Evolution of retail formats: Past, present, and future

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Abstract

In this paper, the authors review current literature on retail formats and propose a new customer-centric framework for retailers to focus on as they continue to innovate and evolve. Specifically, they review the literature on how formats compare in their attributes and compete with each other; the role of customer behavior in format choice; and developments in multichannel and omnichannel retailing. They propose a framework for retail formats suggesting two paths – either reduce friction in the customer journey or enhance customer experience. They discuss the challenges faced by offline (physical store-first) and online (digital-first) retailers and elaborate on strategies each type of retailer is pursuing to address these challenges. Finally, they offer directions for future research in this domain. They conclude by calling for newer digital-first and physical-first players to continue coming up with different customer-centric formats, which they predict will slowly morph into integrated retailers, leaving space for newer players to enter the market and hence keep the wheel of retailing spinning.
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Retailers mainly provide a set of services valued by consumers. Betancourt, Chocarro, Cortinas, Elorz, and Mugica (2016) define the wide-ranging forms these services can take: retailers might, for example, facilitate the availability of information, provide product assortment, promote the accessibility of a location, create ambience, or assure timely product delivery in the desired form at the desired time. Each of these services either provides direct utility (e.g., ambience) or lowers the customer costs of acquiring a market basket (e.g., accessibility of location). Most of the time, these services are not priced separately. The demand for these retail services mainly results from a consumer tradeoff involving factors such as the need for information, access to transportation, time costs, and the ability to store goods. Some consumers are willing to allow a retailer to have a higher margin in return for extensive service. In contrast, others are willing to perform some of the services themselves in return for a lower price. Because there is a cost of supplying these services, retailers' survival in equilibrium produces a positive relationship between prices and services provided. That is, margins increase with service, and a trade-off between margin and services results.

The type and extent of these services depend primarily on the retail format, which combines different levels of service characteristics. Retail formats have significantly evolved. Until the

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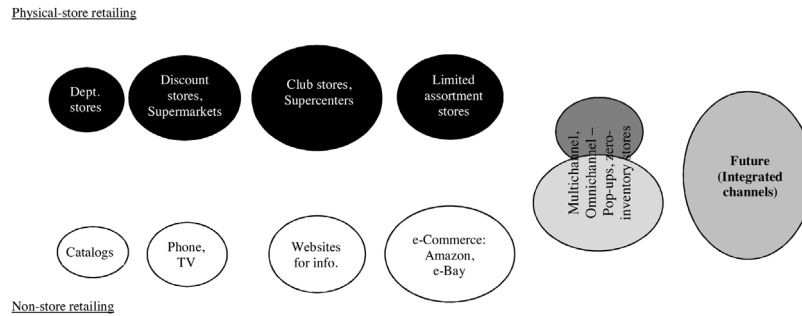(A. Pandey).

Fig. 1. Evolution of retail formats.

middle of the nineteenth century, small, family-owned general stores were the predominant retail format. Customers had to ask a clerk to bring out merchandise and would often haggle over the price. The transition to larger general stores and department stores started with the establishment of Marshall Field's in 1852 (later acquired by Macy's). They offered a large assortment of products under one roof at fixed prices. Supermarkets emerged in the early twentieth century, with Kroger opening up in 1929. The proliferation of retail formats gathered pace shortly after, with the first mall opening the next year. Shoppers could access a variety of stores under one roof. 7-Eleven opened its first convenience store in 1946 and started providing extended hours of operation (from 7 a.m. to 11 p.m.) to customers for the first time. The birth of discount stores followed, with Walmart opening in 1962, and Kmart and Target coming up soon after (See Fig. 1 for the evolution of store and non-store retailing).

Meanwhile technology started playing an increasingly prominent role in retailing with the advent of universal product codes in 1974. The Home Shopping Network brought TV and shopping together in 1985, creating a technology-based non-store format outside brick-and-mortar stores. Then, Amazon revolutionized retailing by selling its first book online in 1995 (Braun, 2015).

The advent of each new format puts pressure on the older ones to evolve. Department stores were once at the cutting edge and reshaped retailing by enhancing customers' shopping experience. By dividing products into different departments, they fulfilled many customer needs under one roof. However, in the second half of the twentieth century, department stores struggled to match the prices offered by discount stores and category-killers, which had better economies of scale. Internet retailing created competitive threats for all brick-and-mortar retailers (denoted as offline hereon) by providing huge product assortment and convenience of purchase. To compete, older formats have been partly trying to co-opt the features and technologies of newer formats and partly trying to return to what they do best. What set department stores apart a century ago was their status as shopping destinations – customers viewed shopping as an enjoyable activity. Yet today, when shoppers can simply check their phones to see a retailer's assortment and prices from the comfort of their home, these stores have to differentiate themselves once again. Towards this purpose, they have been remodeling their aesthetics, curating their product assortments, investing in value-adding services to attract customers, and introducing

new concepts such as store-within-a-store (Lahart, 2020). Discount stores and category-killers thrived on offering lower prices until online retailers undercut them. Now they are investing in matching the convenience and assortment of online retailers. In turn, many online retailers are investing in physical stores to improve customer experience and speed of product acquisition. All this investment in omnichannel retailing is increasing costs for bigger players. This has opened space for smaller, independently-owned stores like the mom-and-pop stores of yore, but with a heavy reliance on technology. On top of all this, newer formats offer varying combinations of retail services and features of both offline and online channels.

This paper reviews the current literature on retail formats, proposes a framework for customer-centric retail formats as they advance, explores current and potential developments in retail formats, and offers directions for future research in this domain. Our framework lays out two potential paths for retail formats to be competitive and relevant. The first is to enhance customer experience. The second is to reduce customer friction. Of course, retailers can opt for both paths if their resources permit. We address two questions related to the future evolution of retail formats:

1. What challenges are faced by offline retailers (i.e., retailers who started with physical stores, or "physical-first"), and how are they evolving in response?
2. What challenges are faced by online retailers (i.e., retailers who started with online channels, or "digital-first"), and how are they evolving in response?

Literature review

Our review considers how formats vary in their services, and the role consumer behavior plays in format choice. A summary of work done on competition between retail formats, and multichannel and omnichannel retailing issues follows.

Variation in retail services across retail formats

Online formats have advantages in accessibility and assortment since their market scope is unlimited geographically, and they do not need to maintain costly inventories at many physical locations (Brynjolfsson, Hu, & Rahman, 2009). On the other hand, the lack of direct contact with customers lowers their abil-

ity to provide an enjoyable shopping experience (ambience) and lowers delivery speed. As pointed out by Lal and Sarvary (1999), objective information on digital or non-sensory attributes is readily obtainable online. Examples would be electronic products or terms of an auto insurance policy (Honka, 2014). On the other hand, sensory items such as perfumes or apparel require personal inspection, at least for the initial purchase. An online retailer cannot provide this as effectively with current technologies, giving offline formats an advantage for these sensory items.

In general, a retail format is a combination of different levels of retail services such as information, accessibility, assortment, ambience, and delivery speed.[1] These service attributes form the basis for competition between formats. As an example of variation in services across formats, Fox, Montgomery, and Lodish (2004) compared the attributes and price levels of three offline formats that sell grocery products – mass merchandisers, grocery stores, and drug stores. Mass merchandisers were the least accessible (i.e., required the most travel time) but had the lowest prices. Grocery stores had the widest assortments but the highest prices. They also had the highest market share by a considerable margin. Drug stores were the most accessible but had by far the smallest assortments and the smallest market share. Because of heavy promotion, drug stores had lower average prices than the grocery stores. These examples illustrate the trade-offs characteristics of different retail formats.

Role of consumer behavior in retail format choice

Consumers seek to choose a format and price level that best suits their needs in a given shopping situation. Because a retailer can survive only if it can profit from providing a given mix of services, consumers ultimately determine the market formats. Therefore, it is essential to examine the services required by consumers as they proceed through the customer journey.

While the stages in the customer journey can be described in different ways, we will describe them in a way that is consistent with the customer-centric framework we later propose. The first two stages are the basic stages of the purchase process, i.e., information search and purchase. Since goods sold online are acquired only after delivery, we consider acquisition as a third separate stage of the customer journey. Since product return is a particularly important factor for online sellers, it is considered a separate and last stage of the journey. Table 1 presents a summary of relevant literature on factors related to the search and purchase stages of the journey, and Table 2 presents a summary of relevant literature on factors related to product acquisition and return stages. A general conclusion from this summary is that the factors related to various stages of the consumer journey are driven by consumer demand for the services provided by retailers.

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[1] For the purpose of this review, different retail formats should be thought of as general types of retailers, such as online, mass merchandisers, department stores, supermarkets, convenience stores, etc.

Information search

Concerning search, Ehrlich and Fisher (1982) presented and tested a model in which consumers value advertising because it lowers their search costs. In return, they pay a higher margin that covers the cost of advertising. Search engine advertising in which consumers actively seek advertisements related to a given topic seems a good example of this. Ratchford and Stoops (1988) showed that this model can be replicated for any bundle of retail services.

As consumers do not need to travel to online stores, their online search costs should be relatively low. Using a carefully constructed survey of price shopping for automobile insurance, Honka (2014) demonstrated that online search costs were much lower than offline search costs. Using clickstream data, De Los Santos, Hortacsu, and Wildenbeest (2012) studied online searches for books, Koulayev (2014) studied online searches for travel, and Kim, Albuquerque, and Bronnenberg (2017) studied searches for camcorders. All three studies found that although search costs were low, consumers still did not search extensively. The finding of limited search is also characteristic of offline shopping and needs explanation.

While one might expect retailers to avoid direct competition by locating further away from one another, retailers often locate in clusters near stores that sell related products. For example, automobile dealers tend to locate in a "motor mile." One explanation for this co-location is that consumers prefer to comparison shop at one location because this lowers their search costs. A more subtle explanation is that consumers can avoid being exploited by the sunk cost of traveling to a dealer by having another seller nearby, accessible at no additional travel cost (Wernerfelt, 1994a). While consumers may need to travel to one or more stores to inspect an item's sensory attributes on the first-purchase occasion, the information on sensory attributes may carry over to subsequent purchases. Information on other attributes may be available online. In this case, consumers may lower their search costs by buying online and avoiding a shopping trip (Lal & Sarvary, 1999).

In examining savings that result from a search for groceries, Gauri, Sudhir, and Talukdar (2008) compared a spatial shopping strategy with a temporal shopping strategy. The authors found that those who attend to weekly promotions at one store (temporal strategy) gain about the same savings from their search as those who shop at two competing stores in one week (spatial strategy). A consumer who lives close to two competing stores might shop both spatially and temporally, and thus receive both strategies' benefits.

Though conditions under which sales assistance can be useful have been conceptually outlined (Wernerfelt, 1994b), detailed empirical evidence about salespeople's role in in-store search is scarce. An exception is a recent study of search for cosmetics by Jain, Misra, and Reid (2020) that used video recordings of in-store search behavior. The authors found that salesperson time with customers does lead to increased purchase incidence and sales, though with diminishing returns. They also found that these effects vary considerably with customer and salesperson characteristics.

Table 1
Summary of Literature on the Role of Consumer Behavior in Retail Format Choice: Information Search and Purchase.

Activity	Topic / Result	Key References
Information search		
General	Advertising lowers search costs by reducing shopping time	Ehrlich and Fisher (1982); Ratchford and Stoops (1988)
Online search	Search costs are lower online than offline	Honka (2014)
	Online search costs are low, but the amount of online search is also low	De Los Santos et al. (2012); Koulayev (2014); Kim et al. (2017)
In-person search	Co-location of competing stores facilitates search	Wernerfelt (1994a)
	Sensory information obtained on the initial purchase may alleviate the need for store visits on subsequent purchases	Lal and Sarvary (1999)
	Temporal and spatial dimensions of search	Gauri et al. (2008)
	Sales assistance does have a positive effect on sales	Jain et al. (2020)
Showrooming	Creates a free-rider problem for retailer and salespeople	Ailawadi and Farris (2017)
	Purchase is less likely if consumers have difficulty finding a salesperson.	Gensler et al. (2017)
	The manufacturer can compensate the retailer for providing service	Kuksov and Liao (2018)
Purchase		
Assortments	Large assortments lead to one-stop shopping and save time	Messinger and Narasimhan (1997)
	Large basket shoppers prefer EDLP	Bell et al. (1998)
	Large assortment of brands leads to increased sales	Briesch et al. (2009)
	Buying large packages at club stores is associated with increased consumption	Ailawadi et al. (2018)
Other store characteristics	Store labor lowers waiting time for consumers	Oi (1992, 2006)
	Design and ambience perceptions affect patronage	Baker et al. (2002)
Transportation	Automobile provides access to stores with low prices	Talukdar (2008)
	An increase in gasoline prices leads to more patronage of supercenter formats	Ma et al. (2011)
Shopper segments	Multi-channel shopper segments	Konus et al. (2008)
	Online patronage and shopper typologies	Ganesh et al. (2010)

Table 2
Summary of Literature on the Role of Consumer Behavior in Retail Format Choice: Product acquisition and Returns.

