Journal of
Theoretical and Applied Electronic Commerce Research

MDPI

Editorial

The Future of E-Commerce: Overview and Prospects of Multichannel and Omnichannel Retail

Santiago Iglesias-Pradas and Emiliano Acquila-Natale *

Departamento de Ingeniería de Organización, Administración de Empresas y Estadística, ETSI de Telecomunicación, Universidad Politécnica de Madrid, 28040 Madrid, Spain; s.iglesias@upm.es
* Correspondence: emiliano.acquila@upm.es

Abstract: Multichannel and omnichannel strategies have become a critical aspect of retailing. In this study, we present an overview of multichannel and omnichannel retail and discuss its applications in the future of retail. To do so, we explore the different areas of interest in multichannel and omnichannel retail highlighted in previous scholarly research, as a preliminary step to propose a comprehensive framework of themes that should be paid attention to for future advancements in the field. A total of 11 studies addressing the main theme of *Multichannel Retail and Its Applications in the Future of E-Commerce* illustrate this overview and the framework.

Keywords: multichannel; retail; omnichannel

1. Introduction

The advent of electronic commerce has marked a major transformation in retail in the last two decades. Traditional brick and mortar retailers are transitioning to multichannel retail [1], offering products in multiple channels, including physical stores, electronic commerce websites, mobile applications, marketplaces or social networking sites [2,3]. It is precisely the rise of e-Commerce that has somewhat forced retailers to adopt multichannel retail strategies if they want not just to survive but also to stay relevant. In this study, we present an overview of multichannel retailing and discuss its applications in the future of e-Commerce, illustrated by the different research studies published in the special issue *Multichannel Retail and Its Applications in the Future of E-Commerce*.

In general, multichannel retail refers to the adoption of various online and offline sales channels, to offer customers an improved shopping experience, with omnichannel retail referring to a complete integration of sales channels and a seamless shopping experience [4,5] (note: while the title of the special issue included the word *multichannel*, we understand that omnichannel is the natural evolution of multichannel retail and therefore we will extend all our analysis and opinions to both). Retailers adopt this strategy to offer customers a wide range of products, as well as multiple touchpoints and convenient shopping options. A multichannel retail strategy helps retailers expand the reach of the product and satisfy new and evolving customer needs and preferences. With the widespread use of digital technologies, especially mobile devices, multichannel retail has become essential to achieve business success.

One of the most important advantages of multichannel and omnichannel retail is the possibility of providing customers with seamless shopping experiences. By integrating multiple channels, retailers can provide customers with greater convenience and flexibility in their purchase journey. For example, on a morning commute, customers can browse the store's website on their mobile phone, add products to the cart, and then complete purchases at the store during lunch. Similarly, a customer looking for quick purchases may prefer to buy via a mobile application, while another customer who wishes to experience more immersive shopping may prefer to shop in a physical store. That is, multichannel retail provides customers with more options, which in turn increases the probability of

check for updates

Citation: Iglesias-Pradas, S.; Acquila-Natale, E. The Future of E-Commerce: Overview and Prospects of Multichannel and Omnichannel Retail. *J. Theor. Appl. Electron. Commer. Res.* **2023**, *18*, 656–667. https://doi.org/10.3390/jtaer18010033

Received: 13 March 2023
Accepted: 15 March 2023
Published: 17 March 2023

successful sales for retailers. Furthermore, multichannel operation allows retailers to collect valuable data on customer shopping habits and preferences. By tracking customer interactions through different channels along the shopping process, retailers can gain insight into customer behavior, provide them with products that are most relevant to them, and adapt their marketing strategies to better target their audience and satisfy their needs. From a wider perspective, retailers can also use these data to identify market trends and make informed decisions about their products, marketing strategies, and sales channels.

Digital technologies and applications for multichannel retail are shaping the way retailers interact with customers [6] and Web3 is paving the future of retailing [7]: as artificial intelligence becomes ubiquitous, retailers will be able to provide customers with personalized recommendations; retailers may also be able to harness augmented and virtual reality to offer immersive shopping experiences to costumers, either in the physical or online store, or in hybrid settings; finally, the integration of blockchain and Web3 technologies with e-Commerce gives retailers and consumers greater security and transparency when conducting transactions.

