



Special Issue on Data-Based Retailing

Cross-channel effects of omnichannel retail marketing strategies: A review of extant data-driven research

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Abstract

The authors review 50 empirical retailing research papers that have appeared over the last 20 years to take stock of *what we know, need to know better, and do not know* yet about within-retailer cross-channel effects of omnichannel retail marketing strategies on (a) consumer responses over their purchase journeys, i.e., *online and/or offline search, purchase intention, frequency, amount, returns, loyalty*, and (b) the retail firm's aggregate outcomes (e.g., sales, costs, profits, product returns) *by channel and overall*. Specifically, the authors focus on five strategies: (1) the addition of online channel by an offline retailer; (2) the addition (or subtraction) of offline channels by an online retailer; (3) addition of mobile shopping channel (website and/or app) by offline and/or online retailer; (4) cross-channel integration strategies; and (5) retail marketing mix strategies. The author/s integrate findings from empirical research on these strategies into a number of 'insights' about 'what we know'. Prominent among these are the following: Adding a transactional online channel to an offline channel improves the retailer's overall sales even though offline channel sales can be cannibalized to some degree. Adding an offline channel by an online retailer, however, boosts online channel sales as well as overall sales of the retailer. Similarly, adding a mobile shopping channel usually increases customer purchase frequency and amount and overall sales of the retailer in the long-term. Strategies for greater cross-channel integration generally have a positive effect on a retailer's overall performance while online advertising has positive effects on offline channel consideration and sales as well as overall sales of a multichannel retailer. Other insights or findings that need further study or open questions are also identified. The paper closes with managerial implications of the derived empirical insights, and suggestions for future research.

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Key words: Retailing; Omnichannel; Cross-channel effects.

Introduction

The last two decades have witnessed the advent of online retail websites, marketplaces, and additional digital platforms such as mobile phone shopping apps and social media. All these have disrupted and transformed the world of retailing by providing multiple avenues for sellers to connect with buyers. As a result, the term 'omnichannel' has gained currency over the last six years (e.g., Verhoef, Kannan, and Inman 2015). This trend signifies the ability and disposition of contemporary consumers to crisscross and avail of the multiple channels at various stages on their customer journeys for products

and services. For example, a 2017 survey of 43000 shoppers of one multichannel retailer reported in *Harvard Business Review* found that 73% of the study participants were omnichannel customers, i.e., used multiple channels during their shopping journey (Sopadjeva, Dholakia, and Benjamin 2017). Moreover, omnichannel customers of this retailer were also found to be more valuable customers on multiple counts. Consistent with this study, a 2018 eMarketer study reported that while only 7% of all US shoppers were omnichannel, this group contributed 27% of total US retail sales (eMarketer Criteo, 'Global Commerce Review: Unites States, Q1 2018'). Last but not least, as the Covid-19 pandemic induced a dramatic shift to more online shopping for many customers, the omnichannel approach is now recognized as a necessity by most retailers. This article is then aimed at: (1) taking stock of the data-driven insights about cross-channel effects currently available in the retailing research literature that can

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guide the development of effective omnichannel strategies by retailers, whether they currently be offline only, online only, or multichannel retailers; and (2) identifying questions for further research.

Earlier, between about 1995 and 2010, there was a major shift from the traditional single-channel brick & mortar (B&M) and catalog retailing settings to a 'multichannel' retailing world that viewed B&M, direct marketing (catalog) and fast-growing online retailing as alternative channels for sellers to reach their target consumers. These were initially considered as separate channels with different objectives having little or no overlap. The brand manufacturers could either choose one of these channels or a 'hybrid' combination in different markets. The underlying assumption was that different consumer segments would choose to shop through different channels. At the time, there was little realization that most consumers may choose to utilize more than one or all the available channels while shopping for a product.

However, the evolution and spread of smartphones shook up this mindset and changed the world of retailing forever. Mobile devices enabled consumers to access information and make choices of what and where to buy - on either digital or physical retail platforms - in real-time. The advent of mobile thus revolutionized multichannel shopping. It allowed consumers to explore and consult their friends via a quick phone call or text. Customers could also post a query on their social networks or visit multiple websites on the go to evaluate and compare the choices available across multiple sellers while buying a product. This consumer behavior compels all multichannel retailers to think about how to manage and influence interactions with consumers across multiple touchpoints on different channels in order to win their business. Furthermore, in developing their strategies, retailers have to be sensitive to and account for potential *cross-channel effects of retail marketing strategies* (Chu, Chintagunta, and Vilcassim 2007, Mark et al. 2019). Prior research on cross-channel effects has focused on the effects of the introduction of a new channel on the existing channels (e.g., Wang and Goldfarb, 2017) and the effects of marketing strategies in one channel on shopping behavior and outcomes in other channels (Gauri 2013, Gensler, Verhoef, and Bohm 2012, Shankar and Kushwaha 2021). In the present paper, we broadly define the cross-channel effects as spillover effects of a retailer's addition or deletion of one channel, or marketing actions within that channel, on consumer responses and retailer outcomes in its other channel/s. Not surprisingly, research in the domain of omnichannel management is now growing rapidly, as recent reviews indicate (e.g., Cai and Lo 2020). However, there has been no comprehensive review of the extant *empirical research-based knowledge of within-retailer cross-channel effects of retail marketing strategies* of multichannel retailers in an omnichannel world. The purpose of this paper is to provide such a review.

Specifically, the objectives of this paper are to take stock of *what we know, need to know better, and do not know yet* about *the cross-channel effects* of five classes of retail mar-

keting strategies on consumer response behaviors (i.e., *online and/or offline search; purchase intention, frequency, amount, returns; and loyalty*) and retailer's outcomes (i.e., *aggregate sales, costs, profits, product returns by channel and overall*). Hereafter, *online channel* refers to a website of a retailer accessed by a consumer via a desktop or laptop computer; *offline channel* refers to either a retailer's brick & mortar stores (including pop-up or temporary stores and showrooms), catalog mailings & mail or phone orders, and televised home shopping by phone; *mobile channel* refers to accessibility via a mobile device (e.g., smartphone or tablet) to a retailer's online website and/or shopping app. The focal five classes of retail marketing strategies are then: (1) *'adding clicks to bricks'*, i.e., adding online channel by an offline channels retailer; (2) *'adding bricks to clicks'* i.e., adding (or possibly closing) offline channel outlets, e.g., physical stores, pop-up stores or showrooms by a retailer with an online channel; (3) *adding a mobile shopping channel*, i.e., provision of a website adapted to tablet or smartphone formats and/or a mobile app (i.e., a program that is downloaded and installed onto a user's mobile device that is another purchase channel, e.g., Liu et al. 2019) by online, offline, or multichannel retailer; (4) *cross-channel integration strategies*; and (5) *retail marketing mix strategies*. Below, we summarize the focal 'research questions' (RQs) driving the present research review:

Research questions

- RQ1-Adding Clicks to Bricks: What is the impact of the addition of an online channel (informational, transactional, or e-marketplace) by a traditional offline retailer on offline consumer-level responses and retailer's outcomes by channel, and overall?
- RQ2-Adding Bricks to Clicks: What is the impact of the addition of an offline ('bricks') channel (permanent, pop-up, or showroom outlets) by an online retailer on online consumer-level responses and retailer's outcomes by channel, and overall?
- RQ3-Adding Mobile Channel: What is the impact of the addition of a mobile channel by an online or online + offline retailer on consumer-level responses and retailer's outcomes by channel, and overall?
- RQ4-Cross Channel Integration: What is the impact of a multichannel retailer's cross-channel integration strategies such as integrated technology platforms, communications, and fulfillment strategies, e.g., 'buy online and return in stores' (BORS), 'buy online and pickup in stores' (BOPS), 'Ship to Store' (STS), etc., on consumer-level responses and retailer outcomes by channel, and overall?
- RQ5-Marketing Mix: What is the impact of changes in retail marketing mix elements (e.g., price, product assortment, advertising, promotion, delivery time & returns period policies) in offline (online) channel of a multichannel retailer on its online (offline) channel's consumer-level responses and retailer outcomes by channel, and overall?
- RQ6: What are important directions for further research?

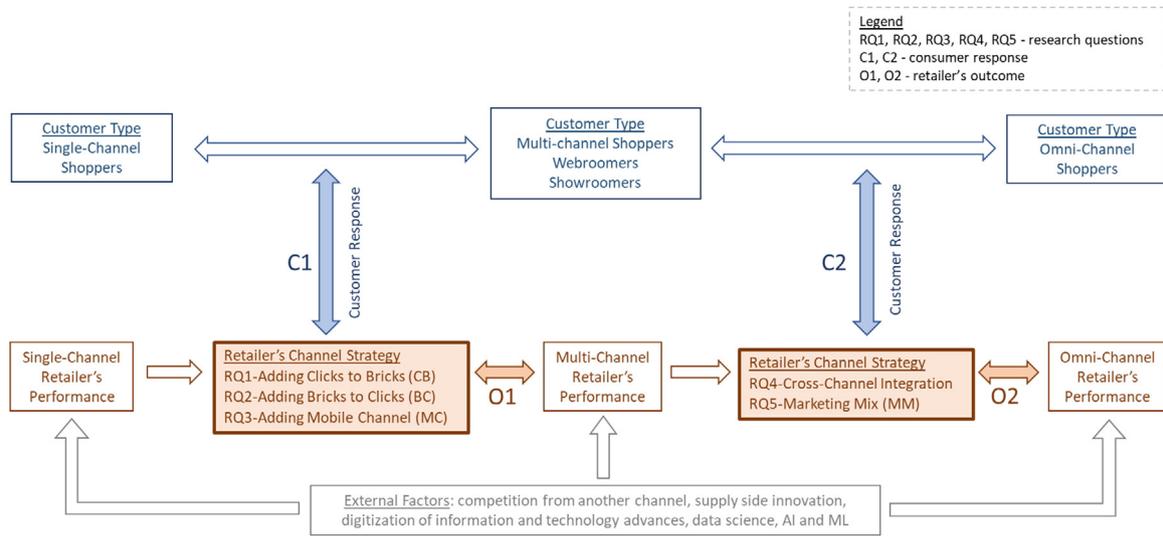


Fig. 1. Framework to review cross channel effects.