Activity	Topic / Result	Key References
Product acquisition		
Strategy	Amazon uses delivery time as a strategic variable	Dinlersoz and Li (2006)
Shipping fees	Studies of economics of shipping fees	Dinlersoz and Li (2006); Koukova et al. (2012); Gil et al. (2020)
Returns		
Return rates	Over 30 percent of items sold online are returned	Banjo (2013)
	Free shipping leads to increased returns	Shehu et al. (2020)
	Product performance and return rates are inversely related	Dzyabura et al. (2019)
Effect of reviews	More product reviews, lower dispersion in ratings, and helpful reviews all lead to fewer product returns	Sahoo et al. (2018)
Effect of store openings	Return rates for online purchases decrease after store openings	Wang and Goldfarb (2017)

Customers may search offline and buy online, a practice labeled showrooming (Ailawadi & Farris, 2017). Since showrooming leads retailers to provide information to consumers without being compensated for their efforts such as salesperson time, showrooming is a problem for offline retailers and has received considerable attention.[2] In an extensive survey study of showrooming behavior, Gensler, Neslin, and Verhoef (2017) found that showrooming is more likely when the information obtained in the offline store leads consumers to believe that they can get better quality and prices online – or to believe that there is more variation in online prices, indicating that an online search might lead to a lower price. Buying at the store rather than showrooming is more likely when online search costs are perceived to be high, in-store sales personnel are more accessible, and consumers are under time pressure. In particular, Gensler et al. (2017) found that consumers are more likely to indulge in showrooming when they have difficulty finding a salesperson. They concluded that more salespeople might be more important than high-quality salespeople.

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[2] Searching online and buying offline is called webrooming. Because webrooming involves accessing a website that is available to all buyers, the marginal cost of this practice to an online seller is likely to be relatively very low.

While the received wisdom assumes that showrooming is harmful to offline retailers, Kuksov and Liao (2018) showed that this need not be the case if manufacturers act in their own best interest. Since manufacturers benefit if consumers receive pre-sales services from offline retailers, they could alleviate the showrooming problem by compensating retailers for providing the appropriate level of service.

Purchase

Accessibility is a major differentiating factor for offline retailers. Consequently, there is an extensive literature on the trade-off between the attractiveness of the store (or overall trade area) and the consumer's distance from the store. Much of this literature is based on Huff (1964) proposed logit model to capture this trade-off (see Dolega, Pavlis, & Singleton, 2016 for a review). Messinger and Narasimhan (1997) used the household production framework to model the choice between supermarkets and convenience stores. They found that the reduction in shopping trips, resulting from one-stop shopping at supermarkets, and facilitated by their broad assortment, justified this format's choice by consumers. Using panel data from the four largest grocery retailers in the Chicago market, Briesch, Chintagunta, and Fox (2009) showed that store choice increases with the number of brands in a category but declines with the number of stock-keeping units (SKUs) per brand.

Studies on consumer preferences provide insights potentially relevant to practice. In a study of grocery shopping behavior, Bell, Ho, and Tang (1998) found that large-basket shoppers prefer everyday low pricing (EDLP). In a recent study, Ailawadi, Ma, and Grewal (2018) exploited a natural experiment created by the entry of a club store into a market. They found that the number of calories contained in the large packages of food products, usually sold by club stores increased considerably over time compared to control groups. The implication is that the large package sizes sold by club stores may be promoting a harmful increase in the consumption of packaged foods.

Other store characteristics affect patronage. While one-stop shopping lowers travel costs, Oi (1992, 2006) used a model based on queuing theory to demonstrate the value of store labor in reducing shopping time and to show that more shoppers (arrivals) create economies of scale by reducing the time that workers are idle. The latter is a source of economies of scale generated by larger assortments. Baker, Parasuraman, and Grewal (2002) provided an extensive review of the literature related to store ambience. They conducted two experimental studies to show that store design and music perceptions positively affected customers' perceptions of merchandise value and purchase intentions.

Aside from retailers, the automobile is an important instrument in the production of retail services. Talukdar (2008) examined the importance of access to an automobile as a factor in consumer shopping. He showed that among respondents with lower socioeconomic status, those who had access to a car shopped at distant, lower-priced stores. In contrast, those who did not have access to a car did not search and generally limited their shopping to small and expensive stores located within walking distance. Ma, Ailawadi, Gauri, and Grewal (2011) examined

the effect of gas prices on grocery shopping behavior. They found that, as gasoline prices rise, shoppers tend to shift away from grocery and drug formats to supercenter formats.

There are some segmentation studies of shoppers. Ganesh, Reynolds, Luckett, and Pomirleanu (2010) found that online shopper segments were similar to offline shopper segments derived in other studies. Konus, Verhoef, and Neslin (2008) used latent class analysis of self-reported information-seeking and purchase behavior to form three clusters of shoppers: uninvolved (40%), multichannel (37%), and store-focused (23%). Psychographic and demographic variables were used as covariates. Multichannel shoppers were found to be the highest of the three clusters in innovativeness and shopping enjoyment, while store-focused shoppers were found to be highest in loyalty.

Acquisition

For online channels, acquisition (i.e., getting the product in one's hands) generally occurs after purchase and involves a consumer decision about the cost and timing of delivery. Purchase and acquisition are also commonly separated in many offline channels (for example, furniture and major appliances). The separation of purchase and acquisition leads sellers to compete on shipping fees and delivery time. Amazon Prime's guarantee of 2-day delivery is an example of the latter (Dinlersoz & Li, 2006). As discussed later in this paper, many delivery technology innovations are being developed, and Amazon is also a leader in this area.[3] Shipping fees provide an opportunity to engage in price discrimination, and in practice, many different fee structures abound. There have been many different studies of the economics of shipping fee structures (e.g., Dinlersoz & Li, 2006; Koukova, Srivastava, & Saul-Fischer, 2012; Gil, Korkmaz, & Sahin, 2020).

Returns

Returns lower the risk of buying online without personal inspection; thus, return policies are particularly important for online retailers. However, Banjo (2013) reports that around one-third of all online purchases are returned, creating operational challenges for retailers and affecting profitability. With more and more retailers serving customers through both online and offline channels, efficiently managing product returns across channels should be a key strategic focus.

Shehu, Papies, and Neslin (2020) presented a comprehensive framework for studying product returns and conducted an extensive study of the impact of free shipping promotions on returns. Their results indicate that free shipping encourages the purchase of more risky products, leading to increased returns. Some other noteworthy findings in the literature are that a product's performance in a channel and its return rate are inversely related (Dzyabura, Siham, Hauser, & Ibragimov, 2019); avail-

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[3] For example, see "How Amazon is Changing Supply Chain Management," https://www.thebalancesmb.com/how-amazon-is-changing-supply-chain-management-4155324 and "Six Ways Amazon is Strengthening Logistics Reach," https://www.bringg.com/blog/latest/6-ways-amazon-strengthening-logistics-reach/.

ability of more product reviews, lower dispersion in ratings, and the presence of more helpful reviews all lead to fewer product returns (Sahoo, Dellarocas, & Srinivasan, 2018); and return rates for online purchases decrease after store openings (Wang & Goldfarb, 2017).

Competition between retail formats

Competition between offline retail formats

The top section of Table 3 summarizes the literature on competition between offline retail formats. Articles by Basker (2007); Bronnenberg and Ellickson (2015), and Ellickson (2016) summarize an extensive literature on the evolution of retail formats. Basker (2007), who mainly summarizes her studies of Walmart, attributes its success to the interaction of superior technology and economies of scale, both of which give the retailer a cost advantage allowing for lower prices. Bronnenberg and Ellickson (2015) also emphasize the importance of economies of scale in modern retailing development. They further note that scale economies cannot be realized without the development of improved access to transportation and storage by consumers, nor without investments in infrastructure by governments.

Basker (2007) and Ellickson (2016) both note that Walmart prices were lower than competitor prices and that Walmart's entry into a market had resulted in reduced prices at competing outlets located nearby. However, Zhu, Singh, and Dukes (2011) also demonstrated that an existing retailer could benefit if a mass merchandiser (e.g., Walmart) establishes a location nearby. The existing retailer can benefit if it sells unique items not sold by the mass merchandiser. The existing retailer loses on those items also sold by Walmart but benefits from the spillover effect of Walmart's presence on the sales of its unique items.

Using Census tract data on consumer characteristics and a complete dataset on store revenues, size, and distance-to-Census tracts, Ellickson, Grieco, and Khvastunov (2020) present a comprehensive analysis of spatial competition in the grocery industry. Besides verifying the importance of location, income, and automobile ownership, the authors provide an extensive analysis of substitution patterns between firms. Walmart was found to have the lowest cost for improving quality and was identified as the major competitive threat to other chains.

Past research has documented that grocery stores follow a combination of format and pricing strategies to serve various consumer segments' needs. The predominant formats are supermarkets, supercenters, and limited assortment stores, and the main pricing strategies observed are EDLP, Hi-Lo, and Hybrid (Bhatnagar & Ratchford, 2004; Gauri, Trivedi, & Grewal, 2008; Hoch, Drèze, & Purk, 1994). Most major retailers use various combinations of pricing and format strategy combinations to occupy several niche markets in various geographical regions. Ellickson, Misra, and Nair (2012) employed a dynamic game to estimate the costs of switching between high-low pricing and everyday low pricing formats for supermarkets. They analyzed markets with and without Walmart. While high-low pricing entails higher fixed costs, it also generates higher margins and revenues. The authors estimated that switching from high-low to EDLP was about six times as expensive as switching from EDLP to high-low pricing. This basic result held regardless of the presence of Walmart. The magnitude of switching costs uncovered in this study may help explain why Ellickson and Misra (2007) found that competing firms tended to choose the same strategy in a given market, rather than differentiating themselves. Gauri et al. (2008) also found that competing stores tend to differentiate on either pricing or format strategy.

Competition between offline and online retail formats

The bottom section of Table 3 summarizes the literature on competition between offline and online formats. Using market-level data from 1994 to 2003, Goldmanis, Hortacsu, Syverson, and Emre (2010) showed that the large decline in the number of small offline establishments in the travel, book, and automobile industries was associated with increased internet usage in a given market. This is consistent with their model, in which the arrival of the internet had a significant impact on the structure of these markets by reducing search costs.

Several other studies have documented the existence of direct competition between offline and online outlets. Goolsbee (2001) found that the cross-elasticity of online computer sales with respect to offline prices was greater than one. Forman, Ghose, and Goldfarb (2009) found that online sales of popular books decreased when a new offline discount store or bookstore entered the local market, suggesting that respondents prefer to buy from a physical store or, conversely, that the online outlet provides a source for purchases when an offline store is not nearby. Choi and Bell (2011) showed that consumers with atypical preferences were more likely to shop online because offline retailers did not offer their preferred product.

Since there is no need to invest in physical stores, and no need to maintain an inventory in each store, online retailing can achieve considerable economies of scale on the supply side. Centralized distribution centers and drop shipping arrangements with suppliers allow online sellers to have very large assortments. Brynjolfsson, Hu, and Smith (2003) indicate that Amazon, for example, had access to 2.3 million books, compared with 40,000–100,000 at a large brick-and-mortar bookstore. The latter was constrained by the store's physical space and the costs of carrying a separate inventory at each store.

Due to savings in inventory costs, online retailing has a big advantage in selling less popular items (the long tail) and in removing geographic barriers to purchase. Brynjolfsson et al. (2003) estimated that the significantly increased assortment of books available online increased consumer welfare by $700 million to a billion dollars in 2000. In comparing the online sales of a clothing retailer with the catalog sales of the same item, Brynjolfsson et al. (2009) showed that online sales of niche items were less sensitive to competition from offline stores than from catalog sales because the online sales were skewed toward niche items. Brynjolfsson, Hu, and Simester (2011) showed that online sales of niche items increased with recommendations and search tools, indicating that these tools lowered search costs, making it easier for consumers to locate them. In sum, because of the ability to handle more extensive inventories and provide search tools that facilitate locating niche items, online retailing has a

Table 3
Summary of Literature on Competition between Retail Formats.

	Topic/Result	Key References
Offline Competition		
Big Chains vs. conventional stores	Growth of big chains is due to technology, scale economies, infrastructure	Basker (2007); Bronnenberg and Ellickson (2015) (2016)
Impact of Walmart's entry in a market on incumbent sores	Nearby competitors forced to lower prices	Basker (2007); Ellickson (2016)
	Greatest threat to other chains	Ellickson et al. (2020)
	Nearby stores can benefit from spillovers	Zhu et al. (2011)
EDLP vs. Promo	Competing stores tend to choose the same option	Ellickson and Misra (2007); Gauri et al. (2008); Ellickson et al. (2012)
Offline – Online Competition		
Entry of internet	Exit of high-cost offline retailers	Goldmanis et al. (2010)
Online vs. offline competition	Online and offline outlets are substitutes, online preferred when offline unavailable, and for niche items not stocked by store	Goolsbee (2001); Forman et al. (2009); Choi and Bell (2011)
Competitive advantage	Online retailers have an advantage in accessibility, non-sensory information, assortment, niche items, removing spatial barriers	Brynjolfsson et al. (2003, 2009, 2011)
	Offline retailers have an advantage in sensory information, delivery speed, ambience	

comparative advantage in selling less popular items, translating into substantial benefits for consumers.