From the above, it is evident that multichannel retail will play an important role in shaping the future of e-Commerce, and that retailers adopting multichannel or omnichannel strategies will be at a better position to meet their customers' changing needs and preferences in a digital (or phygital) world.

2. Multichannel Retail and Its Applications in the Future of E-Commerce

2.1. Challenges in Multichannel to Omnichannel Retailing: Overview and Evolution

When envisioning the future of multichannel (omnichannel) retailing, it would be pretentious not to consider more than a decade of research agendas. Thus, in this subsection, we present an overview of the different areas of interest in multichannel and omnichannel retailing that have been highlighted in scholarly research, as a preliminary step to propose a comprehensive framework of themes that should be paid attention to for future advancements in this field.

In the first place, Neslin et al. [8] identified five main challenges to managing the multichannel environment more effectively: data integration, understanding consumer behavior, channel evaluation, allocation of resources across channels, and coordination of channel strategies. The authors proposed a framework whereby consumer perceptions and preferences are crucial and should be perfectly integrated with the firm's channel strategy and data integration. As we shall see in this section, most of these themes are still highlighted as the main topics of interest in omnichannel retailing.

For example, Piotrowicz et al. [9], based on a focus group discussion, identified seven overarching themes in multichannel retail: channel integration, the impact of mobile technologies, the role of social media, the changing role of the physical store, the diversity in customer requirements, personalization and customer data privacy, and the need for a supply chain redesign. For the authors, omnichannel is seen as an evolution of multichannel that overcomes the division between the physical and online store and where, enabled by mobile technologies and social media, customers move freely between the different contexts (online, mobile, physical).

One year later, Verhoef et al. [10] identified three main areas of interest: the impact of channels on performance, shopper behavior across channels, and the retail mix across channels. According to the authors, the three themes share in common the impact of the different elements on the performance of the company. For example, how each channel contributes to performance metrics, effective segmentation based on customer behaviors, or how to effectively integrate channels (or to what extent should companies integrate their channels for optimal performance).

Simone and Sabbadin [11] identified four drivers of omnichannel retailing (technological development and disruption, the emergence of the online channel, the rapid adoption of mobile devices and the demand from customers), and outline six challenges of omnichannel retailing: channel integration (which can offer some opportunities, but also has

threats associated with its implementation), changes in channel management (changes in functional and operational management of the different channels), technology (investment in technologies associated with operational changes), the need for customer-centric approaches to provide seamless shopping experiences, optimization of the physical channel and reimagining the role of the physical store, and advanced payment systems.

Chen et al. [12] took a different approach in their analysis of the field and divided the challenges according to their perspective (customer-centric versus retailer-centric) and the research orientation (diagnostic versus prescriptive), leading to four different areas of research. As main areas of interest, they identified the trade-offs that companies must observe when transitioning to omnichannel strategies, the need to investigate the role of supply chains, and customer touchpoint analysis to improve shopping experiences. Liu et al. [13] also took a two-sided perspective on the future of omnichannel retailing, with retailers on the one side and consumers on the other. They proposed a framework to understand both consumer choices and retailer decisions that includes an input-process-output view.

Von Briel [14] used the results of a Delphi study to identify key trends and challenges in omnichannel retailing. Among these, the experts highlighted the achievement of functional integration, balancing digital commerce with brick-and-mortar retail (e.g., the role of physical stores), cross-channel integration (such as real-time inventory management, personalized consumer experience, in-store customer profiling, or conversion rate optimization), developing organizational omnichannel capabilities (managers' and employees' omnichannel skills), information and data privacy and security, or managing product variety. The study findings can be arranged under four broad themes of core insights: consumer experience, human capability, store digitization, and business operations.

Cai and Lo [15] proposed key themes in omnichannel retailing after their systematic review based on a citation network analysis of omnichannel management. They identified the following research domains: omnichannel strategy, omnichannel retailing, omnichannel customer service, omnichannel logistics and fulfillment, omnichannel marketing and advertising, omnichannel consumer behaviors and preferences of omnichannel customers. Based on this identification, they proposed a prescribed framework for 'omnichannel management', to which they incorporated two additional research domains: omnichannel supply chain management (e.g., inventory management) and omni-tech management (related to supporting technologies) .