Organizing conceptual framework for review

To answer our research questions, our review of the literature is aligned with the conceptual framework shown in Fig. 1. This framework has three main components: (i) customer types, (ii) retailer types, and (iii) retailer's channel strategies. It depicts the retailer's evolution from a single or mono-channel to an omnichannel retailer, and, along this evolution, customer types based on their purchasing behavior and engagement with the retailer. A customer engages with the retailer along their purchase journey or path to purchase differently for different purposes at different decision stages of their journey. The customer's journey is typically depicted as a five-stage path (e.g., Levy, Weitz and Grewal 2018) comprising need recognition, evaluation, consideration, purchase, and post-purchase. In this paper, however, we follow the lead of scholars such as Grewal & Roggeveen (2020), Lemon & Verhoef (2016), Shavitt & Barnes (2020) in defining the customer journey as comprised of three stages: pre-purchase (e.g., 'search'), purchase (e.g., transaction), and post-purchase (e.g., review, returns, repeat) and use this definition to explain the three main components our conceptual framework and their interactions in more depth below.

Customer types

Based on the customer's journey, we can broadly conceptualize five customer types depicted in Fig. 2: single-channel customers, multichannel customers, webroomers and showroomers, and omnichannel customers.

Single-channel customers (Fig. 2a) are those shoppers who use the same channel, either online or offline, throughout their purchase journey whenever they shop, regardless of the retailer's channel strategy. Multichannel customers may use all the multichannel options of retailers, but on different shopping occasions or purchase journeys, i.e., they are single-channel on any particular shopping occasion. Webroomers

(Fig. 2b) and Showroomers (Fig. 2c) are customers who typically complete the purchase stage from the same channel (online for Showroomers and offline for Webroomers), but perform the pre-purchase stage, i.e., 'search', in the other channel (Gensler, Neslin, and Verhoef 2017). Lastly, omnichannel customers (Fig. 2d) freely utilize different channels and may crossover at any stage – pre-purchase, purchase, or post-purchase - from one channel to another (perhaps multiple times) along a shopping journey. (In this respect, webroomers or showroomers are special cases of omnichannel shoppers.) They can buy online and pick-up from the store ('BOPS') or return products at stores ('BORS'). They can even perform the same stage in both channels, e.g., search in both offline stores and online website.

Retailer types

Neslin et al. (2006) define a channel as "a customer contact point, or a medium through which the firm and the customer interact." This is, by definition, a two-way interaction, which excludes the one-way communications by media such as traditional TV advertising. Applying this definition, a 'retailer' must have at least one channel where interactions are in the form of purchase transactions by consumers. Using this definition of a channel and a retailer, we can classify retailers into one of three categories:

A mono- (or single-) channel retailer offers one channel for customers to interact with it and consummate purchases. This channel could be: (1) 'offline' such as physical stores and catalogs, or (2) 'online' such as websites and e-commerce platforms, or (3) 'mobile' including mobile websites and apps. The multichannel retailer offers more than one channel for customers to interact with it and buy from (e.g., Konuş, Neslin and Verhoef 2008, Schröder and Zaharia 2008). The omnichannel retailer engages in omnichannel management as defined, e.g., by Verhoef, Kannan, & Inman (2015), i.e., the synergetic management of its multiple channels and

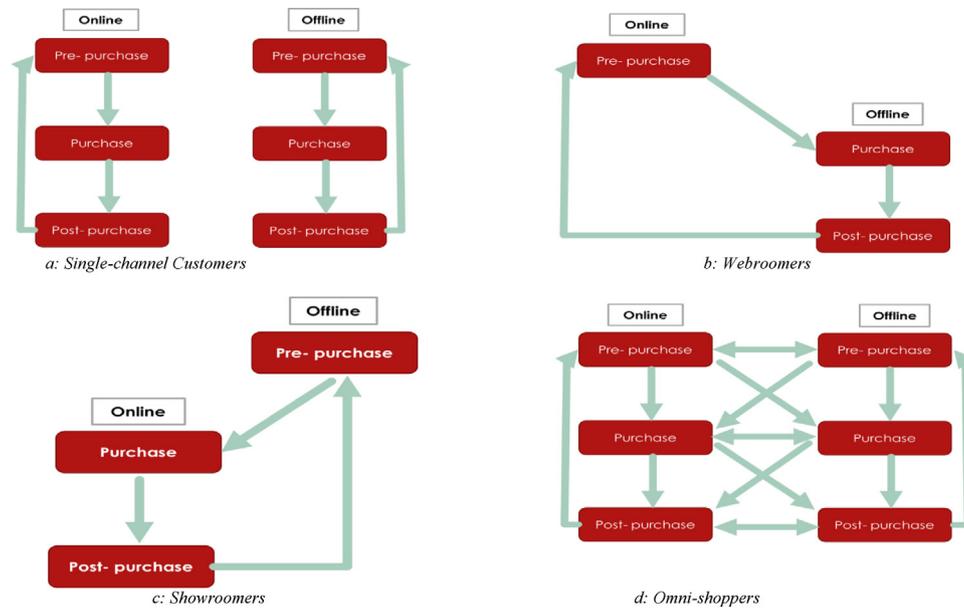


Fig. 2. Customers' types a: Single-channel customers. b: Webroomers. Showroomers. d: Omni-shoppers.

customer touchpoints, in such a way that the customer experience across channels and the performance over channels is optimized.

Retailer's channel strategies and cross-channel effects

A retailer that seeks to improve its financial performance can leverage the changing customer's behavior by changing its selling channels mix. For instance, an offline (B&M and/or catalog or telephone channel) retailer could add an online channel (i.e., 'adding clicks to bricks'); or a mono-channel online retailer could add an offline channel ('adding bricks to clicks'). Further, a retailer may add a mobile channel to its existing online and/or offline channel/s. By becoming multichannel, the retailer accommodates all five customer types defined above and can also attempt to proactively manage customers' omnichannel shopping behavior by *cross-channel integration* and 'right channeling' strategies (e.g., Valentini, Montaguti, and Neslin 2011). Thereby, the retailer may derive some competitive advantage and retain segments of consumers by providing better services than their rivals. Multichannel retailers can also vary marketing mix elements, such as product assortments, prices, advertising or promotions, delivery and returns, by shopping channel to improve their customers' experience, accounting for spillover or cross-channel effects on sales volumes and profitability, and overall firm performance. Overall performance refers to the aggregate or sum of channel-level performances of a retailer on some outcome metric, e.g., sales revenues, profit.

As already noted, we focus on the five sets of retailer strategies (Research Questions 1-5) in this review paper: (RQ1) 'Adding Clicks to Bricks' ('CB'); (RQ2) Adding Bricks to Clicks ('BC'); (RQ3) Adding Mobile channel ('MC'); (RQ4) Cross-channel Integration (CCI); and (RQ5) Retail Marketing Mix ('MM'). We label the cross-channel effects or

consumer responses and retailer outcomes of the first three (CB, BC, and MC) in Fig. 1 by the links C1 and O1, and those of the last two (CCI and MM, after the retailer becomes a multi-channel retailer) by C2 and O2 respectively.

The rest of the paper is organized as follows: Section 3 summarizes the procedure (criteria, sources, method) we used for the compilation of the empirical research papers reviewed in this paper. Section 4 presents insights on cross-channel effects of various retail marketing strategies depicted in Fig. 1 (i.e., 'What We Know'). Notably, most of these insights are integrative, i.e., based on convergent findings from several albeit small numbers of papers (2 to 5) while a few have only one supporting paper. Therefore, we refrain from labeling these empirical insights as 'empirical generalizations' as defined in previous literature (e.g., Bass and Wind 1995, Barwise 1995) as they need to be established in a wider range of empirical settings and conditions. However, they do represent what we know to date. Section 5 discusses major implications of these current insights for managers and researchers. The concluding section discusses this paper's contributions, and highlights 'What We Need to Know Better' and directions for future research, i.e., 'What Do We Not Know' yet, especially with regard to under-researched external forces, depicted in Fig. 1, that are likely to impact the customer experience and retailer's outcomes.

Review procedure

For this review, we compiled articles published in the past 20 years (2000-2020) in high-quality academic research-based journals in the following disciplinary streams (Retail Marketing, Information Systems, Operations Management, Economics, and Management). Specifically, we limited our search to journals ranked A and A* in the ABDC (Australian Busi-

Table 1
List of the journals used in the review.

Journals	No. of Articles
Journal of Retailing	9
Journal of Marketing Research	4
Marketing Science	1
Journal of Marketing	4
International Journal of Research in Marketing	8
Journal of Service Research	1
Journal of Interactive Marketing	3
International Journal of Retail & Distribution Management	1
Journal of Retailing and Consumer Services	1
Marketing Letters	1
Quantitative Marketing and Economics	1
Journal of Research in Interactive Marketing	1
The RAND Journal of Economics	1
International Journal of Management	1
Management Science	3
Production and Operations Management	3
Journal of Operations Management	2
Manufacturing & Service Operations Management	1
Information Systems Research	1
Journal of Management Information Systems	1

ness Deans Council) ranking. These journals are listed in Table 1.

We have also included one recent relevant working paper. Thus, the total number of articles reviewed in this article is 50, and the criteria for the selection of these articles are explained next.