As noted above, online sellers have an advantage in facilitating a search for information on digital attributes (including price). In contrast, offline sellers have an advantage in providing information on non-digital attributes and providing faster delivery. This leads to the possibility that consumers will search among both online and offline retailers.

Multichannel and omnichannel retailing

Table 4 summarizes the literature on multichannel and omnichannel retailing. Multichannel refers to the design, deployment, coordination, and evaluation of different channels through which the marketer acquires, develops, and retains customers (Neslin et al., 2006), while omnichannel refers to integrating activities within and across channels (Ailawadi & Farris, 2017). These authors provide a general framework for studying multichannel and omnichannel retailing and propose several metrics for assessing performance.

Since online retailing has advantages in accessibility and assortment, while offline retailing has advantages in personal inspection and immediate delivery, retailers can combine the two channels to offer all types of services. Many retailers have done this, giving rise to multichannel retailing. The major question is whether the benefits of synergy outweigh the potential costs of one channel cannibalizing the other. Pauwels and Neslin (2015) and Avery, Steenburgh, Deighton, and Caravella (2012) studied the effect of adding a brick-and-mortar store to a channel consisting of internet and catalog options. In both cases, the authors found that adding the store increased sales and did not adversely affect the internet channel, though catalog sales decreased.

The effect of offline retailers adding an online channel is more nuanced. In a U.S. supermarket chain study, Pozzi (2013) found that adding an online channel increased overall revenues by 13 percent. This was mainly due to reduced travel costs. Conversely, Melis, Campo, Breugelmans, and Lamey (2015) found that grocery customers tended to be loyal to the online outlet of their favorite offline chain initially, but then shopped among all online sellers after they gained more experience buying groceries online. The implication is that online outlets need to be competitive with the online outlets of other chains. Chang and Zhang (2016) found that visits to the offline store were more effective at restoring customers who had become inactive to an active state. In sum, multichannel retailing appears to be effective if properly managed.

There is considerable evidence that consistency between offline and online offerings is beneficial. Badrinarayanan, Becerra, and Kim (2012) found that trust in the offline channel, and congruence between the offline and online channels, were positively associated with trust and purchase intention for the online channel. Herhausen, Binderb, Schoegel, and Herrmann (2015) found that service integration between online and offline channels (e.g., store locators, availability checks, returns to physical store) enhanced perceptions of service quality, lowered perceptions of risk, and increased purchase intent for the online store without harming the offline store. Emrich, Paul, and Rudolph (2015) also found that integrating assortments between offline and online channels increases patronage intentions. Hammerschmidt, Falk, and Wieters (2016) found that online and offline channels should be alignable; in other words, consistent in their attributes. Emrich and Verhoef (2015) found that a homogeneous web design (consistent with the design of the offline store) had the largest effect on patronage intentions.

For a retailer with both offline and online outlets, the internet and well-conceived customer databases allow tracking consumers through many stages of the purchase process. This has led to the idea of omnichannel marketing and the development of marketing strategies for each stage in the purchase process (Verhoef, Kannan, & Inman, 2015). Consumers might encounter information about a retailer through search and dis-

Table 4
Summary of Literature on Multichannel and Omnichannel Retailing.

Topic/Result	Key References
Multichannel	
Adding an offline store to an online channel is profitable	Pauwels and Neslin (2015); Avery et al. (2012)
Adding an online channel to offline stores is profitable	Pozzi (2013)
Adding an online channel creates online competition for your loyal customers	Melis et al. (2015)
Visit to offline store is effective at restoring inactive customers	Chang and Zhang (2016)
Need to align services and attributes between online and offline channels	Badrinarayanan et al. (2012); Herhausen et al. (2015); Emrich et al. (2015); Hammerschmidt et al. (2016)
Omnichannel	
Make web design consistent with store design	Emrich and Verhoef (2015)
Strategy for each stage of the customer journey	Verhoef et al. (2015)
Attribution of sales to channels used in search	Li and Kannan (2014); Kalyanam et al. (2017)
Value of rapid delivery in omnichannel retailing	Fisher et al. (2019)

play advertisements, retailer stores, referral websites, a retailer's website, or desktop and mobile devices—and each may merit its own channel strategy. For example, Kalyanam, Lenk, and Rhee (2017) developed a structural model to examine the use of different offline and online channels by customers of a catalog retailer. They found that the market can be segmented by the shopping costs associated with different channels. These costs are related to a customer's experience and basket size. As another example, Li and Kannan (2014) employed detailed data on different channels used in searching for a hotel to develop a model for attributing conversions to different channels. As a third example, Fisher, Gallino, and Xu (2019) showed that an innovation resulting in faster delivery to online apparel customers increased online sales and had positive spillover effects on the seller's offline stores.

Fig. 2. Paths for customer-centric retail formats.
*At a minimum, exceptional on one dimension and acceptable on the other.
**The two paths are not mutually exclusive. A resource-rich retailer may follow both simultaneously.

Customer-centric retail formats

In this section, we propose a customer-centric conceptual framework for the success of retail formats. We recognize that quality and price considerations alone are no longer sufficient when customers decide between multiple formats. Like Kahn (2018), our framework recognizes that consumers' reliance on digital and mobile devices has fundamentally changed the customer journey. Retailers must now aim to enhance that journey or remove obstacles (see Fig. 2).

Because quality and price are key characteristics of a retailer's offering, they are still critical aspects of a retail format. Quality remains the most important intrinsic characteristic of a product or service and price, the most crucial extrinsic characteristic. Neither of them is unidimensional, however. The final price is often arrived at after applying a loyalty program benefit, redeeming a coupon (common at department stores, grocery stores, and online retailers), or negotiation (the dominant pricing paradigm for automobile retailers). Moreover, consumers' evaluation of the price depends on external references, including the regular shelf price or the Manufacturer Suggested Retail Price, i.e., MSRP (see Winer, 1986; Lattin & Bucklin, 1989). Quality is multidimensional as well – it depends on multiple attributes of the product or service from which consumers derive benefits. For products, these attributes may include raw materials, design, and manufacturing. For services, consumer benefits may
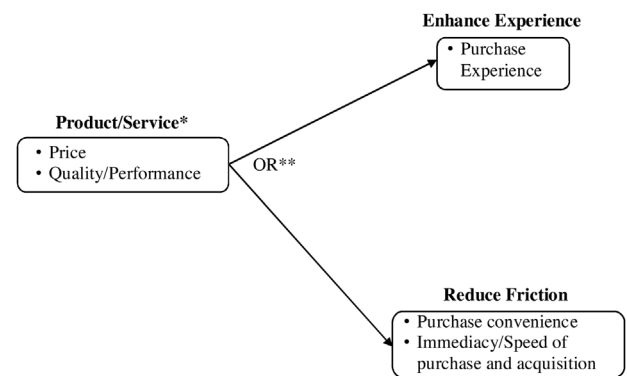
depend on who provides the service and where and its consistency.

But quality comes at a cost, leading to an inherent trade-off with price. Most retail formats excel in one of these two characteristics while being just acceptable in the other. More than any other retailer, Walmart achieves a compelling low-price format with acceptable quality (Walmart has made a wide variety of leading brand-name products available in rural markets throughout the U.S.). In contrast, Nordstrom's flagship stores offer a compelling high-quality format with acceptable prices, primarily because of policies that enable exceptional customer service (Ander & Stern, 2004).

Yet quality and price are no longer enough. Consumers now engage with retailers using digital and mobile devices, which has fundamentally changed the customer journey. Gone are the days when the manufacturer unilaterally controlled brand communications, modeling the customer journey as a simple purchase funnel. Now, marketers map the customer journey to identify points of friction and opportunities to enhance the customer experience. We propose that the retailer take one of these two paths—either (1) reduce friction in the consumer's shopping process or (2) enhance the shopping experience. Observe that the first path takes away obstacles and impediments by shortening wait times, reducing inconveniences, and eliminating unneces-

sary steps in the journey. The second path creates pleasurable experiences based on customers' preferences and behaviors.

There may be no better example of a retailer removing obstacles and impediments from the customer journey than Amazon, which has leveraged technology to extraordinary effect. Taken together, innovations from "one-click" ordering to a sophisticated product recommendation engine, to constructing a supply chain capable of offering free second-day shipping on a previously unimagined scale, have affected online shopping in two fundamental ways. First, Amazon reduced the effort and complexity of online shopping. Second, Amazon reduced the time online shoppers needed to wait before receiving their merchandise. By reducing friction in the shopping process and wait times for merchandise, Amazon has fundamentally changed consumers' expectations about online retail transactions.

Lululemon offers an example of enhancing the customer experience by building a community around engagement in yoga and a healthy lifestyle. Lululemon's CEO describes its community retail concept as "an experiential brand that ignites a community of people living the sweat life" (cf. Danzinger, 2019). Its approach has been to build store-based yoga- and fitness-centric communities by engaging local yoga and fitness instructors and sponsoring events, both in-store and in the local market. To that end, the retailer's most recent store model includes an in-store "sweat studio" for trying out merchandise and a "fuel bar" for healthy refreshments.

In summary, we propose that a customer-centric retail format should go beyond price and quality to either add value to or remove impediments from the shopping experience. Our framework encompasses many conceptual models that have been proposed in the literature to understand the consumer journey in retailing and the role of technology in it. We extend an early framework (Grewal, Levy, & Kumar, 2009) that focused exclusively on customer experience to include customer friction. Grewal, Noble, Roggeveen, and Nordfalt (2020) conceptualize a model specifically for in-store shopping, unlike our framework, that applies to all retailing forms. Of the two dimensions that underlie their model, one (convenience) maps onto reducing friction in our framework. Their other dimension of social presence deals with how technology can make individuals feel as if they are interacting with others, and therefore corresponds to enhancing customer experience in our framework. Roggeveen, Grewal, and Schweiger (2020) put forward the DAST framework to broaden the role of atmospherics to include out-of-store experiences managed by the retailer. This framework, although quite comprehensive, is primarily applicable to physical store atmospherics. While the DAST framework's design and trialability dimensions correspond to reducing friction in our framework, the other two dimensions (ambient and social) correspond to enhancing customer experience.

Evolution of retail formats

Driven by both existing literature and our proposed customer-centric framework, we explore current and potential developments in retail formats. We delineate the customer journey into two parts – first, information search and purchase,

and second, product acquisition and potential product return (see Fig. 3). We consider different offline and online means by which customers may search for information about a product, and purchase, acquire, and, if necessary, return it. We differentiate between purchase and product acquisition, as customers cannot immediately obtain their purchases in all formats. Information search and purchase primarily (though not exclusively) provide opportunities to enhance experience, whereas product acquisition and product return primarily (again, not exclusively) provide opportunities for reducing friction. We also consider challenges that offline and online formats face during this two-stage customer journey. We further attempt to take into account the potential effects of the Covid-19 pandemic (pandemic hereon) on consumer behavior, including the acceleration in the shift to online shopping, preference for curbside pickup instead of selecting items from the store shelf, preference for touchless transactions, and re-allocation of discretionary and non-discretionary spending in consumer budgeting.

We structure this exploration through two questions listed in the introduction: What are the challenges offline retailers face, and how might they evolve? And, similarly, what are the challenges faced by online retailers and how might *they* evolve? We conclude with some thoughts for future research.

Offline retailers: challenges

Offline retailers have been facing a myriad of challenges since the advent of e-commerce. The intensity of these challenges has increased as consumers have become comfortable with online shopping. This comfort with online shopping has leapfrogged by several timespans during the pandemic. Some of the pandemic-induced changes in consumer behavior are likely to persist. This faster shift to e-commerce will heighten offline retailers' challenges since the US already has too much brick-and-mortar space for an increasingly digital world. In 2016, the US had the most per-capita retail space at 23.5 square feet per person; Canada was second with 16.4 square feet; Australia was third with 11.1 square feet (Howland, 2016). In 2020 so far, retailers that have filed for bankruptcy protection include J.C. Penney, Neiman Marcus, J. Crew, Pier 1 Imports, and Stage Stores. UBS estimates e-commerce accounts for a quarter of retail sales in the US, and that the number of retail stores is likely to fall from 883,000 (in 2019) to 782,000 over the next five years (Kapner & Nassauer, 2020).

