actual behavior, indeed to invade their very

private territory, which may discourage branded platform adoption. A case in point is consumers' alarm at the numerous glitches and eavesdropping capabilities in Amazon Alexa's voice technology. Future studies can explore whether and under what circumstances consumers perceive technological advancements as a threat to their privacy or autonomy and what firms can do to alleviate privacy concerns or to mitigate customer perceptions of lock-in (Kannan & Li, 2017).

- How do consumers perceive and interact with smart durables and IoT products? Under what circumstances would consumers perceive smart durables as a threat to their privacy or autonomy?

For branded platform business models, new monetization opportunities may exist. Hence, future studies could inform firms about pricing or business model decisions. For instance, researchers can use simulation approaches to estimate revenue models that account for new revenue streams, such as revenues from sales of complementary products, from data (e.g., displaying targeted advertisements of third-party complementary providers), or from premium functionalities of smart durables (e.g., paying extra fees for specific functions).

- How can smart durables open up new revenue streams for branded platforms? How can new revenue streams created by smart products, such as revenues from sales of complementary products, from data (e.g., displaying targeted advertisements of third-party complementary providers), or from premium functionalities of smart durables (e.g., paying extra fees for specific functions) be accounted for?

6.3. Online retail platforms

Clearly, online retail platforms seem to be the big winners in the retailing environment. However, even they encounter challenges, which open new avenues for research. These platforms often operate as a department-store model, as exemplified by Amazon or Alibaba. However, the platforms may suffer when both retailers and brands counter this trend with more focused relationships with customers. Retailers and brands may offer solutions, expertise, and tailored customer experiences for products and thus serve as gatekeepers with respect to many decisions once made on online retail platforms. The attractiveness of general platforms may also suffer.

- How can retail platforms advance their value propositions as manufacturers and retailers attack their current “department store” business model through branded product platforms and specialization/solution selling?

Another challenge for platforms is suppliers' and brands' ambivalence about their relationships. Brands feel intermediated from their customers, transaction commissions tend to be significant, and some platforms choose to sell their own versions of certain products once they realize the revenue potential of those products. Therefore, some brands will not consider selling on those platforms and other brands withdraw after their negative experience with the platform. Brands often search for ways to be independent of those platforms – especially large brands that do have enough clout on their own.

- How can platforms design a sustainable eco-system that does not alienate suppliers?

7. Epilogue

As early as 1994, Bill Gates made the provocative and controversial statement that in the future, banking would be needed, but banks themselves would not. With every year since, this statement has seemed to hold even more validity – given that financial services are largely digitizable. Looking forward, similar thinking may be applied to the retailing sector. Retailing as a function will not vanish, but traditional retailers as an institution may be endangered. We argue that current constituents (brand manufacturers) and new constituents (retail platforms) will take over important interfacing roles with final customers. These interfacing roles are made possible through very specific types of value that are generated via digitization, leading to new and improved benefits at the customer level. Hence, while the customer appears to be a clear winner from these developments, the competition for the customer interface is more open than ever.

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