We used the following keywords (with different spellings and different combinations) to search for the articles: *Omnichannel retail, multichannel retail, Online to Offline retailing, ecommerce, mobile apps, webrooming, showrooming, cross-channel, shopper marketing, omni-shoppers*. We then filtered the set of articles to retain *only the articles containing empirical data analysis* in line with the objectives of this Special Issue. Further, we confined our search to *papers that utilized objective data* gathered via survey, scanner, archival, or experimental (field and lab) methods *and reported any cross-channel effects* of the selected five sets of retail marketing strategies (CB, BC, MC, CCI, and MM) by individual retailers. That is, findings from studies utilizing qualitative data such as from focus groups or personal interviews are not included. We only include papers that examine *within-retailer cross-channel effects*. For instance, articles based on industry-level data or customers’ surveys about their shopping experience across different retailers are excluded unless there are cross-channel findings reported at the individual retailer-level.

Lastly, we concentrated on papers that had empirical findings bearing on the following objective consumer-level response measures and retailer outcomes. Specifically, on the consumer side, one or more measures related to ‘pre-purchase’, e.g., channel choice; ‘purchase’, i.e., purchase intention, purchase frequency, purchase amount (spending level); and ‘post-purchase’ e.g., product returns, and loyalty to the retailer. As regards retailer outcomes, we focused on papers with findings related to one or more of the following

outcome measures: aggregate customer visits, retailer sales, costs, returns, profitability by channel, and overall.

As a result of the above process, we compiled 50 relevant papers. Table A1 in the web appendix displays the distribution of the compiled papers by strategy and outcome variable investigated, and Fig. 3 depicts the distribution of these articles based on the geographic setting of the data used and the publication date.

Cross-channel effects of omnichannel retail marketing strategies: synthesis of research findings to date

In this section, considering our five research questions RQ1-RQ5, we focus on providing current data-driven integrative insights into the cross-channel effects of the five omnichannel retail marketing strategies depicted in our Organizing Framework (Fig. 1), beginning with the *Adding ‘Clicks to Bricks’* (‘CB’) strategy.

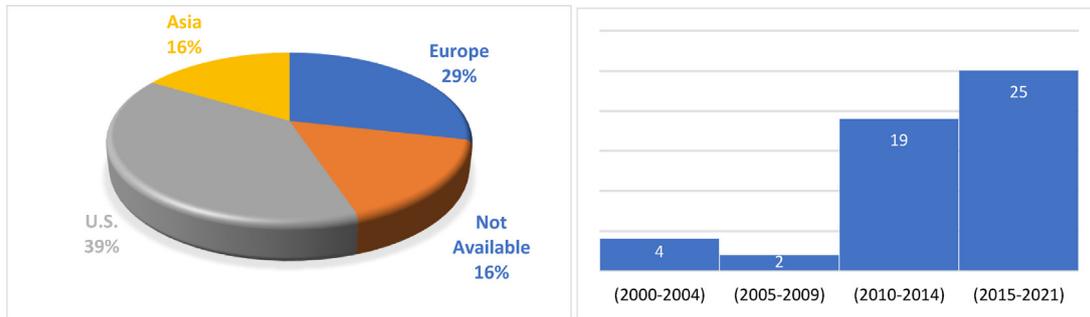
Adding ‘clicks to bricks’ (RQ1)

At the turn of the new millennium, interest in online retailing was rapidly rising with the disruption by online retailer Amazon attracting great attention from the time of its launch in the mid-’90s. By the year 2000, it had become clear that the Internet channel was a viable alternative or additional channel for the retailing of many categories of goods and services. Many traditional retailers had started thinking seriously about the pros and cons of adding an Internet channel to their existing B&M stores and/or catalog channels (i.e., ‘CB’ strategies). This interest also spilled over to the academic research community (e.g., Alba et al. 1997), and the first formal studies of the cross-channel effects of the CB strategy began to appear.

As already mentioned, Table 2 identifies the set of empirical research papers included in this review related to the CB strategy. (Table A2 in the web appendix provides a more detailed summary of these papers, including specific strategy investigated, data setting, methodology, key finding/s and underlying posited mechanism/s or explanations.) Below, we discuss empirical insights bearing on RQ1, derived from the key findings of one or more supporting research papers with respect to specific ‘links’ related to retailer outcomes ‘O1’ and consumer responses ‘C1’ in our organizing framework depicted in Fig. 1.

Insight R1.1: Cannibalization of offline channel sales by a newly added online channel can occur but this effect is highly variable, ranging from negligible to over 90%, depending on the retail setting.

Supporting research: ‘Cannibalization’ of existing customers’ offline sales by a newly added online channel in some defined time period is the proportion of total online sales to existing offline customers in that period attributable to sales displaced from the offline channel. That is, if every dollar spent by an existing customer online is matched by a dollar decrease in that customer’s expenditure offline then the cannibalization is 100%.



a. Distribution of the Paper Based on Geographic Origin of Data

b. Distribution of the Paper Based on Publication Date

Fig. 3. Distribution of the papers based on data origin and publication date. a: Distribution of the paper based on geographic origin of data. b. Distribution of the paper based on publication date.

Table 2

Summary of key insights of adding clicks to bricks.

Key Insights regarding Research Question 1	# of supporting papers	Papers
Insight R1.1: Cannibalization of offline channel sales by a newly added online channel can occur but this effect is highly variable, ranging from negligible to over 90%, depending on the retail setting.	3 supporting 2 opposing/neutral	Deelersnyder et al. (2002), Geyskens et al.(2002), Biyalogorsky & Naik (2003), Pozzi (2013), Hernant & Rosengren (2017)
Insight R1.2: Adding an online channel by a hitherto offline retailer has a positive effect on overall retailer performance.	3	Deleersnyder et al. (2002), Biyalogorsky & Naik (2003), Pozzi (2013)
Insight R1.3: The effects of addition of an online informational ('search') website on offline customer purchase frequency and spending amount can be negative for some product categories and customer segments.	2	Van Nierop et al. (2011) Pauwels et al. (2011)

An early study by Deelersnyder et al. (2002), set in the newspaper publishing industry in Europe, found no cannibalization by the online channel of either total offline (print) circulation or advertising revenues of hybrid newspapers. In another related study in the same industry, Geyskens, Gielens, & Dekimpe (2002) found Internet channel investments are positive net present value investments for newspaper publishers. Subsequently, Biyalogorsky & Naik (2003, p. 28) reported 'negligible' cannibalization in a music retailer setting, i.e., only 2.8% of newly added online channel sales are drawn from the offline channel. A later study of the cross-channel effect of adding online to existing physical stores network by a supermarket retailer by Pozzi (2013), utilizing household-level scanner and loyalty program data, reported limited cannibalization. Specifically, Pozzi's (2013) study found that the Internet channel led to a 13% increase in overall sales with 95% of this effect coming from increased expenditure by existing offline consumers, but with only limited cannibalization at the household level. That is, on average, for every dollar spent online by an existing customer, this study found 67 cents represented fresh business, and only 33 cents were displaced from the retailer's offline sales (Pozzi 2013, p. 574).

However, a study by Hernant & Rosengren (2017) reported a higher cannibalization rate than the previous studies. These researchers used consumer-level data, very similar to that utilized by Pozzi (2013), but drawn from a non-grocery retail setting. They found over 90% cannibalization by a newly introduced online channel within 15 months of its opening.

Specifically, the average monthly expenditure online by existing offline customers was only marginally higher than the reduction of these customers' sales in the offline stores (implying about 91% cannibalization), "representing almost a complete switch from offline to online." In short, we have varying results from a handful of studies regarding the magnitude of cannibalization of offline sales by the online channel (2.8% to 91%). This divergence is likely attributable to the different product categories, retailer settings and customer types involved in these studies but needs more investigation.

Insight R1.2: Adding an online channel by a hitherto offline retailer has a positive effect on overall retailer performance.

Supporting research: Despite the varying results regarding degree of cannibalization, all the five studies reviewed above indicate that the retailer's overall sales and financial outcome (the retailer's performance across all channels) by way of the addition of the online channel are positive. The Internet channel may be generating new business due to attracting new segments of customers who never utilized the offline channel (e.g., Deleersnyder et al. 2002) or, because of greater convenience (e.g., reduction in search or travel costs), growth in online equity (Biyalogorsky and Naik 2003) or diverting business from rival supermarkets and other substitutes, e.g., restaurants (Pozzi 2013).

The studies referred to above focus on the cross-channel effects of addition by an offline retailer of a *transac-*

tional online channel as opposed to simply an informational website. Two additional studies (Van Nierop et al. 2011, Pauwels et al. 2011) focused on the narrower strategy of an offline retailer adding an informational website (one that offers commercial information aimed at facilitating the pre-purchase stage of the consumer journey but does not allow customers to make purchases online, unlike a transactional website.). The motivation to do so, likely came from reports of the product category-level phenomenon of 'research shopping', or ROPO, i.e., the propensity of consumers to research the product in one channel (e.g., the Internet) and then purchase it through the other channel, i.e., the offline store (e.g., Choi and Park 2006, Verhoef, Neslin and Vroomen 2007). An important consumer-level (C1) insight from these studies is:

Insight R1.3: The effects of addition of an online informational ('search') website on offline customer purchase frequency and spending amount can be negative for some product categories and customer segments.

Supporting research: Van Nierop et al. (2011) found from their analysis of individual-level data of 8615 customers of six selected product categories at a large, Dutch retail department store that most visitors to the retailer's newly added informational website made fewer shopping trips and spent less offline across all six product categories. They suggested these negative effects are attributable to more planned shopping enabled by the information available on the website and greater ability to easily compare the retailer's offerings with those of competitive stores in deciding where to shop. However, another study in the same empirical data setting by Pauwels et al. (2011) reported more nuanced findings. Specifically, lower online search costs are especially beneficial for sensory products and for customers distant from the store. Customers in some segments buy more expensive products, suggesting that online search and offline purchases are complements, while customers in other segments reduce their shopping trips, suggesting their online activities partially substitute for experiential shopping in the physical stores.