One of the key challenges that has dogged offline retailers since the beginning of e-commerce is their relative disadvantage in pricing. Online sales did not incur sales tax for a long time, which reduced the final price for consumers. Furthermore, because online retailers do not incur the expense of maintaining stores and holding inventory at multiple stores, their overall cost structure can be lower. This lower pricing, along with other factors, helped online retailers attract a growing number of customers. The resulting fall in foot traffic further increased offline retailers' cost disadvantage and reduced their cost-efficiency. Another critical challenge for offline retailers is rising customer expectations regarding purchase convenience and purchase experience. They are competing with 24×7 acces-

Challenges:
Offline formats – Accessibility / Assortment / Pricing / Time costs
Online formats – Sensory information / Ambience

**Formats for
INFO SEARCH / PURCHASE**

In-person:
• Physical store
• Salesperson

Remote (Assisted or Automated):
• Telephone
• Media
  o Print
  o Broadcast
• Internet
  o Interactive screen, e.g., Computer / Smartphone / TV
  o IoT

ENHANCE EXPERIENCE*
• **Provide in-person or remote "experiences"**
• **Improve personalization**

REDUCE FRICTION*
• **Reduce inconvenience**
• **Eliminate unnecessary steps**
• **Reduce wait times**

Pick-up / Drop-off:
• In-store
• Out-of-store
  o Curbside
  o Lockers
  o 3PL access points

Delivery:
• Physical delivery
  o Conventional
    • Company / 3PL
  o New tech
    • Drones / Robots
• Digital delivery
• 3-D printing

**Formats for
ACQUISITION / RETURN**

Challenges:
Offline formats – Time costs
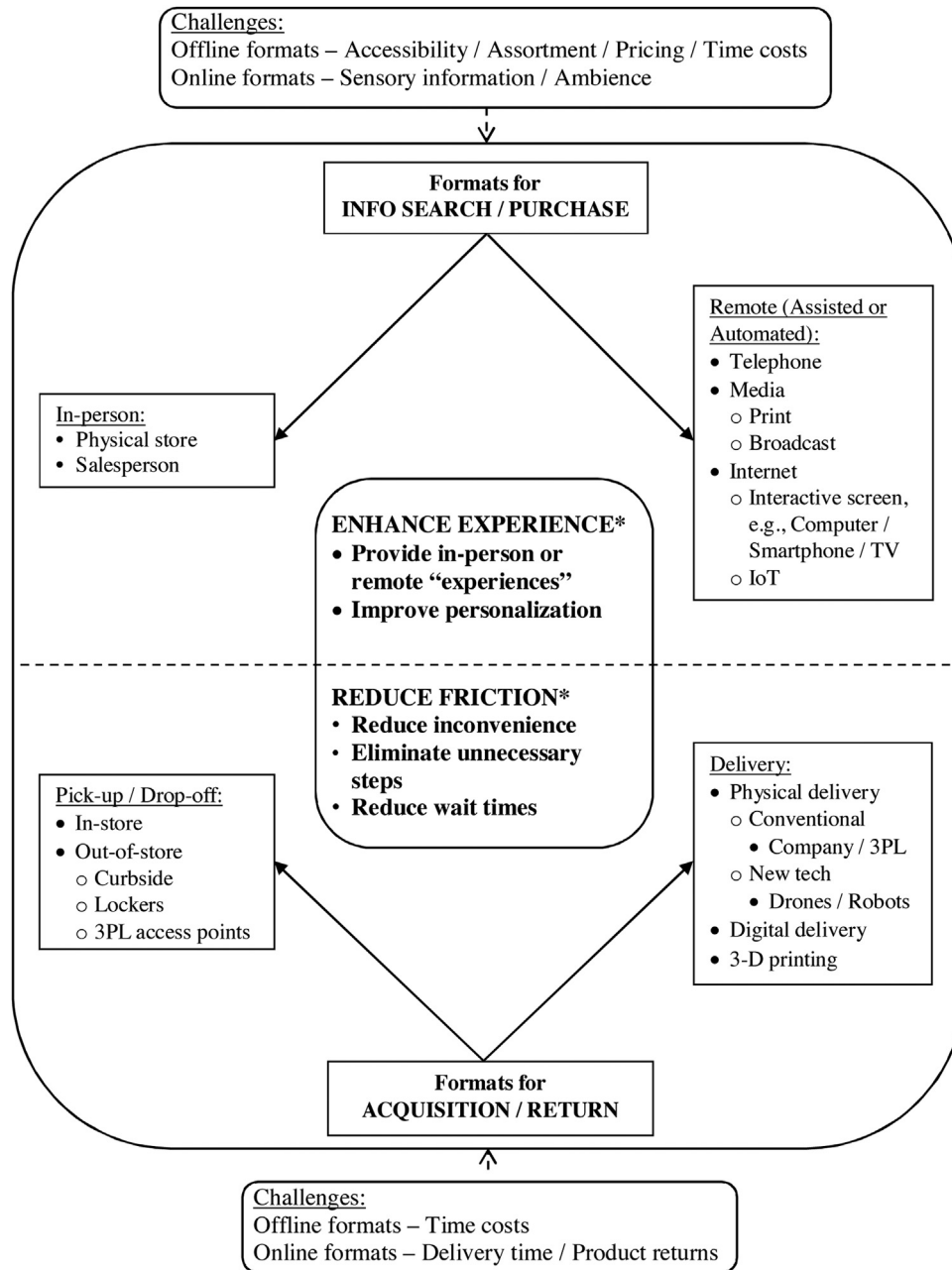Online formats – Delivery time / Product returns

Fig. 3. Conceptual Framework for Retail Formats.
*Opportunities to reduce friction are also available in information search/purchase; Opportunities to enhance experience are also available in acquisition/return.

sibility of online stores and customers making purchases with just a few clicks from the comfort of their home. There is considerable friction (inconvenience) for the customer in getting to the store, finding parking, navigating the store, being surrounded by others, especially in the current pandemic, waiting to pay, and if required, going back to return the product.

Moreover, offline retailers find it challenging to offer the breadth and depth of assortment available through online channels. Differentiating themselves from online channels by imparting experiential aspects of purchase raises its own challenges. Improving experiential aspects of shopping and reducing friction in the purchase process require investments in, for example, technology, which further adds to the costs of offline

retailers. Larger chains may not be nimble enough to make such fundamental changes, and smaller or narrowly focused retailers may find the cost especially prohibitive.

Offline retailers have been taking many steps to address these challenges. We look at these steps under two separate categories: enhancing customer experience and reducing purchase friction.

Offline retailers: enhancing customer experience

Physical stores can play a crucial role in the customer journey. They provide consumers sensory experience through the opportunity to touch and feel products, immerse them in brand experiences, and let them engage with sales associates who
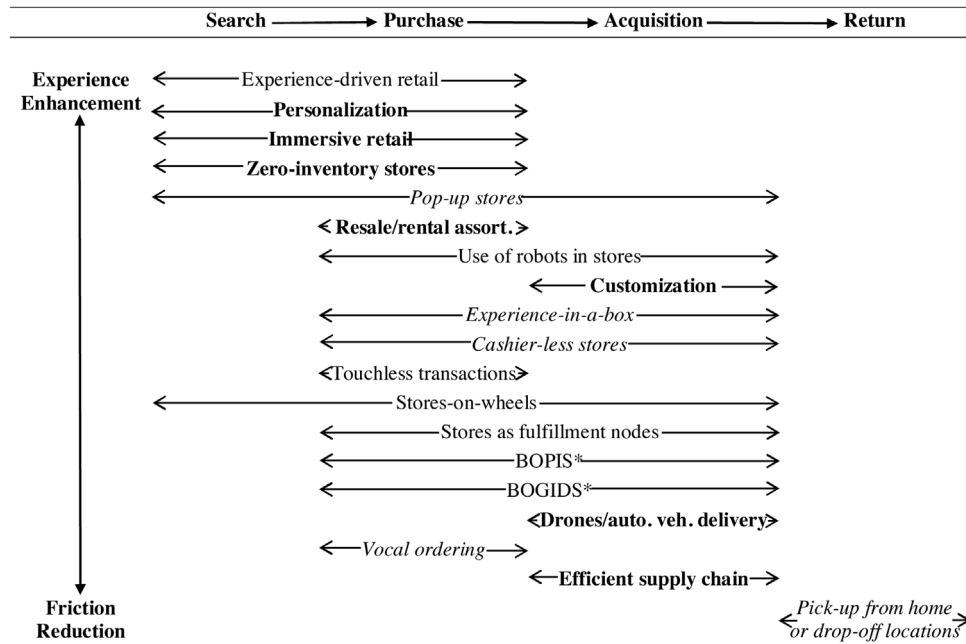
Fig. 4. Evolution of Customer-Centric Retail Formats in the Framework.
Notes: *BOPIS stands for buy online, pick-up in-store or curbside; BOGIDS stands for buy online, get it delivered from store.
Formats in plain text usually employed by physical-first retailers; formats in italics usually employed by digital-first retailers; and formats in bold employed by both kinds of retailers.

can reaffirm their enthusiasm for their new purchases (Brown, Moriarty, & Mendoza-Pena, 2014). Offline channels have been investing in a range of tools to enhance customers' purchase experience.

Zero-inventory stores with endless aisles

Offline retailers, especially outlet stores, offer innovative designs, sometimes within their regular stores, and often via concept stores. For these stores, the objective is less to encourage in-store transactions and more to provide "experiences" – to create brand awareness and engage customers, arouse their interest, and tell them the brand's story. For example, Canada Goose has opened a new retail concept named "The Journey" in Toronto. It has no product inventory, but visitors walk through "The Crevasse," which mimics traversing an icy rock face, and can try on the brand's parkas in a snow-filled room. The experience ends with an employee acting as a personal tour guide, helping the customer shop online. This approach allows the store to overcome the limited-assortment drawback of a typical physical store and mimic the wide assortment available at online retailers by offering customers an endless aisle (Rastello & Sambo, 2019). In another example, REI has opened a new concept store in New Hampshire, which is "designed first to be a launching pad for outdoor activities" and focuses on customer experience. This store is near a resort area, a departure from their usual locations in commercial districts (Ryan, 2019b). Fig. 4 denotes stages of the customer journey to which each retail format caters.

In-store experience-driven retail or "Retailtainment"

Offline stores are also embracing experience-driven retailing to attract and engage shoppers. The aim is to use a combi-

nation of unique displays and interactive events to create an in-store experience that can attract customers despite the heightened convenience of online shopping. A few recent examples help illustrate experience-driven retail. The Samsung Experience Store at the Galleria Mall in Houston hosts in-store events for shoppers to experience its product line. Target hosted nearly twenty-five thousand hours of in-store events nationally during the 2018 holiday season, where children could meet their favorite characters from TV shows and participate in a Minecraft scavenger hunt. Apple stores are now morphing into "Town Squares," with meeting spaces where children can learn how to code, and teachers can take classes on how to incorporate technology into the classroom (Takahashi, 2019).

Experience-in-a-box

One of the reasons customers go to stores is to discover new things and be entertained. During the pandemic, consumers are using subscription boxes to bring the shopping experience into their homes that they cannot now have in stores. For example, the children's fashion company Kidpik's products arrive "in a box that you can shop in or send away or buy or buy part of it. It's a store in a box." The company's tag line is, "Kidpik brings the store to you." Such services have been growing for several years (for example, Birchbox). Their acceptance during the pandemic shutdown "is pushing several years of adoption into a much shorter period." Increasingly, retailers are thinking about what can be sold using a subscription model (Kestenbaum, 2020a).

Resale/rental assortments

Secondhand clothing in the form of resale or rentals is becoming popular with environmentally conscious consumers and

those looking to save money. To an extent, this shift mirrors the sharing-economy – less ownership and more limited-time experiences. The clothing resale market has grown 21 times faster than new clothing sales over the past three years (Anderson, 2020a). Annual revenues are projected to reach $51 billion by 2023 as more younger consumers make secondhand clothing a larger part of their wardrobes (Anderson, 2020a). Sites such as Rent the Runway, thredUp, Poshmark, and The RealReal have become eco-friendly, circular fashion alternatives to fast fashion. Several larger chains are adopting this strategy on their own or partnering with these brands. Nordstrom has launched a new resale concept – See You Tomorrow – online and at the Nordstrom flagship in New York City for secondhand clothing. JC Penney and Macy's have run pilot programs with thredUP, which bills itself as the largest online thrift store (Anderson, 2020a).

Retailers typically want customers to linger in the store, as they may then buy more. However, the pandemic has led to more deliberate grab-and-go purchasing as customers minimize their time in enclosed spaces. In the short run, retailers are trying to make shopping faster, easier, and safer. For example, Best Buy is asking customers to shop by appointment, and Sephora forbids shoppers from testing products. However, it is arguable whether this change will be long-term with manifestation in consumer expectations and habits (Bhattarai, 2020). Technology can help retailers cope with the persistence of this behavior both during and after the pandemic.

Additionally, technology can help improve customer experience even after things go back to "normal." Technology is being used to improve a whole range of retail functions: providing customers with up-to-date product information such as product attributes, user reviews, and availability in-store; improving the purchase experience with simulated-use experience; and improving personalization with tools based on artificial intelligence (AI). Robotics also free up in-store employees from routine, repetitive, time-consuming tasks to focus on offering customer services and delivering memorable consumer experiences.

"Immersive" retail

"Immersive" retail denotes an approach dedicated to building stronger bonds with customers through engaging experiences. Retailers use mixed reality (MR) apps to conduct virtual tours and allow customers to see how a particular product looks in a simulated real-life environment. Such apps map interactive digital content over the physical world through a device screen such as a smartphone. According to a Juniper Research forecast, the number of such apps' installations is likely to reach 10 billion by 2024. Nike has leveraged augmented reality (AR) for app-based shoe try-on. Sephora, L'Oreal, and Ulta Beauty have used AR to allow customers to try virtual versions of their products (Stern, 2019).

Robots and customer service

Retailers use autonomous mobile robots to help automate and enhance tasks such as cleaning, delivery, and inventory management. Shelf-scanning robots can indicate when inventory is low or out of stock so that items can be reordered. They can also help expedite labor-intensive tasks such as shelf re-stocking, allowing retailers to allocate higher-value tasks (such as serving customers) to their in-store employees. Also, well-stocked shelves provide a better in-store experience. This is critical, especially when the retailer uses stores to fulfill online orders or makes deliveries using a third party, such as Instacart or DoorDash (Izhikevich, 2020).

Personalized shopping

A study from Boston Retail Partners found that 79 percent of consumers identify personalized service from a sales associate as an important factor in determining which store to shop (Goldberg, 2020). According to another study conducted by A.T. Kearney, 40 percent of customers considered switching to another retailer based on bad past experiences (Zih Corporation, 2019). A knowledgeable sales associate is the human face of a retailer and a key differentiator. When competing with online stores and price-matching policies, a lower price is no longer a substitute for good service. Trained employees must help provide "retail therapy," a feel-good sensation of discovery in an attractive environment. Thus, retailers are training their employees to impart experiences and leverage new resources, like AI technology. For example, retailers are now equipping employees with in-store recommendation engines based on consumer purchase behavior. For out-of-store shoppers, messaging apps and mixed reality apps play a crucial role in facilitating one-to-one communication with a store employee. Some retailers have shown they can increase the conversion rate ten times and increase the average order value by 50 percent when an online customer directly connects with a store associate for assistance (Belmar, 2020; Goldberg, 2020; Zih Corporation, 2019).

Offline retailers: reducing purchase friction

Conversion friction, where shoppers leave a store without any purchase, is a well-known phenomenon in retail. Offline retailers have taken several steps to make the purchase process convenient and expedient for consumers to reduce conversion friction.

Touchless transactions

Customers had been slow in adopting in-store contactless mobile payments, but such innovations are now finding wider acceptance due to the pandemic. Touchless transactions have become a popular way to pay for essential items like groceries and medications. In a survey, fifty-six percent of respondents indicated that they would keep using contactless payments even after the pandemic ends (Holman, 2020). Both large and small food retailers have adopted touchless technologies such as mobile self-scanning checkouts where shoppers can use their smartphones to scan and bag items while they are shopping. They then check out using their phones and skip the lines, eliminating wait times, making their shopping trip more efficient (Kleckler, 2020). According to eMarketer, the U.S. mobile payment market increased to almost $100 billion in 2019. Projections are that it will rise to more than $130 billion in 2020. Not only

do mobile payments help reduce purchase friction, but they also enable retailers to redeploy employees to improve purchase experience.

Besides payments, technology companies are working to make as much of the transaction process as touchless as possible, and these technologies are likely to find increasing acceptance in stores. For example, identifying the correct product code when weighing produce is a key friction point for grocery customers. Shekel has introduced Fast Track, a touchless, cloudless self-checkout solution that employs machine-learning to recognize produce, bakery, and specialty items automatically, thus eliminating the need to enter product codes (BusinessWire, 2020a). This makes the whole process more efficient for customers.

Buy online, get it delivered from the store

Traditionally, the customer's quicker product acquisition has been one area where offline retailers have an advantage over online retailers. However, as offline retailers increasingly embrace omnichannel strategies for a seamless customer journey, they are trying to leverage their local presence in communities for delivery. Online purchases, including online ordering through mobile devices, has gradually gained ground over the past several years. The pandemic has led to a multifold growth in online retail, even in product categories where sensory information is important. For example, online grocery sales reached $5.3 billion in April of 2020 – 37% growth compared to the previous month (Reuter, 2020). To retain their edge in product delivery, offline retailers have leveraged their local store presence. For example, Walmart has introduced an Express Delivery service and plans to expand it to 2,000 stores. At about a hundred stores, consumers can currently receive their merchandise within two hours of placing their online order. Customers can order across more than 160,000 items from food, toys, electronics, consumables, and general merchandise assortments. To expand this service, Walmart will utilize 74,000 of its own Personal Shoppers, along with specific hires to pick orders, and use third-party delivery providers (Snider, 2020). Target utilizes Shipt, a delivery company it acquired in 2017, to deliver online orders fulfilled out of its stores. Tractor Supply Company, the largest rural lifestyle retail chain (with more than 1,800 locations), became the first major general merchandise retailer to offer same-day delivery from all its stores. It has partnered with a delivery service specializing in local same-day delivery, which employs a crowdsourcing model to utilize unused capacity in passenger vehicles already on the road.

For small businesses, however, setting up an e-commerce arm has proven difficult. One option they have is to sell on existing online marketplaces such as Fulfillment by Amazon and Walmart Fulfillment Services. These services store, pick, pack, ship, and handle returns for smaller businesses. Although more than half of Amazon's revenues come from such third parties, some view Amazon as a threat because they are also direct competitors. Recently, Facebook started Facebook Shops, a platform for small businesses to sell through Facebook's platform. Businesses will personalize virtual storefronts and use AR to let customers virtually try on products such as furniture, décor, apparel, and accessories. The virtual shops will appear on the businesses' Facebook and Instagram accounts and, eventually, on the Messenger and WhatsApp messaging tools. Orders generated on these online platforms will be fulfilled directly by merchants (Armental, 2020).

Buy online, pick-up in-store or curbside

To fully utilize their physical presence and keep their costs (and prices) low, offline retailers have adopted strategies allowing consumers to acquire merchandise by buying online, then pick-up in-store (BOPIS) or curbside. This strategy brings inventory closer to where customers live and allows them to acquire their online orders faster than if they waited for home delivery. This mode is becoming increasingly popular with customers; on Black Friday in 2019, 39 percent of all sales originating on smartphones were BOPIS orders (Ryan, 2019c). This strategy ensures customer experience continuity and a seamless journey between digital and physical touchpoints, from product search to product acquisition. Acquiring merchandise this way, customers can avoid in-store navigation and checkout line waiting times. It also provides peace-of-mind to online shoppers concerned about "porch piracy." The pandemic has had a huge effect on this strategy as well. According to Adobe Analytics, the number of orders placed online and picked up in stores increased by 208 percent between April 1 and April 20 in 2020, compared with the same period a year ago. A survey found that even among customers subscribing to delivery services such as Amazon Prime, most are likely to opt for curbside delivery once the pandemic subsides (Ryan, 2020c).

Retailers have taken actions to make these options available to customers. For example, Target has made it easier for customers to shop online and pick-up their items the same day in-store or curbside. Of course, customers can return their online orders in-store too. Nordstrom fulfills more than half the orders placed on its website at its stores using its in-store staff. In part because of its curbside pick-up option, Walmart, the largest grocer by revenue in the US, has become a force in the online grocery industry (Nassauer, 2020). Online and hybrid options are spurring supermarkets to change fundamental aspects of their operations, such as the way they organize their stores and parking lots. Many are reserving parking spaces where customers and delivery services can quickly pick up online orders filled in stores. Some have designated checkout lines to ring up larger orders from third-party online grocery-delivery services, while others have created separate entrances for delivery pickups (Haddon, 2018).

Besides using stores as pick-up and drop-off points for their customers, some retailers collaborate with other retailers or third-party delivery services to leverage their local presence. For example, Michaels, the largest arts and crafts retail chain, and UPS have announced curbside service at UPS "access points" in more than 800 Michaels stores. Customers can pick-up their packages or drop-off their returns at these points for any e-commerce retailer that accepts UPS return shipments (Businesswire, 2020b). The stores are also convenient for customers to pick up or drop off orders after normal business hours,

as stores tend to stay open late. Such add-on services help bring more customers into the stores too.

Stores-on-wheels

Some entrepreneurs (e.g., Grit Grocery in Houston) have utilized pandemic lockdowns to introduce a very popular format in the developing world, such as in South Asia. They bring grocery trucks to neighborhoods for selling locally-sourced fresh produce, meats, and other grocery products. It is akin to bringing farmers' market to shopper's doorstep. They usually have fixed time slots for various neighborhoods and notify the residents about the truck's location by text messages. Doing so eliminates travel time for a shopper, significantly reduces wait time for an equivalent in-store checkout and cuts down the wait time for acquiring an equivalent online purchase. And it provides shoppers an opportunity to validate product quality and freshness before purchase. Although it started primarily as a response to pandemic conditions, this format has the potential to resolve another persistent problem in several parts of the U.S. – the scarcity of fresh food in "food deserts," areas underserved by traditional grocery stores. Such stores-on-wheels can be of special interest in aging communities due to purchase convenience.

Dedicated stores as fulfillment nodes

Larger chains are opting to use more smaller-size stores to provide the dual functions of in-store shopping by customers and pick-up points for online orders. For example, Target has successfully expanded its coverage by opening smaller limited-assortment stores in recent years. Its 100 small-format stores, launched in 2014, have reached more than $1 billion in annual sales, generating about three times the revenue per square foot as its big-box stores. It now plans to open even smaller-size stores, some as small as 6,000 square feet, in densely populated urban centers, near college campuses, and in tourist areas. Each store will offer localized limited product assortments in beauty, home, and food categories to people in new trade areas and will open up an additional site for consumers to pick up their online orders (Anderson, 2020b).

Robots – behind the scenes and upfront

In the backroom and out in the store, use of technology in retailing is becoming prominent and is likely to increase. Walmart is one of several grocers, along with Albertsons and Kroger, using robots to improve efficiency. In its Salem, NH store, Walmart uses a backroom robot to cut labor costs and fill orders more quickly and accurately. A store worker can collect, on average, around 80 products from store shelves an hour, whereas the robot can collect 800 products an hour per workstation. Using store workers to fill orders with products already on shelves also clogs the aisles, which can mar in-store customers' purchase experience. Using a backroom robot also allows a store to have real-time information on inventory so that online shoppers know exactly what is available at any given moment (Nassauer, 2020).

Delivery by drones and autonomous vehicles

In Christiansburg, VA, Walgreens has been using Wing, a unit of Google's parent Alphabet, to deliver merchandise since

October 2019. This was the first residential drone delivery service in the US. When a drone gets to its destination, it descends to 23 feet and lowers a laminated paper cargo box with a capacity of 3 pounds using a rope (Bogaisky, 2020). During the pandemic, CVS has teamed up with UPS to deliver prescription medicines via drones to residents of a Florida retirement community, also using the Wing drone delivery service (Hawkins, 2020). The pandemic has also accelerated the development of autonomous vehicles for delivery. Cities and companies are trying out automated sidewalk delivery robots. For example, 20 robots in Fairfax, VA deliver meals, groceries, and hair products. A local shop in Chevy Chase, MD that sells gourmet food products started using a robot-on-wheels to make deliveries to customers residing within a one-mile radius. However, it may take several years for the mass adoption of automated on-road delivery (Lienert & Lee, 2020).

Online retailers: challenges

Since the origin of formalized trade, offline stores have been the default retail channel. Online retailers needed to provide consumers with a reason to change their traditional purchase behavior. The most effective tool for this purpose has been the product variety and assortment that online retailers can offer. Compared to offline retailers, online retailers can afford to maintain huge inventories in a few limited locations and ship anywhere from there. Additionally, they can offer lower prices, which has helped their rapid growth. In the US, online sales are forecast to represent approximately 14.5 percent of total retail sales in 2020 (Perez, 2020). According to eMarketer, in February 2020, Amazon, the dominant player in e-commerce, had a share of 38.7 percent of US online retail sales, which is larger than the next nine players combined. Walmart, the offline retail giant, was a distant second with a 5.3 percent share. Despite their advantages, however, online channels have not yet overtaken offline channels. They face their own set of challenges.

One of the key challenges online retailers face relates to product delivery. Consumers do not get the instant gratification of acquiring their purchase, which encourages some to choose offline channels instead. Some online stores have tried to address this challenge with expedited free shipping, but this puts pressure on their cost structure. Diseconomies of scale in shipping can put small online retailers at a price disadvantage relative to larger retailers. Online stores are also at a disadvantage when sensory information or ambience is vital for customers to experience or interact with the product – e.g., in apparel – or when the freshness of the product is critical – e.g., in grocery and produce. The fact that the entire transaction is conducted online also raises trust issues for some consumers who like to inspect or validate product quality before purchase. Furthermore, reverse logistics pose both financial and operational challenges for online retailers.