Table 2 summarizes the key extant empirical insights regarding RQ1 gleaned from our review along with numbers of supporting papers. The main takeaway is that newly added online channels can cannibalize offline channel sales but improve the retailer's overall performance. However, these effects vary across product categories and settings.

Adding 'bricks to clicks' (RQ2)

As already defined, this strategy refers to the addition of offline channel (B&M stores, pop-up stores, showroom) by a mono- or multi-channel online retailer. Given that a large proportion of consumers continue to shop offline, especially for product categories like groceries, many online retailers, e.g., Amazon, have added an offline channel to their operation to expand their sales and accelerate their growth. Correspondingly, several notable academic empirical studies (see Table A3 in the web appendix for detailed summaries) since 2010 have investigated within-retailer outcomes from "adding

bricks to clicks" (denoted 'BC' in Fig. 1), specifically the addition of B&M stores channel, 'showroom' or pop-up physical store, by a hitherto online retailer. (For completeness, we also include two studies of 'subtracting', i.e., closing offline stores/channel of a hitherto multichannel retailer in this section). Several insights drawn from extant research pertaining to retailer-level outcomes (Link O1 in Fig. 1) and consumer-level responses (Link C1 in Fig. 1) of BC strategies are presented next.

Insight R2.1: B&M stores openings have a positive long-term effect on online channel sales, especially where the online presence is weak, and boost overall performance of the retailer.

Insight R2.2: B&M store openings tend to cannibalize catalog sales in the short term and increase product returns.

Supporting research: The first of these studies by Avery et al. (2012) centered on the addition of physical stores by a high-end apparel and furnishings retailer with pre-existing non-store channels (catalog and Internet). A novel aspect of this work was the use of a quasi-experimental approach to investigate the change in the retailer's online and catalog sales and existing and new customer counts ('traffic') due to physical store openings. The authors found that while physical store openings decrease catalog sales in the short term, they had no short-term effect on Internet channel sales. Further, sales increase in both catalog and Internet channels in the long run, but more so in the online channel. Furthermore, the store openings stimulated long-run increases in first-time and repeat customer counts in the non-store channels leading Avery et al. (2012) to conclude that the addition of bricks to clicks has a *long-term complementary effect*, with stores acting as the brand's *billboard*.

Four subsequent studies of the 'BC' retailer strategy found results largely consistent with those of Avery et al. (2012). First, Pauwels & Neslin (2015) also found that while store introduction cannibalizes catalog sales, it did not affect Internet sales. Also, while product returns and exchanges increased, so did overall sales. Transaction size of purchases, returns, and exchanges did not change. Like Avery et al. (2012), Pauwels & Neslin (2015) (2015) concluded that store introduction has a positive effect on overall sales. Second, a study by Fornari et al. (2016) found that store openings reduce the probability of purchasing online in the short term, but it tends to increase in the long term. They provided evidence for a long-term synergy effect of the physical and online stores due to store presence in the given area. In the short term, the migration effect (reduced probability of purchasing online due to physical store availability) prevails, but in the long term, the synergy effect (increased probability of online purchase due to physical store) is more prominent. Third, Wang & Goldfarb (2017), like Avery et al. (2012), conducted a quasi-experimental analysis of the impact of physical store openings on local online sales by an online retailer of specialty general merchandise and reported a *decrease (increase) in online sales where the retailer has a strong (weak) pres-*

ence. Further, Wang and Goldfarb observe a large increase in new customer acquisition and overall sales. They conclude that although online and offline channels may be substitutes in distribution, they are complements in marketing communications that effectively inform consumers about the existence of the brand.

Fourth, Kumar, Mehra & Kumar (2019) investigate the impact of adding physical stores by an online fashion apparel retailer also via a quasi-experimental design ('difference-in-differences' or DiD analysis) using *customer-level data* rather than channel-level sales data. These authors find that store openings increased online purchases from existing online customers and these complementary effects increase as customers' proximity to retailer's physical stores increases. Kumar, Mehra & Kumar (2019) posit that a store engagement effect – the probability of interaction due to a physical store – is the reason for the increase in online purchases. They also find that allowing customers to purchase online and return the product in-store plays a significant role in increasing online sales for an omnichannel retailer. Kumar, Mehra & Kumar (2019) also found opening a physical store increases overall sales.

Next, we focus on studies that focus on the addition of 'special-purpose' B&M outlets, including *pop-up* outlets and *showrooms*. (*Pop-up* retail store is a store that is opened temporarily to take advantage of a faddish trend or seasonal demand. A retail *showroom* is a physical space provided by a retailer designed to allow customers to try and test products purchase journey with the understanding that the final purchase transaction will take place online.)

Insight R2.3: A well-advertised pop-up store, or showroom, has a complementary effect on sales of a hitherto online retailer.

Insight R2.4: A showroom boosts the retailer's overall performance.

Supporting research: Zhang et al. (2019) conducted a randomized field experiment in collaboration with the Alibaba Group that investigated the impact on online retail sales of pop-up store openings by a jeans apparel retailer. The authors found that messaging about the upcoming pop-up store increased foot traffic and, in turn, boosted sales at the participating retailer's online store. In two other studies, Bell, Gallino & Moreno (2015; 2018) examined the impact of online fashion eyewear retailer Warby Parker's addition of B&M showrooms to its pre-existing online and 'sampling' channels, the last of which refers to Warby Parker's Home Try-On program in which, five pairs of glasses (frames only) are delivered to customers for inspection free of charge for five days. Utilizing a quasi-experimental analysis approach, Bell, Gallino & Moreno (2015) report that showroom openings had a positive overall demand increase impact of 10%, while in locations with showrooms, direct sales through website increased by 7%. The authors conclude that benefits are derived from the provision of information alone, as fulfillment is identical in all three channels, i.e., Web, showroom, and 'sampling' channels. In their subsequent paper, Bell, Gallino &

Moreno (2018) report that showrooms increase demand overall and in the online channel as well. Moreover, showroom openings generate operational spillovers and increase overall operational efficiency by: (1) attracting customers who, on average, have a higher cost-to-serve; (2) increasing conversion in a sampling channel; and (3) decreasing purchase returns. The complementary effects of showroom on online sales found by Bell, Gallino & Moreno (2018) are corroborated in another recent working paper by Jiang, Li, and Shen (2020), reporting a quasi-experimental study of the addition of an offline showroom by an online plus mobile channel retailer (see Table A2 in the web appendix). These researchers find addition of a physical showroom leads to a positive category expansion effect for the existing customers who visit it, i.e., these customers discover and purchase products from new categories that they may otherwise not have purchased in the online environment. This is accentuated by the presence of salespeople in the showroom.

Two other studies focus on offline channel closings rather than openings by a multichannel retailer. The first of these by Konus, Neslin & Verhoef (2014) investigated the effects of elimination of the catalog channel, i.e., the ceasing of catalog mailings by a multichannel (telephone and online ordering) Dutch retailer, while the second by Soysal, Zentner & Zheng (2019) focused on offline store closings by a multichannel (offline plus online) video rental retailer.

Insight R2.5: Closing offline channel (e.g., catalog, stores) can have a negative effect on customers' purchase incidence and loyalty to the retailer.

Supporting research: Konus, Neslin & Verhoef (2014) find that closing the catalog mailings shifted consumers to the lower-cost online channel, especially former heavy users of the catalog-telephone channel. Overall, retailer's net revenues decline. In another retail context, Soysal, Zentner & Zheng (2019), found that closure of its offline stores by a DVD rental company had an adverse impact on online channel and overall sales, especially purchases by customers who relied strongly on the offline channel. These two studies together suggest that elimination of offline channels by a multichannel retailer not only shifts its heavy users to other retailers but also reduces their purchase incidence in the online channel, thereby negatively impacting the overall revenues.

The key insights from our review, summarized in Table 3, highlight the positive impact of offline channels on the retailer's online and overall performance.

Adding mobile channel

A mobile channel allows consumers to use their smartphone or tablet devices to visit, search and order from the retailer's online webstore or via a downloadable mobile app of the retailer. Several papers summarized in Table A4 in the web appendix have investigated the impact of adding mobile channel ('MC' strategy), browser and/or app, by a mono-channel online or multichannel retailer.

Table 3
Summary of key insights of adding offline channels.

Key Insights regarding Research Question 2	# of supporting papers	Papers
Insight R2.1: B&M stores openings have a positive long-term effect on online channel sales, especially where the online presence is weak, and boost overall performance of the retailer.	5	Avery et al. (2012), Fornari et al. (2016), Wang & Goldfarb (2017), Kumar et al. (2019), Pauwels & Neslin (2015)
Insight R2.2: B&M store openings tend to cannibalize catalog sales in the short term and increase product returns.	2	Avery et al. (2012), Pauwels & Neslin (2015)
Insight R2.3: A well-advertised pop-up store or a showroom has a complementary effect on sales of a hitherto online retailer.	3	Zhang et al. (2019), Bell et al. (2015), Bell et al. (2018)
Insight R2.4: A showroom boosts the retailer's overall performance.	3	Bell et al. (2015), Bell et al. (2018), Jiang et al. (2020)
Insight R2.5: Closing offline channel (e.g., catalog, stores) can have a negative effect on customers' purchase incidence and loyalty to the retailer.	2	Konuş et al. (2014), Soysal et al. (2019)

Insight R3.1: Adding mobile shopping channel by online-only retailer cannibalizes retailer's existing online channel customers' purchases in the short term but boosts the retailer's overall sales in the long term and increases consumers' online purchase frequency and order size, especially for previously low spenders.

Supporting research: Bang et al. (2013), utilizing data from a leading e-market in Korea and multivariate baseline analysis with VARX in a quasi-experimental design, found that, overall, the mobile channel does not substitute for, but rather complements, the traditional online channel. Specifically, the addition of the mobile channel increased the overall revenue from channel adopters by 18.4%. Mobile channel complements the online channel in time-critical searches and triggers additional transactions on the online channel. Subsequently, Wang, Malthouse & Krishnamurthi (2015) investigated the impact of the introduction of mobile shopping channel (using tablets or smartphones to place online orders) on purchases from a grocery retailer in a quasi-experimental analysis of customer-level data. They found, first, as customers develop the habit of M-shopping, their value to the online grocer increases since they place orders more frequently. Second, the positive effect of M-shopping on subsequent purchase behavior is more pronounced on previously low-spenders who place larger orders on a more frequent basis after adopting M-shopping. In another similar quasi-experimental study using consumer-level transaction data, Huang et al. (2015) found that after mobile channel adoption, the purchases on the web channel were slightly cannibalized; however, the consumers' purchase frequency and purchases increased overall, suggesting that the positive synergy effect of the new channel exceeded its cannibalization effect.

While the above three studies examined the impact of M-shopping introduction by a mono-channel online retailer, four other recent studies by Narang & Shankar (2019), van Heerde, Dinner & Neslin (2019), Zhang, Pauwels & Peng (2019), and Gu & Kannan (2021) have specifically investigated the impact of mobile app adoption and usage in a multichannel (offline+online) setting. Based on these studies, we derive the following insights.

Insight R3.2: Adding mobile app channel by multichannel retailer boosts customers' purchase frequency, spending amount, and returns in both existing online and offline channels of the retailer and overall, with the impact being greater on offline-only customers than on online-only customers, in a less competitive mobile app market. The positive effect can reverse in a market with many competitors offering mobile apps.

Supporting research: Narang & Shankar (2019) investigated the impact of mobile app introduction by a large multichannel (online plus offline) US-based retailer of video games, consumer electronics, and wireless services in a quasi-experimental analysis. They found, first, a complementary effect, i.e., app adopters' purchases in both, the online and offline channels increase after app launch. Furthermore, app adopters buy 33% more frequently, 34% more items, and spend 37% more than non-adopters in the period after app introduction. At the same time, they return 35% more frequently, 35% more items, and 41% more in dollar value. Overall, app adopters spend 36% more in net monetary value. Zhang, Pauwels & Peng (2019) also report long-term favorable results from the addition of a mobile app-based online-to-offline service platform (O2OSP) by an offline retailer (a Chinese fast food restaurant chain). In the O2OSP business model, customers order local, daily services online using platform-based mobile apps and then receive the service output almost instantly. Zhang, Pauwels & Peng (2019) found that while adding the O2OSP channels hurts offline and total profits in the short-term it improves offline and total sales and profits in the long term. Specifically, offline and total sales increase by about 23.3% and 34%, respectively.

Van Heerde, Dinner & Neslin (2019) investigated the cross-channel effects of a mobile app introduction by a national multichannel retailer, with an online website channel and a single brick-and-mortar flagship store in a major metropolitan area. Van Heerde, Dinner & Neslin (2019) found that app access behavior of offline-only and online customers was similar across all metrics but generated more incremental sales among offline-only customers compared to online customers, especially among offline-only customers not located

Table 4
Summary of key insights of adding mobile channel.

Key Insights regarding Research Question 3	# of supporting papers	Papers
Insight R3.1: Adding mobile shopping channel by online-only retailer cannibalizes retailer’s existing online channel customers’ purchases in the short term but boosts the retailer’s overall sales in the long term and increases consumers’ online purchase frequency and order size, especially for previously low spenders.	3	Bang et al. (2013), Wang et al. (2015), Huang et al. (2015)
Insight R3.2: Adding mobile app channel by multichannel retailer boosts customers’ purchase frequency, spending amount, and returns in both existing online and offline channels of the retailer and overall, with the impact being greater on offline-only customers than on online-only customers, in a less competitive mobile app market. The positive effect can reverse in a market with many competitors offering mobile apps.	4	Narang & Shankar (2019), van Heerde et al. (2019), Zhang et al. (2019), Gu & Kannan (2021)

near the physical store. This finding supported their theory that distant and offline-only customers’ needs for convenient interaction or digital engagement are not being met in the absence of the app. In other words, the “value proposition” of retailer apps is to deliver convenient access to a superior digital engagement than that provided by visiting the retailer’s website directly.

But in the most recent study conducted in the very competitive hospitality (hotels) retailing market, Gu & Kannan (2021) find that the effect of app adoption on customers’ overall spending is significant and negative. Their additional analyses suggest that customers who adopt the focal app also adopt competitor apps and therefore search more and shop around, leading to decreased share of wallet with the focal hotel group. Barring this study conducted in the hospitality sector, however, the bulk of the extant studies leading to the insights summarized in Table 4 indicate that the ‘M’ strategy has positive effects on existing online and/or offline channel outcomes in the long term.

Cross-channel integration (CCI) (RQ4)

In this section, our focus is on studies assessing demand- and firm-side effects of deliberate cross-channel integration (CCI) efforts by multichannel retailers. Cao & Li (2015) define CCI as “the degree to which a firm coordinates the objectives, design, and deployment of its channels to create synergies for the firm and offer particular benefits to its consumers.” Following Cao & Li (2015, 2018), any or a combination of following elements contributes to CCI by a multichannel retailer: *integrated marketing communications*, i.e., consistent use of the same brand and messaging in all channels; *integration of shoppers’ order fulfillment*, e.g., ‘Click & Collect’ options (see below), ‘Buy online and return in-store (BORS)’; *integration of consumer information access*, e.g., access to online inventory and online orders fulfilled by staff in-store, allowing online consumers to browse the inventory in-store, linkage between store and mobile app (WiFi in-store, locating store by mobile app). More comprehensive or ‘Full’ CCI would include alignment of all marketing mix elements in all channels, centralization of back-end systems, and organization transformation. In this paper, however, we focus on

research bearing only on retail marketing-oriented CCI strategies such as integrated price, product assortments, marketing communications, order fulfillment, and consumer information access.

Several studies summarized in Table A5 in the web appendix have investigated the benefits and value of enhancing CCI efforts. Below we discuss some key insights pertaining to Links O2 and C2 in our organizing framework (Fig. 1) that can be derived from them.

Insight R4.1: In general, greater CCI by a multichannel retailer has a positive effect on customers’ purchase intention, purchase value, and loyalty to the retailer.

Supporting research: In an early study, Bendoly et al. (2005) found that consumer’s perception of the level of integration of multiple channels of a firm has a positive influence on customer loyalty. This perceived integration reduces the customer’s perception of risk associated with the potential unavailability of a desired product at a particular channel. This makes customers select the store’s alternative channel when a product is unavailable in one channel instead of searching in a rival firm’s store. Next, Swaid & Wigand (2012) studied the impact of a specific type of CCI, specifically, offering customers the option of *integrated-pickup* (or ‘buy online and pick up in-store’, i.e., BOPS discussed in more depth below). They found that perceived online service quality or value is significantly influenced positively by integrated pick-up and in turn, has a positive impact on customer loyalty. A third study bearing on the value of integrating website and physical store design by multichannel retailers by Emrich & Verhoef (2015) found that a homogenous design (with cues corresponding to their physical stores) rather than a prototypical design (with channel-specific attributes) for the online shop creates a positive impact on intended customer patronage especially when the customers have had good shopping experience in physical stores and show high processing intensity.

Lastly, the study by Herhausen et al. (2015) investigated the indirect effect of online-offline ‘OI’ integration, i.e., integrating access to and knowledge about the offline channel into an online channel, on consumers’ search intention, purchase intentions and willingness to pay. They found that

integration increases all three because it is associated with a higher perceived service quality by the customer and a lower perception of risk. While the positive effect of integration on the perceived service quality of the online store is through a direct effect, the positive impact on overall willingness to purchase (WTP) is through an indirect effect. Herhausen et al. (2015) also found that the online shopping experience moderated both, the direct and indirect effects of integration. Integration did not lead to the cannibalization of channels but instead attracted customers who would have bought from other nonintegrated online retailers.

Melis et al. (2015) investigated the underlying drivers of consumers' choice of the online store channel of a multichannel grocery retailer. Among other results, they found that the positive effect of offline store preference on the online store choice probability is stronger when there is a better integration in marketing mix between the online and offline store of the chain. In particular, offering a comparable product assortment in the online and offline store strongly improves the transfer of chain preferences and results in a higher likelihood for the consumer to choose the online alternative of a chain. Two subsequent studies using the same dataset, found that such assortment integration across the multiple channels increases the retailer's 'share of wallet' of consumers' grocery spending overall (Melis et al. 2016), and especially for product category purchases that are not planned in advance (Campo et al. 2021). Turning to the studies that have focused more on retailer-side aggregate outcomes, we glean the next Insight below:

Insight R4.2: In general, greater CCI by a multichannel retailer has a positive effect on overall retailer performance.

Supporting research: First, based on survey data from 125 multichannel retailers in Singapore, Oh, Teo & Sambamurthy (2012) find that retail channel integration through the use of IT allows firms to be not only efficient in delivering the current offerings but also innovative in delivering future offerings. Second, analyzing quantitative financial and accounting data of a sample of 71 publicly listed retailers from 2008 to 2011 from the COMPUSTAT database, supplemented by data about the number of physical stores, Cao & Li (2015) found that CCI boosts sales growth for firms with less online experience, provided they can leverage their physical stores and existing distribution capabilities. Firms with larger physical store networks benefit less from coordination activities across channels. Third, shifting the focus to the cost side of a firm's performance, Tagashira & Minami (2019) performed a stochastic frontier analysis of publicly listed corporate-level data collected from Japanese multichannel retailers. They found that CCI, particularly a higher level of integrated marketing communications, is positively associated with the multichannel retailers' cost efficiency, which in turn improves firm performance.