Online retailers have been taking several steps to address these challenges. We consider both the steps taken to enhance purchase experience and those taken to reduce friction in purchase and returns.

Online retailers: enhancing customer experience including providing sensory information

In recognizing the need to offer sensory information, online stores have embraced omnichannel retailing to varying degrees. Arguably, it is more expensive for an online retailer than an offline retailer to adopt an omnichannel strategy. But both large and small online retailers have been making investments in offline assets.

Pop-up stores

Pop-up stores stay open only for a defined period, ranging from a few days to a few months. They don't generate a huge sales volume or cater to the broader demographics of the geographic market; their main objective is to offer their customers a tangible experience and sensory information that they cannot find online. They also allow brands to experiment with concepts quickly and build closer connections through personalized service. They are becoming an increasingly important part of the $3.8 trillion retail sales in the US, and both large and small online retailers are increasingly using them. Amazon has used pop-ups to great effect. Although it had closed all of its pop-ups in 2019, Amazon again opened five new mall-based pop-ups in February 2020. Amazon mines the data it collects on consumer purchase behavior to decide on locations and offers customers great deals on the products they would have otherwise purchased at the mall's department stores or specialty retail shops. It also showcases products that people in that market regularly buy at that time of the year (Walton, 2020).

Some online retailers piggyback on the physical infrastructure of offline retailers to engage directly with customers. Offline retailers also view alliances with online brands as an opportunity to attract younger shoppers to their stores. The online beauty and fragrance brand Glossier, with more than $100 million in sales in 2019, has two flagship stores in New York and Los Angeles. But department stores are the largest channel for fragrance in the US and comprise nearly a quarter of all fragrance sales. In 2019, recognizing the importance of sensory information for selling perfume, Glossier opened 300-square-foot pop-up shops in seven Nordstrom stores (Thomas, 2019). Other online brands also have followed this route, including the jeweler Kendra Scott, the trendy luggage company Away, the shoe retailer Allbirds, and the apparel maker Everlane (Thomas, 2019). Such stores also help create the thrill of engagement among customers. Pop-ups sometimes offer limited-edition items, which are only available to loyal customers who are "in the circle" through social media engagement. Although they target this narrow audience for a short time window, pop-ups also introduce more customers to the brand along the way and gather more information about their preferences. All this boosts the brand's main online channel (Kitchens, 2019).

Zero-inventory stores

Another way online retailers provide sensory information is through zero-inventory stores. These are distinct from offline retailers' "concept stores," which aim to enhance customer experience and overcome limited-assortment drawbacks. Online retailers already offer endless virtual aisles to the customer, but they cannot easily provide sensory information. Then, for online retailers, the objective of zero-inventory stores is to serve as showrooms, provide sensory information, and engage customers. For example, Bonobos, now owned by Walmart, has over 60 physical locations that serve only as showrooms. Customers try on apparel in the store, order online, and receive their purchases via delivery.

Cashier-less stores

Amazon pioneered cashier-less stores in the US with its "Go" convenience store concept. Launched in 2018, these stores range in size from about 450 square feet to more than 2,000 square feet. With improvements in camera technology, Amazon extended the concept in early 2020 to an urban grocery store larger than ten thousand square feet. Shoppers can pick up produce and other grocery items and simply walk out. A mix of artificial intelligence (AI) and predictive analytics enables the store to separate individual customers and their purchases from others. Their Amazon accounts are automatically charged through the retailer's smartphone app (Herrera & Tilley, 2020). The goal is to provide a faster and easier shopping experience. Such stores may not be suitable for every product category, and, given the amount of investment required in technology, they are not necessarily suitable for every retailer. However, there are reports of technology companies, including Amazon itself, interested in licensing this technology. Besides online retailers, many offline retailers such as Starbucks and Sam's Club also are investing in cashier-less stores. This innovation could change the face of retailing in the years to come.

Direct-to-consumer (DTC)

Customers' increasing comfort with online purchasing, especially after the current pandemic, is likely to accelerate manufacturers' adoption of direct-to-consumer (DTC) formats. According to a survey conducted by Ware2Go, a UPS company, manufacturers are pivoting from "the business-to-business (B2B) paradigm to the B2E (business-to-everyone) model" (Ware2Go, 2020). Selling direct allows them to showcase their brand in the best possible light and provide better customer experience. Although most manufacturers may prefer online stores, some may choose to open zero-inventory, flagship, or outlet stores, including Apple, Nike, and Tesla. DTC allows them an opportunity to build a direct relationship with customers, especially with younger customers. As customers increasingly purchase groceries and other staples online, manufacturers of these goods also see an incentive in selling direct. For example, PepsiCo recently launched two new websites – PantryShop.com and Snacks.com – where customers can order some of the company's favorite brands online and have them delivered within two business days (Anderson, 2020c). Even small-to-midsized consumer packaged goods (CPG) companies that may lack resources can outsource their e-commerce activities to go direct.

Although already ahead when it comes to utilizing technology to enhance online purchase experience, online retailers are doubling down. They are investing more in technology to improve aspects of the experience: enhancing personalization

and recommendations by investing in data analytic tools including machine learning and AI; improving purchase experience with automation by employing mixed reality; providing customers with increased options for ordering with voice assistants, and even automated ordering by everyday appliances enabled with the Internet of Things (IoT).

Product Customization

Product customization had been a chimera in marketing until recently. Technology did not exist to customize products to each individual's preferences fully. However, 3-D printing has brought customization and automation together. Although still in its early days, 3-D printing has the potential to shake up conventional supply chains if the technology can operate at scale. So far, footwear has been a hot area for 3-D printing innovations. In 2018, Nike announced that it was using its 3-D printing technology, Flyprint, to design the synthetic upper portion of some shoes. Some retailers have been testing out the concept of print-on-demand clothing too. According to a 2017 survey, 95 percent of customers looked forward to purchasing a 3-D printed product, and 80 percent reported wanting to spend more money at a retailer that would allow customization via 3-D printing (Stern, 2020).

Personalized experience

Online retailers are applying AI and machine-learning tools to the vast amounts of customer data they collect to dynamically personalize consumer experiences and provide relevant content in the form of product information, reviews, design options, style guides, etc. For example, Overstock uses its proprietary real-time personalization technology to deliver a more engaging, relevant, and personalized experience at every touchpoint of a customer's journey. The objective is to improve the discoverability of products relevant to each customer's preferences through recommendations and help them navigate to content that facilitates their purchase decision. Stitch Fix, which bills itself as a personal style service that evolves with customer's tastes, needs, and lifestyle, uses recommendation algorithms and data science to personalize clothing items based on size, budget, and style.

"Immersive" retail

Several online retailers have adopted mixed reality apps to help customers visualize how products would look in their homes. Wayfair, an online home furnishing retailer, has adopted AR technology to help people better visualize furniture in their home. Its mobile shopping app, Room Planner 3D, allows shoppers to create an interactive three-dimensional room that they can view from any angle while testing out different layouts and styles. Even before Wayfair, Amazon had launched a visual shopping experience called Showroom, which lets online and mobile shoppers "try-out" furniture and décor in a customizable virtual room (Perez, 2019). The use of these apps to let consumers make more informed purchase decisions extends beyond furniture and décor alone. Burberry has partnered with Google Search technology to enable consumers to use their smartphones to view a 3D version of a product at scale against other objects.

This ensures better sizing and fit of the product. Virtual "try-on" applications for selecting make-up, footwear, and jewelry also use AR. For example, Warby Parker uses a "Virtual Try-On" tool on Apple's Face ID to measure 30,000 points on someone's face to recommend appropriate frames. The app then uses AR to provide a 3D preview of the frames as they will look when worn. Facilitating customers to make more informed decisions leaves customers satisfied and reduces the cost-to-company by ensuring a lower number of returns (Ryan, 2020a).

Online retailers: reducing friction in purchase and returns

Consumers increasingly prioritize convenience and expect retailers to continue to offer innovative ways to save them time and effort. In this regard, online retailers have been working to make ordering, delivering, and returning products easier and quicker.

Easy ordering

In 2019, almost 30 million consumers used a voice assistant such as Amazon Echo and Google Home to browse, research products, and add items to a shopping cart. As voice assistants become more commonplace and their user interface improves, these devices will enable customers to order from anywhere, including while driving a vehicle. Such a potentially frictionless process will radically alter the customer experience. Projections are that the number of consumers ordering via voice assistants will climb to 38 million by 2021, when more than forty percent of smart speakers in the US are expected to be used for shopping purposes (Ryan, 2019a). Juniper anticipates the magnitude of voice-assisted shopping to reach $80 billion by 2023 (Simms, 2019).

Quick delivery

Convey, a supply chain software company recently conducted a survey of over 2,000 consumers, a large majority of whom were members of Amazon Prime. Eighty percent of the respondents indicated that their primary motivation for shopping at Amazon was fast, free shipping (Kestenbaum, 2020b). Among other factors, Amazon has achieved this by increasing the number of fulfillment centers to get closer to the customer. Most online retailers want to provide a quicker delivery service, but a vast majority do not have the resources to do it independently. A new e-commerce fulfillment company, Deliverr, has launched a service for such smaller retailers to compete with Amazon Prime delivery. It uses "machine learning and optimization technology" to bring two-day delivery to sellers on such marketplaces as eBay and Shopify. It leases warehouse space nationwide and uses predictive algorithms to distribute sellers' inventory to the warehouses to be within two days of potential buyers. Several other companies have developed online fulfillment solutions in the hopes of putting same-day and next-day delivery within every online retailer's reach. These include solutions for last-mile delivery (Bringg and Roadie); micro-fulfillment (Chaldal, Fabric, and Attobotics); and long-haul delivery planning (Convoy, Transfix, and Loadsmart). In the future, such delivery services will likely commoditize deliv-

ery using a network of technology and logistics providers (Ryan, 2020b).

Easy returns

Given the lack of pre-purchase sensory information in online purchases, especially for high-touch products, retailers have come to accept returns as the cost of doing business. The expense of handling returns can range from 20 to 65 percent of an e-commerce site's cost of goods sold. Ease of return is critical in a customer's post-purchase experience; a complicated return experience risks a hit to customer engagement and loyalty. For some customers, ease of return can be a critical factor when choosing a retail format. Online retailers have been working on reverse logistics to make returns easier for customers and to control their costs. They have teamed up with their logistics providers, providing pick-up service from customers' homes and allowing customers to take FedEx returns to Walgreens or Dollar General locations (or, as previously discussed, to drop off UPS returns at an "access point" in a local Michaels store). They have also tried to utilize offline retailers' physical infrastructure by making them drop-off points for returns. For example, Amazon accepts returns at all of Kohl's 1,150 stores in the US. Amazon has also started using its lockers as both pick-up and drop-off points. Rent the Runway, an online clothing rental platform, allows customers to drop off their rentals at Nordstrom locations. Drop boxes make it easier for customers to return clothes, and it also allows them to order their next batch of outfits more quickly (Segran, 2019).

Conclusion and future research

The developments outlined above are attempts to address the challenges and benefits of online and offline retail formats. Although we have highlighted the managerial rationale for retailers, these developments also paint a rich tapestry of research questions for academics. Below we set forth a few broad questions for future research.

Online retailers are using zero-inventory stores and pop-up stores to facilitate consumer search for sensory items. But these stores impose a search cost on consumers in the form of travel to the store. When does this search cost make such stores unviable? Will further advancements in technologies such as virtual reality (VR) render them obsolete? Do such stores influence customer engagement? Do they affect the brand image of the online retailer? Also, online retailers' partner with offline retailers to quicken product acquisition, ease product returns, and reduce shipping costs. This also benefits offline stores by increasing foot traffic. Such partnerships can be especially synergistic if the same retailer owns both online and offline formats (e.g., Amazon.com and Whole Foods stores). Will the "buy online and pick-up in a partner's store" strategy be the new normal for online retailers? Or will more fulfillment centers and emerging delivery technologies such as drones and autonomous vehicles be the norm for minimizing acquisition time?

Many big chains are using their stores as fulfillment nodes for online purchases. How will that affect store layout, product assortment, employee roles, technology adoption, and cus-

tomer service? Although automobile ownership led to suburban shopping malls' development, traffic has become increasingly congested in urban areas. It has become tedious and expensive for customers to access offline stores in such areas. Will attempts by offline retailers to promote experiential and immersive shopping succeed in the face of traffic congestion? What is the optimum number of such showroom stores? Will "live, work, shop, play" environments, which have a variety of housing, workplaces, dining, and recreational outlets near each other, be a remedy for traffic congestion? The current retail environment may require modifying the variables considered in the Huff model. Further, is destination shopping likely to bring greater customer engagement and improve store loyalty?