Next, we focus on cross-channel effect of some specific forms of CCI strategy options, namely - Click & Collect (C&C) means of online shopping & 'last-mile' fulfillment,

e.g., 'BOPIS' or BOPS (buy online, pickup in stores), curbside pickup, and 'STS' (ship-to-store).

BOPS as a CCI strategy: BOPS functionality provides customers with real-time store-level product availability information, i.e., the retailer shows online viewers the locations at which the items are available, lets customers complete transactions online, and allows customers very soon thereafter to pick up the items in a store at their convenience (Gao and Su 2017). BOPS reduces shopping transaction costs for customers since items are picked and packed by store employees prior to customer pick-up. Last but not least, BOPS transactions are considered online revenue. A C&C option that is not materially different from BOPS from a consumer viewpoint is the 'ship-to-store' (STS) strategy. The main difference between them is from the retailer standpoint, i.e., BOPS uses in-store inventory to fulfill customer demand while STS uses centralized fulfillment and typically takes somewhat longer to fulfill (Akturk, Ketzenberg and Heim 2018). Focusing on the cluster of BOPS and STS studies, we derive the following insights:

Insight R4.3: Implementation of BOPS by non-grocery multichannel retailers has a positive effect on the retailer's total revenues, i.e., any reduction in consumer spending online is made up by spending increases offline.

Supporting research: A detailed study and quasi-experimental analysis of transactional sales and traffic data from a durable goods retailer by Gallino & Moreno (2014) showed that offline (in-store) sales and traffic increased after the BOPS functionality was deployed by the retailer while the sales transacted online actually decreased. Gallino & Moreno (2014) argue that this stems from a channel-shift effect due to 'ROPO' ("research online and purchase offline") behavior due to consumers' perception that inventory availability information online is more credible if provided under the retailer's BOPS option. This increases the probability they will visit the store to purchase a product they have researched online. Further, consumers buy other items while in the B&M store to pick up their online orders, i.e., BOPS has some cross-selling effects as well. Moreover, in their study, Gallino and Moreno observed that while online sales dropped around 7% after BOPS implementation, B&M sales in stores increased by 6%, and given the much larger proportion of the latter sales in the retailer's total sales, ultimately implied an average net increase of 4% of the total sales. In short, this study showed BOPS implementation results in lower online sales, higher store sales, and higher store traffic.

Gallino & Moreno's (2014) finding of positive spillover effects of BOPS on offline sales is further supported by the findings of the next study. Specifically, in a quasi-experimental study of transactional data from a national jewelry retailer that introduced STS facility for consumers, Akturk, Ketzenberg & Heim (2018) also found that online sales decreased after STS was introduced while B&M store sales increased. Further, they found cross-channel customer returns of online

purchases to physical stores increased while returns from store purchases were reduced. Detailed analysis of the data showed that high-value purchase customers switched from completing the online channel's STS process to completing the purchase in the brick-and-mortar channel – and often bought even more expensive products in the process! The customers who stayed with and fully completed a sale using the STS service typically were those that bought low-value items. Like Gallino & Moreno (2014), Akturk, Ketzenberg & Heim (2018) suggest that consumers may have greater confidence in a ROPO process based on the information provided online as well as are driven by the immediate gratification they can get by buying the available product in the store. Along with this channel shift, another contributor to greater B&M sales was the increased cross-channel customer returns to and their replacement at the physical store.

Insight R4.4: BOPS and C&C have positive effects on customer's online and offline spending

In another study in a non-grocery general merchandise retailer setting using customer-level data in a quasi-experimental analysis, Song et al. (2020) examine data from 110 stores of a hybrid retailer in four cities and found significant positive effects of BOPS usage on offline purchase frequency (a result consistent with that of Gallino & Moreno (2014)). But they also found a positive effect on online purchase amount and, in fact, reported that ultimately BOPS usage *can simultaneously* enhance offline and online spending (in their study, about an increase of \$5 in monthly spending). They also found nuanced moderating effects of offline store characteristics (i.e., store density, product variety, and competition intensity) in the influence of BOPS usage on purchase behaviors. Notably, Song et al. attribute the conversion of non-customers into store customers (channel-shift effect) to ROPO shopper behavior enabled by BOPS implementation. They validate this explanation with the change in cart abandonment and conversion rate data from the B&M and online channels.

A recent broader study of the effects of provision by a multi-channel grocery retailer of multiple C&C types by Gielens, Gisjsbrechts & Geyskens (2021) found that C&C shopping boosts online spending (on average about €40 extra online per month) at the grocery retailer but, whether or not there is a total spending lift depends on the C&C type and the shopper's convenience needs. For consumers with average convenience needs, they find C&C shopping boosts total spending, i.e., has positive spillover effects on offline store sales, especially for pick up at 'nearby store' outlets adjoining stores (as opposed to fulfillment 'in-store' or at free-standing locations, i.e., 'standalone' C&C types). We speculate that the big difference between Gielens, Gisjsbrechts & Geyskens (2021) conclusion about an increase in online channel spending as a result of C&C versus the earlier studies we have reviewed is related to the differences in retail settings of the various research studies. Specifically, grocery purchases are much more regular, planned, and familiar than the purchase of durable goods or appliances. Hence, the timing of purchase, freshness of food and convenience in ordering and

pick up are key needs for consumers to buy groceries. This mix of needs can be clearly satisfied to a great degree by C&C options. In contrast, durable goods like furniture and jewelry are more 'touch and feel' and 'try' type products which could increase the temptation to channel-switch during usage of BOPS service by the retailer.

This section provides several insights (see Table 5) that highlight the positive impact of cross-channel integration on the retailer's performance.

Multichannel retailer's marketing mix strategies (RQ5)

In this section, we provide empirical insights (many are, however, findings from single studies) from the extant research on cross-channel impact of marketing mix (MM) strategies pertaining to variables such as price, product assortment, marketing communications (advertising, catalogs, emails), price promotion, returns and delivery policies (see Table A6 in the web appendix).

Insight R5.1: Customers of multichannel retailers are willing to pay a somewhat higher price for an item in the offline channel than its price in the online channel.

Supporting research: Homburg, Lauer & Vomberg (2019) studied data on customer response to relative prices for the same item in online and offline channels of a large multichannel retailer. They found that customers are willing to accept at most 2% higher prices offline than online, for a broad range of products (in between very high-priced products or low-priced takeaway items, which seem to permit higher price premiums). Further investigation showed that customers' heterogeneity moderates the willingness to accept an offline premium, i.e., some customer segments are resistant while others respond less negatively to higher offline prices. Lastly, consumers seem more tolerant of offline price premiums for unplanned purchases.

Insight R5.2: Optimized product assortment offline has a positive effect on the total revenue of a retailer.

Supporting research: Dzyabura & Jagabathula (2018) investigated the impact of the assortment of items offered offline on demand in both the online and offline channels in an omnichannel setting. Using conjoint analysis in a lab experiment, they estimated that an optimized offline assortment increases the total revenue by up to 40%. Hence, offline assortment, which "showcases" the product attributes, impacts profits across both offline and online channels.

Insight R5.3: Online advertising by a multichannel retailer can have strong effects on offline channel sales. Hence, measuring the impact of (online and/or offline) advertising on only a single channel by a multichannel retailer does not fully account for its total impact, i.e., cross-channel effects exist and must be accounted for in deciding resource allocations.

Supporting research: Naik & Peters (2009) econometrically estimate a multichannel structure in which the dependent vari-

Table 5
Summary of key insights of cross channel integration.

Key Insights regarding Research Question 4	# of supporting papers	Papers
Insight R4.1: In general, greater CCI by a multichannel retailer has a positive effect on customers' purchase intention, purchase value, and loyalty to the retailer.	7	Bendoly et al. (2005), Swaid & Wigand (2012), Emrich & Verhoef (2015), Herhausen et al. (2015), Melis et al. (2015), Melis et al. (2016), Campo et al. (2021)
Insight R4.2: In general, greater CCI by a multichannel retailer has a positive effect on overall retailer performance.	3	Oh et al. (2012), Cao & Li (2015), Tagashira & Minami (2019)
Insight R4.3: Implementation of BOPS by non-grocery multichannel retailers has a positive effect on the retailer's total revenues, i.e., any reduction in consumer spending online is made up by spending increases offline.	2	Gallino & Moreno (2014), Akturk et al. (2018)
Insight R4.4: BOPS and C&C have positive effects on customer's online and offline spending	3	Song et al. (2020), Gallino and Moreno (2014), Gielens, Gijssbrechts & Geyskens (2021)

able was the consideration set for automobile choice. The authors examine the impact of offline advertising (consisting of television, radio, magazines, and newspapers aggregated into a single construct), online advertising (display), and direct mail (postal). The consideration set was measured by visiting the dealer showroom (offline channel) and by visiting and configuring a car on the firm's website (online channel). While the authors did not measure actual purchases, they found significant cross-media synergies (between traditional and online advertising) and cross-channel effects, i.e., online advertising affects offline consideration, while direct mail affects online consideration.

Dinner, Heerde Van & Neslin (2014) expand on the work of Naik & Peters (2009) by considering actual purchases, carryover effects, competitive effects, and endogeneity using sales data from a large US, multichannel clothing retailer. Specifically, they found: (i) positive cross-channel advertising effects that are almost as strong as own-channel effects; (ii) online advertising, and in particular search advertising, is more effective than traditional advertising in driving overall sales, primarily due to the strength of online to offline cross-channel effects; and (iii) while traditional advertising has a positive direct cross effect on online sales, it negatively (positively) impacts click-through rates (impressions) of paid search ads.

Lastly, in a randomized field experiment-based econometric study of the impact of online advertising by a multichannel retailer, Lewis & Reilly (2014) (see Table A5 in the web appendix) find that the advertising profitably increases purchases by 5%, and 93% of the increase occurs in the retailer's brick-and-mortar stores. Thus, managers evaluating advertising solely on the basis of own-channel effects may significantly err in their assessment of the total impact.

Insight R5.4: Catalog mailings by a multichannel retailer can drive new customers' choice of shopping in a non-catalog channel (web, store) of the retailer.

Supporting research: A study by Ansari, Mela & Neslin (2008) found that catalog mailings have a positive effect on customer migration to Web channel of an online+catalog

multichannel retailer. A later study by Valentini, Montaguti & Neslin (2011) reported that catalog mailings promote the offline store rather than the catalog channel of a multichannel catalog + online + store retailer of books. They speculate that this could be because the catalogs provided the store addresses as well as the "research shopper" phenomenon (Verhoef, Neslin, & Vroomen 2007), i.e., the customer uses one channel (the catalog) for search (gathering information) and a different channel (the store) for purchase.

Insight R5.5: Catalog mailings by a multichannel retailer can increase purchases in web and physical store channels.

Supporting research: Ansari et al. (2008, p. 68) also report that catalog mailings had a significant positive direct effect on purchase incidence (along with inducing migration to the web channel) while Mark et al. (2019, p. 539) found that, after controlling for the effects of email communications and other factors, for those customers who buy primarily from the web, catalogs increase the likelihood of additional purchases through the store or web but not over the phone.

Insight R5.6: Emails induce migration of catalog consumers to the Internet and a higher online channel purchase frequency.

This insight emerges first in the study of a multichannel online + catalog retailer by Ansari et al. (2008) who also investigated how emails over time impacted consumers' channel choice. Consistently, Mark et al. (2019, p.537), in their study of a multichannel online + offline + store retailer, found email communication (after controlling for catalogs, demographics, and seasonality) have a significant positive effect on the web channel use for all uncovered segments in their consumer-level study sample. This finding is consistent with the literature (e.g., Montaguti, Neslin and Valentini 2016), which suggests congruency between the marketing activity and channel is more effective at influencing channel choice. In addition, in their study focused on an online + offline + store multichannel retailer, Valentini, Montaguti & Neslin (2011) report that e-mails drive internet sales versus

store sales to customers in the post-trial stage and drive catalog versus store sales in the trials stage. Consistent with these findings, Mark et al. (2019) also found emails have a significant positive effect on purchase frequency in the web channel for the Traditional Catalogue Buyers segment.

Insight R5.7: Cross-channel effects of marketing efforts in a retailer's channels with similar (dissimilar) primary influence roles are substitutional (complementary) and asymmetric.

Supporting research: In a recent study in an auto-insurance industry setting Shankar and Kushwaha (2021) found that cross-channel effects are significant and asymmetric with complementary effects of channels with dissimilar primary influence roles (e.g., the exclusive agent, the Web and the call center channels) and substitutional effects between channels with similar primary influence roles (e.g., the independent agent and exclusive agent channels).

Insight R5.8: Price promotions in one channel of a multichannel grocery retailer can have negative and asymmetric effects on category purchases in the retailer's other channel.

Supporting research: Breugelmans & Campo (2016) investigate both contemporaneous and cross-period cross-channel effects of price promotion on category purchase decisions in a multichannel grocery retailer setting. They find that (1) promotions in one channel can have negative effects on category purchases in the other channel during the promotion period, (2) similar to Shankar & Kushwaha's (2021) finding, these cross-channel effects are asymmetric, (3) high promotion frequency can have negative effects on future promotion effectiveness in the other channel, and (4) cross-channel effects are more negative for more loyal customers of the chain.

Insight R5.9: Coupons that are redeemable across multiple channels have asymmetric cross-effects depending on the channel where the coupon is offered.

Supporting research: Ravula, Bhatnagar & Ghose (2020) investigate the antecedents and consequences of cross-effects of 'omni-coupons' using customer transaction data from an omni-channel retailer that utilizes catalog, telephone, and online channels. A consumer may obtain an omni-coupon from a digital (catalog) channel and purchase either online or via the telephone channel. Ravula, Bhatnagar & Ghose (2020) find that there are significant, asymmetric cross-effects of omni-coupons on purchase incidence and value. More specifically, they conclude that retailers aiming to increase cross-buying should rely more on catalog coupons, while those aiming to increase purchase value should utilize digital coupons.

In addition to traditional marketing mix variables like advertising and price promotion, omnichannel retailers can influence consumer behavior by changes in service policies that conflate elements of price, promotion, and 'place' variables. One such policy is the speed of product delivery promised by the online channel of a retailer.

Insight R5.10: Reduction in delivery time of online orders can lead to increases in both online store sales and offline store sales for a multichannel online+offline retailer.

Supporting research: Fisher, Gallino, & Xu (2019) focus on this element and study how faster delivery in the online channel affects sales within and across channels of an omnichannel retailer in a quasi-experimental data setting. Using a DiD approach, the authors show that online store sales increased, on average, by 1.45% per business-day reduction in delivery time from a baseline of seven business days. The authors also find a positive and increasing spillover effect on the retailer's offline stores that they attribute to (1) customer learning through service interactions with the retailer and (2) existing brand presence in terms of online store penetration rate and offline store presence. Customers with less online store experience are more responsive to faster deliveries in the short run, whereas experienced online store customers are more responsive in the long run.

Another service policy of great importance in omnichannel retailing is the retailer's return policy, especially the length of the period in which a purchased product can be returned.

Insight R5.11: Returns period reduction may not affect online sales but can adversely affect offline store sales of a multichannel retailer.

Supporting research: In a recent study, Ertekin & Agrawal (2021) investigate the impact of return period policy (RPP) change on a multi-channel jewelry retailer's sales, returns, and profitability. They found that the RPP change does not have any statistically significant effect on sales and return rates for online stores, but it decreases offline sales by 8%, return rate by 2.7 percentage points, and profit by 7.3% per brick-and-mortar store, corresponding to a 2.7% decrease in annual sales for the retailer. They attribute the insignificant effect for online stores to the low proportion of online customers affected by the policy change and the "return displacement effect", i.e., customers likely accelerate their product evaluation to return within the restrictive policy period. However, the more restrictive returns policy was found to depress sales as well as returns at the B&M stores.

The insights discussed in this section and summarized in Table 6 provide support that marketing mix strategies do have cross-channel effects that impact the multichannel retailer's performance, calling for a better optimization of these decisions taking into consideration these cross effects. However, further research and more studies are required to draw more informed conclusions.

Discussion and implications

Our review of the empirical research over the last 20 years has led to our identification of a number of valuable 'empirical insights', if not yet empirical generalizations, with respect to cross-channel effects of omnichannel retail marketing strategies. The quasi-experimental design and data-based studies that are increasingly favored today are laudable

Table 6
Summary of key insights of cross channel effects of marketing mix variables.

Key Insights regarding Research Question 5	# of supporting papers	Papers
Insight R5.1: Customers of multichannel retailers are willing to pay a somewhat higher price for an item in the offline channel than its price in the online channel.	1	Homburg et al. (2019)
Insight R5.2: Optimized product assortment offline has a positive effect on the total revenue of a multichannel retailer.	1	Dzyabura & Jagabathula (2018)
Insight R5.3: Online advertising by a multichannel retailer can have strong effects on offline channel sales. Hence, measuring the impact of (online and/or offline) advertising on only a single channel by a multichannel retailer does not fully account for its total impact, i.e., cross-channel effects exist and must be accounted for in deciding resource allocations.	3	Naik & Peters (2009), Dinner et al. (2014), Lewis & Reilly (2014)
Insight R5.4: Catalog mailings by a multichannel retailer can drive new customers' choice of shopping in a non-catalog channel (web, store) of the retailer.	3	Ansari et al. (2008), Valentini et al. (2011), Verhoef et al. (2007)
Insight R5.5: Catalog mailings by a multichannel retailer can increase purchases in web and physical store channels.	2	Ansari et al. (2008), Mark et al. (2019)
Insight R5.6: Emails induce migration of catalog consumers to the Internet.	3	Ansari et al. (2008), Mark et al. (2019), Montaguti et al. (2016)
Insight R5.7: Cross-channel effects of marketing efforts in a retailer's channels with similar (dissimilar) primary influence roles are substitutional (complementary) and asymmetric.	1	Shankar & Kushwaha (2021)
Insight R5.8: Price promotions in one channel of a multichannel grocery retailer can have negative and asymmetric effects on category purchases in the retailer's other channel.	2	Breugelmans & Campo (2016), Shankar & Kushwaha (2021)
Insight R5.9: Coupons that are redeemable across multiple channels have asymmetric cross-effects depending on the channel where the coupon is offered.	1	Ravula et al. (2020)
Insight R5.10: Reduction in delivery time of online orders can lead to increases in both online store sales and offline store sales for a multichannel online+offline retailer.	1	Fisher et al. (2019)
Insight R5.11: Returns period reduction may not affect online sales but can adversely affect offline store sales of a multichannel retailer.	1	Ertekin & Agrawal (2021)

and enhancing the robustness of causal inferences. Several overarching empirical insights, along with their implications for retail managers derived from this review, are discussed below.