Will technological developments (such as self-driving cars) make offline purchasing more attractive relative to online purchasing? How is the newfound acceptance of online shopping among customers due to the pandemic likely to affect offline formats, and which categories are likely to face more significant challenges? For which categories will stores remain critical in shaping consumer behavior and providing unique experiences to shoppers? Has the pandemic swung the pendulum too far and too fast towards online shopping? Another consequence of the pandemic has been the narrowing of product assortments due to impacted supply chains. Some stores have reduced their assortments by almost 40 percent and are focused only on popular brands and items within a category (Gasparro, Bunge, & Haddon, 2020). Early results suggest that focusing on the best-selling variants has not really hit sales. Is this narrowing of offerings likely to continue? Alternatively, did panic buying ensure revenues during the pandemic, but consumers will demand wider assortments again when things return to "normal?"

Owing to the investments required for omnichannel retailing and the resulting benefits, the big players in retail are getting bigger – be they digital-first (Amazon) or physical-first (Walmart). They are also operating as online retail platforms for smaller retailers and third-party sellers. Will this result in the increasing dominance of a few large retailers who will then exercise their monopoly power, perhaps leading to anti-trust action as is being considered against Amazon by the European Union? Or will innovative new players overcome retail giants with the help of technology? How will the closures of offline stores impact the existing competing stores and whether shoppers would make a drastic shift to online format of existing and/or new chains would be worth studying (Shi, Inman, & Gauri, 2020). Technology is expected to play an increasingly large role in future retailing, be it in the form of product customization, personalized shopping, "immersive" experiences, touchless transactions, shelf-restocking, cashier-less stores, and drone and autonomous vehicle delivery. Could retailing go the Detroit way, where technology-based start-ups such as Tesla are defining the future? Will nimble start-ups leverage advancements in mixed reality, AI, machine learning, and robotics to drive an even larger number of legacy offline retailers into bankruptcy?

Finally, it appears that manufacturers and retailers are slowly encroaching upon each other's territory: retailers are aggressively pursuing private labels while manufacturers are finding

ways to sell directly to consumers. How will these developments affect manufacturer-retailer relations? Will it worsen channel conflict? How will it change power in channel relationships?

To conclude, the "wheel of retailing" has come a full circle from retailers starting with smaller store formats to shoppers preferring super-stores and retailers now slowly returning to smaller and convenient formats again. Digital-first retailers such as Amazon and physical-first retailers such as Walmart and Target may continue refining their formats, picking up new strengths and customers as they offer integrated channels. But they may also shed some competencies and customers in the process. We predict that newer digital-first and physical-first players will continue to develop different customer-centric retail formats, which will themselves slowly morph into integrated retailers and leave space for still newer players to enter the market and keep the wheel of retailing spinning.

References

Ailawadi, K. and P. Farris (2017), "Managing multi-channel and omni-channel distribution: metrics and research directions," *Journal of Retailing,* 91 (1), 120–35.

Ailawadi, K., Yu Ma and Dhruv Grewal (2018), "The club store effect: impact of shopping in warehouse club stores on consumers' packaged food purchases," *Journal of Marketing Research,* 55 (2), 193–207.

Ander, Willard N. and Neil Z. Stern (2004), *Winning at Retail: Developing a Sustained Model for Retail Success,* Hoboken, NJ: John Wiley & Sons, Inc.

Anderson, G. (2020), *Will a resale shop deliver bigger sales for Nordstrom?,* Available at. https://retailwire.com/discussion/will-a-resale-shop-deliver-bigger-sales-for-nordstrom/

——————— (2020), *Target thinks small to succeed big time,* Available at. https://retailwire.com/discussion/target-thinks-small-to-succeed-big-time/

——————— (2020), *PepsiCo launches direct-to-consumer sites for its brands,* Available at. https://retailwire.com/discussion/pepsico-launches-direct-to-consumer-sites-for-its-brands/

Armental, M. (2020), "Facebook Launches Shopping Platform for Small Businesses," *The Wall Street Journal,,.* May 19.

Avery, J., T. Steenburgh, J. Deighton and M. Caravella (2012), "Adding Bricks to Clicks: Predicting the Patterns of Cross- Channel Elasticities over Time," *Journal of Marketing,* 76 (3), 96–111.

Badrinarayanan, V., E. Becerra and C. Kim (2012), "Transference and congruence effects on purchase intentions in online stores of multi-channel retailers: initial evidence from the U.S. and South Korea," *Journal of the Academy of Marketing Science,* 40 (4), 539–57.

Baker, J., A. Parasuraman and D. Grewal (2002), "The influence of multiple store environment cues on perceived merchandise value and purchase intentions," *Journal of Marketing,* 66 (2), 120–41.

Banjo, S. (2013), "Rampant returns plague e-retailers," *The Wall Street Journal,,.* December 22.

Basker, E. (2007), "The causes and consequences of Wal-Mart's growth," *Journal of Economic Perspectives,* 21 (3), 177–98.

Bell, D.R., T.-H. Ho and C.S. Tang (1998), "Determining where to shop: Fixed and variable costs of shopping," *Journal of Marketing Research,* 35 (3), 352–69.

Belmar, R. (2020), *Will store associates become the ultimate personalization tool at retail?,* https://retailwire.com/discussion/will-store-associates-become-the-ultimate-personalization-tool-at-retail/

Betancourt, R., R. Chocarro, M. Cortinas, M. Elorz and J.M. Mugica (2016), "Channel choice in the 21st century: The hidden role of distribution services," *Journal of Interactive Marketing,* 33, 1–12.

Bhatnagar, A. and B.T. Ratchford (2004), "A Model of Retail Format Competition for Non-Durable Goods," *International Journal of Research in Marketing,* 21, 39–45.

Bhattarai, A. (2020), "How the pandemic is changing shopping," *The Washington Post,,.* Available at. https://www.washingtonpost.com/business/2020/05/21/pandemic-is-changing-every-aspect-shopping-store-layouts-how-jeans-are-folded/?arc404=true

Bogaisky, J. (2020), *In This City, Toilet Paper Comes from The Sky Thanks to Google's Drones,* Available at. https://www.forbes.com/sites/jeremybogaisky/2020/04/09/toilet-paper-drone-google-wing-virginia/#2828742c2dd0

Braun, S. (2015), *The History of Retail: A Timeline,* Available at. https://www.lightspeedhq.com/blog/the-history-of-retail-a-timeline/

Briesch, R., P. Chintagunta and E. Fox (2009), "How does assortment affect grocery store choice?," *Journal of Marketing Research,* 46 (2), 176–89.

Bronnenberg, B. and P. Ellickson (2015), "Adolescence and the path to maturity in global retail," *Journal of Economic Perspectives,* 29 (4), 113–34.

Brown, M., M. Moriarty and A. Mendoza-Pena (2014), *On solid ground: Brick-and-mortar is the foundation of omnichannel retailing,* A T Kearney report.

Brynjolfsson, E., Y. Hu and M. Rahman (2009), "Battle of the retail channels: How product selection and geography drive cross-channel competition," *Management Science,* 55 (11), 1755–65.

Brynjolfsson, E., Y. Hu and D. Simester (2011), "Goodbye Pareto Principle, hello long tail: The effect of search costs on the concentration of product sales," *Management Science,* 57 (8), 1373–86.

Brynjolfsson, E., Y. Hu and M. Smith (2003), "Consumer surplus in the digital economy: Estimating the value of increased product variety at online booksellers," *Management Science,* 49 (11), 1580–96.

BusinessWire (2020), *Shekel's Fast Track Answers Urgent Call for Touchless Self-Checkout,* Available at. https://www.businesswire.com/news/home/20200505005455/en/Shekel%E2%80%99s-Fast-Track-Answers-Urgent-Call-Touchless

Businesswire (2020), *UPS and Michaels Launch Contactless Curbside Pickup of Packages and Return Drop-Offs at UPS Access Point Locations,* Available at. https://www.businesswire.com/news/home/20200429005107/en/UPS-Michaels-Launch-Contactless-Curbside-Pickup-Packages

Chang, C. and Z. Zhang (2016), "The effects of channel experiences and direct marketing on customer retention in multichannel settings," *Journal of Interactive Marketing,* 36, 77–90.

Choi, J. and D.R. Bell (2011), "Preference minorities and the Internet," *Journal of Marketing Research,* 48 (4), 670–82.

Danzinger, Pamela N. (2019), "Lululemon Is on Fire Thanks to the Power of Community Retail," *Forbes,,.* December 12,. https://www.forbes.com/sites/pamdanziger/2019/12/12/lululemon-is-on-fire-thanks-to-the-power-of-community-retail/#59fd912a5df8

De Los Santos, B., A. Hortacsu and M. Wildenbeest (2012), "Testing models of consumer search using data on web browsing and purchasing behavior," *American Economic Review,* 102 (6), 2955–80.

Dinlersoz, E. and H. Li (2006), "The shipping strategies of internet retailers: Evidence from internet book retailing," *Quantitative marketing and economics,* 4, 407–38.

Dolega, L., M. Pavlis and A. Singleton (2016), "Estimating attractiveness, hierarchy and catchment area extents for a national set of retail centre agglomerations," *Journal of Retailing and Consumer Services,* 28 (1), 78–90.

Dzyabura, D., E.K. Siham, J.R. Hauser and M. Ibragimov (2019), "Leveraging the power of images in managing product return rates," *Working Paper,,.* Available at. https://ssrn.com/abstract=3209307

Ehrlich, I. and L. Fisher (1982), "The derived demand for advertising – A theoretical and empirical-investigation," *American Economic Review,* 72 (3), 43–59.

Ellickson, P. (2016), "The evolution of the supermarket industry: from A&P to Wal-Mart," in *Handbook on the Economics of Retail and Distribution* Available at, Basker Emek ed. Cheltenham: Edward Elgar Publishing.

Ellickson, P.B., P.L. Grieco and O. Khvastunov (2020), "Measuring competition in spatial retailing," *The RAND Journal of Economics,* 51 (1), 189–232.

Ellickson, P. and S. Misra (2007), "Supermarket pricing strategies," *Marketing Science,* 27 (5), 811–28.

Ellickson, P., S. Misra and H. Nair (2012), "Repositioning dynamics and pricing strategy," *Journal of Marketing Research,* 49 (6), 759–73.

Emrich, O., M. Paul and T. Rudolph (2015), "Shopping benefits of multichannel assortments and the moderating role of retailer type," *Journal of Retailing, 91 (2), 326–42.

Emrich, O. and P. Verhoef (2015), "The impact of a homogeneous versus a prototypical web design on online retail patronage multichannel providers," *International Journal of Research in Marketing, 32, 363–74.*

Fisher, M., S. Gallino and J. Xu (2019), "The value of rapid delivery in omnichannel retailing," *Journal of Marketing Research, 56 (5), 732–48.*

Forman, C., A. Ghose and A. Goldfarb (2009), "Competition between local and electronic markets: How the benefit of buying online depends on where you live," *Management Science, 55 (1), 47–57.*

Fox, E., A. Montgomery and M. Lodish (2004), "Shopping and Spending across retail formats," *Journal of Business, 77 (S2), S25–60.*

Ganesh, J., K. Reynolds, M. Luckett and N. Pomirleanu (2010), "Online shopping motivations, and e-store attributes: Patronage behavior and shopper typologies," *Journal of Retailing, 86 (1), 106–15.*

Gasparro, A., J. Bunge and H. Haddon (2020), "Why the American consumer has fewer choices – maybe for good," *The Wall Street Journal,,. June 27.*

Gauri, D., K. Sudhir and D. Talukdar (2008a), "The temporal and spatial dimensions of price search: Insights from matching household survey and purchase data," *Journal of Marketing Research, 45 (2), 226–40.*

Gauri, D., M. Trivedi and D. Grewal (2008b), "Understanding the Determinants of Retail Strategy," *Journal of Retailing, 84 (3), 256–67.*

Gensler, S., S.A. Neslin and P.C. Verhoef (2017), "The showrooming phenomenon: It's more than just about price," *Journal of Interactive Marketing, 38, 29–43.*

Gil, R., E. Korkmaz and O. Sahin (2020), "Can free-shipping hurt online retailers?," *Quantitative Marketing and Economics, 18, 305–42.*

Goldberg, L. (2020), "How can retailers bring the best of digital commerce to physical stores?," *RetailWire,,. Available at. https://retailwire.com/discussion/how-can-retailers-bring-the-best-of-digital-commerce-to-physical-stores/*

Goldmanis, M., A. Hortacsu, C. Syverson and O. Emre (2010), "E-commerce and the market structure of retail industries," *Economic Journal, 120 (545), 651–82.*

Goolsbee, A. (2001), "Competition in the computer industry: Online Versus Retail," *Journal of Industrial Economics, 49 (4), 487–99.*

Grewal, D., M. Levy and V. Kumar (2009), "Customer experience management in retailing: An organizing framework," *Journal of Retailing, 85 (1), 1–14.*

Grewal, D., S.M. Noble, A.L. Roggeveen and J. Nordfalt (2020), "The future of in-store technology," *Journal of the Academy of Marketing Science, 48 (1), 96–113.*

Haddon, H. (2018), "Online orders force supermarkets to rethink their stores," *The Wall Street Journal,,. October 2.*