1. *Adding Clicks to Bricks (CB) Strategy:* With regard to the cross-channel effects of online channel addition by a B&M retailer on multichannel consumer shopping journeys, an overarching insight is that these consumers tend to use the new online channel primarily for search in the pre-purchase stage of their journey. This strategy can lead to a negative impact on purchase frequency and spending amount when the online channel is purely informational, and not insignificant cannibalization of the offline sales when customers can buy from this online channel. The magnitude of this negative cross-channel effect depends on the product categories. However, the strategy can lead to an increase in the retailer's overall performance, especially if the online channel expands the market and bring in new customers. Therefore, retailers should be cautious of the impact on consumer pre-purchase behavior and cannibalization of offline sales when adopting this strategy and pursue it only when online sales expansion due to higher purchase frequency or addition of new customers enhances overall sales and profit.
2. *Adding Bricks to Clicks (BC) Strategy:* When retailers who started as purely online operations subsequently added B&M outlets (e.g., regular stores, showrooms, or pop-up stores) to their operations – a trend more noticeable over the last decade – research has shown that adding offline channel has a positive effect on customers and retailer's performance. The reviewed studies suggest that the newly added offline channel improves consumers' trust in the retailer's brand and its image in the online channel, increases the online purchase volume, and boosts the retailer's overall sales and performance. Unlike adding an online channel, adding a B&M channel has complementary effects on the existing online channel consumer demand and the firm's outcomes such as new customer acquisitions and sales. Moreover, the findings in the literature caution the retailer against closing the offline channels as the latter move may reduce the customer's loyalty and the retailer's performance.
3. *Adding mobile channel (M):* Despite the apparent similarity between the mobile and online channel, the literature suggests that adding mobile channel has a very different cross-channel effect from adding online channel. As we noted in Section 4, adding mobile channel by either an online-only channel or an already multichannel retailer has a positive effect on customers' purchasing value and fre-

quency. This effect is also present even on offline-only customers. Therefore, unlike the online channel, the mobile channel has complementary positive effects on the other channels of the retailer. These findings support and encourage retailers to introduce the mobile channel to their customers. However, the literature warns the retailer of an increase in returns that seems to be associated with the addition of the mobile channel.

4. *Cross-channel integration (CCI) strategies*: Not too surprisingly, the main takeaway from extant research is that closer and better coordination or integration of offline and online channel operations of a multichannel retailer tends to increase customers' purchases and loyalty to the retailer across channels. Operationally, *CCI* moves such as sharing of reliable inventory information or implementation of BOPS or ship-to-store (*STS*) strategies to cater to omnichannel consumers have been found to enhance overall firm performance. These findings should encourage the retailer to invest and implement more integration across channels in order to improve the synergy and complementarity between the different channels and offer customers a seamless and harmonious experience while shopping from the different channels. However, retailers have to deploy the right type and degree of integration that fits their capabilities and consumer behavior (Neslin 2021).
5. *Cross-channel effects of changes in marketing mix (MM) strategies*: While there tend to be complementary effects of channel integration by retailers as summarized above, variations in different marketing mix elements in one channel have been found to have both positive and negative effects on consumer behaviors, demand, and sales in the other channels of a multichannel retailer. Therefore, the findings suggest that retailers should take into consideration the spillover effects of marketing mix while optimizing the different marketing strategies. Failure to do so might result in negative cross-channel effects or, at the best inefficient deployment of marketing resources. For instance, price promotions in one channel can have a negative effect on sales in the other channels. However, online advertising has strong cross-channel effects in increasing overall sales. The offline assortment has a cross-channel effect, and accounting for this effect can increase the retailer's overall revenue and profit. Changes in channel service policies such as rapid delivery policies and returns policy period changes have significant but differential cross-effects on consumer behaviors and firm outcomes in different channels. Thus, research has shown that rapid delivery policies have beneficial effects on both online and offline sales while returns policy period changes reduce offline sales and profits while leaving online sales and returns unaffected.

Contributions, future research ('what we need to know better' & what do we not know) and conclusion

Omnichannel research is an emerging research topic given its strong managerial implications on key decisions that re-

tailers have to make and the limited research thus far. Many more studies on each of the above omnichannel retail marketing strategy aspects covered in this paper are needed to arrive at more precise quantitative empirical generalizations regarding cross-channel effects. The mixed findings and insights reported in this paper under some strategies suggest the existence of moderators that relate to, for instance, retailing context, product categories and the competitive environment. Cross-channel effects of retail marketing do exist and are significant as well as asymmetric given omnichannel shopper behaviors. However, whether the effects of retailer's strategies in one channel positively or negatively impact the firm's outcomes in another channel depends on the retailer's overall positioning strategy and format, and even the specific marketing instrument employed by the retailer within the broad strategy. Therefore, there is a need for more research that uses different datasets and methods to investigate the cross-effects of changes in the same marketing instrument in different contexts to draw some key empirical generalizations to that can guide retailers' decisions. In addition, as indicated by the empty cells in Table A1 in the web appendix, there are still many unexplored cross-channel effects on both customer's decisions and retailer's performance. Knowledge of these effects would improve our understanding of how retailers' omnichannel strategies impact their performance and the customers' decision-making and journey across the different channels. Shedding more light on these cross-channel effects would improve our understanding of the customer's journey in an omnichannel world and enhance the retailer's decision and optimization of the different strategies and decisions. Such insights would also provide guidance to the retailers considering the costly expensive investment in omnichannel capabilities. The key questions that these retailers face are: *is it really worth it to become omnichannel, and how should limited marketing resources be allocated accounting for cross-channel and spillover effects?* Our review of what we currently know seems to highlight the benefit/positive effect of omnichannel strategies but nevertheless cautions the retailer against the potential negative effects of some marketing tools and or cannibalization across the different channels. Hence, we believe that retailers require more insights to guide their non-trivial journey in becoming omnichannel. This calls for much more active academic-practitioner collaborative research in order to conduct the kinds of within-retailer field studies that can quantify more precisely various marketing cross-elasticities adjusting for contexts. While this is, of course, easier said than done, the increasing number of field studies being published in the literature is very encouraging that committed researchers can successfully overcome the data hurdles.

The decision of retailers to become omnichannel seems to be complicated further due to external forces that might influence the retailer's channel strategies. As suggested in our framework (Fig. 1) – but still greatly under-researched – competition and technology are likely to moderate the cross-channel effects of the retailer's strategies and hence, its decision to become omnichannel. Due to the competitive environ-

ment, we believe that the future of omni-channels in retail will straddle both the physical, i.e., the brick-and-mortar model, and the digital channels. The challenge will be to keep it as seamless as possible so that there are not two different channels but one-PHYGITAL- unified commerce experience. The intent will be to acquire and retain the customer through various retail channel shopping options. A single unified customer data platform will spike both the retention and engagement of customers.

However, despite facing this competition from omnichannel retailers, offline-only stores will not completely disappear in the near future. Some successful ones will continue to operate, albeit, not as we see them now. Our review of the insights presented in the literature highlights the importance of the offline stores even in an omnichannel environment. These stores still play a crucial role in shaping customers' perceptions and gaining their trust. However, these stores will have to evolve and leverage more technological resources and capabilities. Offline Retailers will have to look at the right combination of targeted marketing, technological efficiencies, and human interface to offer an overall great customer experience. This improved customer's experience would help these retailers compete with the omnichannel retailers without necessarily being one.

We believe that future research should explore the nature of such competition and shed more light on the different effects on customer's experience and shopping journey.

Another key insight from the literature is the positive effect of the mobile channel. We believe that retailers should rely more on this channel and improve it further. The mobile shopping experience will be bolstered by new and ever-evolving Artificial Intelligence tools, Machine Learning, Big Data, and the like. A well-researched app will ensure an engaged interaction that will translate into financial gains for the retailer. AI algorithms can be applied to model a lot of mobile effects. Shopping explorations start with mobile apps. Mobile phone usage and, along with it, the big data generated is increasing exponentially. Future research should leverage and analyze this big data to better understand customer's journey and inform retailer's decisions.

In addition to the regular channels explored in the literature (online, mobile, and offline), an emerging new channel relies on the Internet of Things (IoT). There has been a rapid surge in the growth of IoT. From RFID tags to kitchen appliances, everything is now getting connected to the internet in real-time. General estimates are that, by 2022, the internet will connect about a trillion sensors. Retailers will deeply explore all these channels to offer more visibility and convenience of shopping. Future research could explore this channel and draw some differences and similarities with the existing channels. It is important to examine the interactions between this emerging channel and the other classical channels.

The recent Covid-19 crisis has led to retailers striving for a safety-driven customer experience. The lockdowns and subsequent shutting of offline vendors prompted retailers to be agile and pivot to online shopping channels. In the foreseeable future, customers will continue to seek contactless shopping,

payments, and pick-ups. Retailers will have to apply AI tools to make this a seamless transaction for the customer. Better AI algorithms for Inventory logistics and curbside pick-up will help create a smoother shopping experience for customers. More customers will continue to opt for 'click-and-collect' purchases. Integration of online & offline channels will be imperative. The literature proposes that cross-channel integration improves the customer's value and the firm's performance. The recent pandemic would magnify the role of integration in offering retailers flexibility in the supply side regarding inventory management and replenishment and the demand side by speeding up orders fulfilment and last-mile delivery. Future research can explore the impact of cross-channel integration on retailers' agility and performance during and after the pandemic.

Personalization will continue to entice customers in the future too. The future of retail lies in the customization and personalization of products and services. With AI-enabled knowledge of customer's previous purchases, a retailer will customize a product or service for the customer. Retargeting algorithms will reinforce learning. A personalized ad targeting engine will learn about each customer through various interactions, frequency & time of order placement. The follow-up customized and curated advertisement will be delivered accordingly to ensure the maximum chance of customer making the purchase. It will be critical to developing such prescriptive frameworks for maximum impact of personalization.

Another trend in retailing is the social commerce that leverages the growth of social media and the time spent by customers browsing the different social media apps such as Facebook, Instagram, and Whatsapp. Many businesses around the globe rely on these apps to reach their customers. Such apps play a crucial role in the livelihood of many businesses (mainly small businesses). For instance, during the recent outage of Facebook apps (Facebook, Whatsapp, and Instagram) on October 5, 2021, many businesses across Africa and other developing countries suffered huge losses in profit for hours as they had lost contact with their customers (Zhong and Stariano 2021).

We anticipate seeing more research in these areas that are critically important for the survival and growth of retailers, who are essential businesses that contribute significantly to most nations' economies. We hope this paper contributes to stimulating more such research in the coming months and years.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jretai.2022.02.008](https://doi.org/10.1016/j.jretai.2022.02.008).

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