Hammerschmidt, M., T. Falk and B. Wieters (2016), "Channels in the mirror: An alignable model for assessing customer satisfaction in concurrent channel systems," *Journal of Service Research, 19 (1), 88–101.*

Hawkins, A.J. (2020), *UPS and CVS will use drones to deliver prescriptions in Florida,* Available at. https://www.theverge.com/2020/4/27/21238196/ups-cvs-drone-delivery-medicine-florida-coronavirus

Herhausen, D., J. Binderb, M. Schoegel and A. Herrmann (2015), "Integrating bricks with clicks: Retailer-level and channel-level outcomes of online–offline channel integration," *Journal of Retailing, 91 (2), 309–25.*

Herrera and Tilley (2020), "Amazon Opens Cashierless Supermarket in Latest Push to Sell Food," *The Wall Street Journal,,. February 25.*

Hoch, S.J., X. Drèze and M.E. Purk (1994), "EDLP, Hi-Lo, and Margin Arithmetic," *Journal of Marketing, 58 (4), 16–27.*

Holman, J. (2020), "Contactless Payments Gain Popularity in Age of Social Distancing," *Bloomberg Businessweek,,. Available at. https://www.bloomberg.com/news/articles/2020-04-29/contactless-payments-gain-currency-in-age-of-social-distancing*

Honka, E. (2014), "Quantifying search and switching costs in the U.S. auto insurance industry," *Rand Journal of Economics, 45 (4), 847–84.*

Howland, D. (2016), *Morningstar: Mall investors poised to lose billions as shopping shifts online,* Available at. https://www.retaildive.com/news/morningstar-mall-investors-poised-to-lose-billions-as-shopping-shifts-onli/428883/

Huff, D.L. (1964), "Defining and estimating a trade area," *Journal of Marketing, 28 (3), 34–8.*

Izhikevich, E.M. (2020), *How Robots Help Retailers in Today's Changing World. Brain Corporation report,* Available at. https://info.braincorp.com/how-robots-are-helping-retailers-in-todays-changing-world

Jain, A., S. Misra and N. Reid (2020), "The effect of sales assistance on purchase decisions: An analysis using retail video data," *Quantitative Marketing and Economics, 18, 273–303.*

Kahn, Barbara E. (2018), *The Shopping Revolution: How Successful Retailers Win Customers in an Era of Endless Disruption,* Philadelphia, PA: Wharton School Press.

Kalyanam, K., P. Lenk and E. Rhee (2017), "Basket composition and choice among direct channels: A latent state model of shopping costs," *Journal of Interactive Marketing, 39, 69–88.*

Kapner, S. and S. Nassauer (2020), "Coronavirus Finishes the Retail Reckoning That Amazon Started," *The Wall Street Journal,,. May 14.*

Kestenbaum, R. (2020), *It's Never Been Easier to Sell Subscription': The Surprise Winners of the Coronavirus Shutdown,* Available at. https://www.forbes.com/sites/richardkestenbaum/2020/05/11/its-never-been-easier-to-sell-subscription-the-surprise-winners-of-the-coronavirus-shutdown/#1e5278592ef5

——————————— (2020), *Amazon Could Be Vulnerable to Competition, And This Is How,* Available at. https://www.forbes.com/sites/richardkestenbaum/2020/02/05/amazon-could-be-vulnerable-to-competition-and-this-is-how/#cf6dd7052a02

Kim, J.B., P. Albuquerque and B. Bronnenberg (2017), "The Probit choice model under sequential search with an application to online retailing," *Management Science, 63 (11), 3911–29.*

Kitchens, S. (2019), "Online Brands Tap Customer Data to Create Pop-Up Shops," *The Wall Street Journal,,. December 1.*

Kleckler, A. (2020), *Independents Adopt Touch-Free Technology,* https://progressivegrocer.com/independent-grocers-adopt-touch-free-technology

Konus, U., P. Verhoef and S. Neslin (2008), "Multichannel shopper segments and their covariates," *Journal of Retailing, 84 (4), 398–413.*

Koukova, N., J. Srivastava and M. Saul-Fischer (2012), "The effects of shipping fee structure on consumers' online evaluations and choice," *Journal of the Academy of Marketing Science, 40, 759–70.*

Koulayev, S. (2014), "Search for differentiated products: identification and estimation," *Rand Journal of Economics, 45 (3), 553–75.*

Kuksov, D. and C. Liao (2018), "When showrooming increases retailer profit," *Journal of Marketing Research, 55 (4), 459–73.*

Lahart, J. (2020), "The Department Store of the Future Will Look a Lot Like the Past," *The Wall Street Journal,,. January 17.*

Lal, R. and M. Sarvary (1999), "When and how is the internet likely to decrease price competition?," *Marketing Science, 18 (4), 485–503.*

Lattin, James M. and Randy E. Bucklin (1989), "Reference Effects of Price and Promotion on Brand Choice Behavior," *Journal of Marketing Research, 26 (3), 299–310.*

Li, H. and P.K. Kannan (2014), "Attributing conversions in a multichannel online marketing environment: An empirical model and a field experiment," *Journal of Marketing Research, 51 (1), 40–56.*

Lienert, P. and J.L. Lee (2020), *Automated delivery cashes in on pandemic-driven demand,* Available at. https://www.reuters.com/article/us-health-coronavirus-delivery-robots-fo/automated-delivery-cashes-in-on-pandemic-driven-demand-idUSKBN22U1F8

Ma, Yu, Kusum Ailawadi, Dinesh K. Gauri and Dhruv Grewal (2011), "An Empirical Investigation of the Impact of Increasing Gasoline Prices on Consumers Shopping Behavior," *Journal of Marketing, 75 (2), 18–35.*

Melis, K., K. Campo, E. Breugelmans and L. Lamey (2015), "The impact of the multi-channel retail mix on online store choice: Does online experience matter?," *Journal of Retailing, 91 (2), 272–88.*

Messinger, P.R. and C. Narasimhan (1997), "A model of retail formats based on consumers' economizing on shopping time," *Marketing Science, 16 (1), 1–23.*

Nassauer, S. (2020), "Welcome to Walmart. The robot will grab your groceries," *The Wall Street Journal,,. January 8.*

Neslin, S., D. Grewal, R. Leghorn, V. Shankar, M. Teerling, J. Thomas, et al. (2006), "Challenges and opportunities in multichannel customer management," *Journal of Service Research,* 9 (2), 95–112.

Oi, W. (1992), "Productivity in the distributive trades: the shopper and the economics of massed reserves," in *Output Measurement in the Service Sector* Available at, Griliches Z. ed. Chicago: University of Chicago Press.

———— (2006), *Measuring productivity in retail trade and services,* New York: Working paper, University of Rochester.

Pauwels, K. and S. Neslin (2015), "Building with bricks and mortar: The revenue impact of opening physical stores in a multichannel environment," *Journal of Retailing,* 91 (2), 182–97.

Perez, S. (2019), *Wayfair's app adds 3D visualization tools, including interactive photos & a room planner,* Available at. https://techcrunch.com/2019/11/13/wayfairs-app-adds-3d-visualization-tools-for-shoppers-including-interactive-photos-a-room-planner/

———— (2020), *US e-commerce sales to jump 18% in 2020, but not enough to offset retail's decline,* Available at. https://techcrunch.com/2020/06/08/u-s-e-commerce-sales-to-jump-18-in-2020-but-not-enough-to-offset-retails-decline/

Pozzi, A. (2013), "The effect of internet distribution on brick-and-mortar sales," *Rand Journal of Economics,* 44 (3), 560–83.

Rastello, S. and P. Sambo (2019), "Canada Goose Shoppers Walk on Fake Ice, Real Snow in New 'Store'," *Bloomberg BusinessWeek,*,. Available at. https://www.bloomberg.com/news/articles/2019-12-04/canada-goose-store-has-snow-fake-ice-and-no-inventory

Ratchford, B. and G. Stoops (1988), "A model and measurement approach for studying retail productivity," *Journal of Retailing,* 64 (3), 241–63.

Reuter, T. (2020), *Walmart launches express grocery deliveries,* Available at. https://progressivegrocer.com/walmart-launches-express-grocery-deliveries

Roggeveen, A.L., D. Grewal and E.B. Schweiger (2020), "The DAST framework for retail atmospherics: The impact of in-and out-of-store retail journey touchpoints on the customer experience," *Journal of Retailing,* 96 (1), 128–37.

Ryan, T. (2019), *REI opens outdoor adventure gateway concept,* Available at. https://retailwire.com/discussion/rei-opens-outdoor-adventure-gateway-concept/

———— (2019), *Alexa – Are Americans ready to shop by voice?,* Available at. https://retailwire.com/discussion/alexa-are-americans-ready-to-shop-by-voice/

———— (2019), *Mobile jumps out as retailers get a mixed start to the holiday season,* Available at. https://retailwire.com/discussion/mobile-jumps-out-as-retailers-get-a-mixed-start-to-the-holiday-season/

———— (2020), *Is curbside pickup just getting started?,* Available at. https://retailwire.com/discussion/is-curbside-pickup-just-getting-started/

———— (2020), *Will augmented reality tech effectively bring the try-on experience online?,* Available at. https://retailwire.com/discussion/will-augmented-reality-tech-effectively-bring-the-try-on-experience-online/

———— (2020), *Will technology even the last mile playing field with Amazon?,* Available at. https://retailwire.com/discussion/will-technology-even-the-last-mile-playing-field-with-amazon/

Sahoo, N., C.S. Dellarocas and S. Srinivasan (2018), "The impact of online product reviews on product returns," *Information Systems Research,* 29 (3), 723–38.

Segran, E. (2019), *Rent the Runway and Nordstrom have big plans to reshape retail,* Available at. https://www.fastcompany.com/90431748/rent-the-runway-and-nordstrom-have-big-plans-to-reshape-retail

Shehu, E., D. Papies and S. Neslin (2020), "Free shipping promotions and product returns," *Journal of Marketing Research,* 57 (4), 640–58.

Simms, K. (2019), *How Voice Assistants Could Change the Way We Shop,* Harvard Business Review. May 15.

Snider, M. (2020), *Walmart expanding express delivery to 1,000 stores to meet demand amid coronavirus crisis,* Available at. https://www.usatoday.com/story/money/business/2020/04/30/coronavirus-demand-walmart-add-express-delivery-1-000-stores/3061783001/

Stern, M. (2019), *Are mixed reality apps set to skyrocket?,* Available at. https://retailwire.com/discussion/are-mixed-reality-apps-set-to-skyrocket/

———— (2020), *Will 3-D printing tech change the footwear industry?,* https://retailwire.com/discussion/will-3-d-printing-tech-change-the-footwear-industry/

Takahashi, P. (2019), *Retailers create experiences to attract shoppers in Amazon age,* Available at. https://www.houstonchronicle.com/business/article/Retailers-create-experiences-to-attract-shoppers-13867586.php

Talukdar, D. (2008), "Cost of being poor: retail price and consumer price search differences across inner-city and suburban neighborhoods," *Journal of Consumer Research,* 35 (3), 457–71.

Thomas, L. (2019), *Glossier is moving into Nordstrom with mini shops for its perfume, which has a cult-like following,* Available at. https://www.cnbc.com/2019/12/03/glossier-is-moving-into-nordstrom-with-mini-shops-for-its-perfume.html

Shi, Qiaoni, J.J. Inman and D.K. Gauri (2020), ""Store Closed": How Consumers Respond to Retail Store Closures,* Working Paper. University of Pittsburgh.

Verhoef, P., P.K. Kannan and J. Inman (2015), "From multi-channel retailing to omni-channel retailing: introduction to the special issue on multi-channel retailing," *Journal of Retailing,* 91 (2), 309–25.

Walton, C. (2020), *The Strategy Behind Amazon Getting Back into Mall Pop-Up Stores,* Available at. https://www.forbes.com/sites/christopherwalton/2020/02/03/amazon-pop-up-stores-are-to-retail-what-pawns-are-to-chess/#49457f442b99

Wang, K. and A. Goldfarb (2017), "Can offline stores drive online sales?," *Journal of Marketing Research,* 54 (5), 706–19.

Ware2Go (2020), *Ware2Go Study: Coronavirus Sends Most Americans Online to Shop,* Available at. https://foodindustryexecutive.com/2020/05/ware2go-study-coronavirus-sends-most-americans-online-to-shop/

Wernerfelt, B. (1994a), "Selling formats for search goods," *Marketing Science,* 13 (3), 298–309.

———— (1994b), "On the function of sales assistance," *Marketing Science,* 13 (1), 68–82.

Winer, Russell S. (1986), "A Reference Price Model of Brand Choice for Frequently Purchased Products," *Journal of Consumer Research,* 13 (2), 250–6.

Zhu, T., V. Singh and A. Dukes (2011), "Local competition, entry and agglomeration," *Quantitative Marketing and Economics,* 9, 129–54.

Zih Corporation (2019), *"The new age of convenience,",* Available at. https://retailleader.com/new-age-convenience-retailers-roadmap-frictionless-future