Bijmolt et al. [16] took an integrative approach to the relationship between the customer's view and the product flow in the shopping process, with key decisions affecting the marketing-operations interface, especially those related to assortment and inventory, distribution and delivery, and returns. The authors argue that tensions between marketing and operations can arise, which can be alleviated by using new technologies, control practices, data analytics, and new business models.

In their systematic review, Gerea et al. [17] explained that the literature reveals research streams dedicated to customers (customer behavior, customer segmentation, and customer interaction with in-store technology) and retailer operations (omnichannel management and service quality). In their research agenda, they highlight the following topics: operationalization of the omnichannel customer experience, customer lifecycle, omnichannel customer experience in marketplaces, touchpoint integration, predictors of omnichannel customer behavior, and omnichannel services.

In his personal reflections on the topic, Verhoef [18] expanded the ideas found in [10] to identify four main research streams: channel usage and switching, channel usage and loyalty outcomes, retail mix across channels, and multichannel strategies and their consequences.

The most recent views on the state and future of omnichannel retailing include Salvietti et al. [19] and Thaichon et al. [20]. The former combined the results of a systematic literature review and those of a discussion with experts, from which they identified four main themes (consumer behavior, strategic management, channel management issues

and channel integration) and the following research challenges: evolution of the customer journey, channel-related consumer behavior and experience, implementation of omnichannel strategy, human resources management, and digital transformation challenges. The latter focused on only two topics: channel integration and consumer behavior.

2.2. Outline for a Research Framework on Multichannel and Omnichannel Retailing

The overview in the previous section shows a diversity in themes of interest for research on multichannel and omnichannel retailing. However, even though initial interest gravitated around understanding customer behaviors and omnichannel strategy in terms of channel performance, more recent research considers the multifaceted aspects of omnichannel retailing, understanding the need to reconcile the operational view of the retailer with a customer-centric view, whereby the strategic decisions made by the firm in an omnichannel context have to carefully balance the internal (e.g., lowering operation costs) and external (e.g., offering a superior shopping experience) outcomes. In that sense, our vision is closer to [13,16], and multichannel retailing can be seen as the interplay of the internal and external digital transformation of the company or brand. That is, multichannel retailing can be seen as the reflection of the effect of the digital transformation on the processes, structure, culture, and even the business model of the company, on the one hand, and its support of customer-centric approaches, on the other. In other words, some aspects of multichannel retailing may be more apparent to consumers (e.g., touchpoints), while other operational resources are necessary, but not visible to consumers, to achieve optimal channel performance (e.g., back-office systems) [21], and both aspects are interrelated.

Therefore, we understand that integration is the central idea that supports omnichannel retailing [21,22], and we conceive that future research on omnichannel retailing should adopt integrative views under the umbrella of this central notion of channel integration. For instance, while [18] supports the notion that going digital only is a viable strategy in multiple industries, there seems to be a consensus on the idea that the future of retail will not be physical or digital, but rather phygital, an approach that may combine the different elements of both worlds wisely to provide customers with enhanced, seamless shopping experiences, while optimizing the company's resources.

However, the path to successful multichannel and omnichannel retailing is not without challenges. Although we could aim at grouping these challenges into different categories (e.g., technology, data management, outbound logistics, cultural change, strategy), the reality is that there is a strong relationship between the different elements. For example, after technology selection (which should be a strategic decision), retailers face the challenge of having to integrate different technologies and systems to provide seamless shopping experiences and monitor all aspects of their processes. Clearly, this integration is closely related to other aspects; for example, on the customer side, technology integration affects the design and management of the underlying data platforms, which must help harness the potential of all customer data collected in the shopping process. On the retailer's side, the integration of technologies must facilitate the development of effective inventory management systems that can accommodate customer needs and seamless shopping experiences; similarly, supporting technologies must help efficiently manage shipping, delivery, and returns across the different channels with a unified view. Figure 1 illustrates this idea.

From Figure 1, research on omnichannel strategy is still key in the development of the field; the strategic view of omnichannel retail must include aspects related to profitability and performance, channel selection and design, touchpoints, the role of the physical store, the transition from brick-and-mortar to omnichannel or from pure player to omnichannel, or service offering (e.g., options for delivery and returns). This strategic view must be configured with information from three different sources: understanding consumer behaviors (e.g., channel adoption, channel preference, situational factors), internal information (current processes, product flow, human resources skill set), and the different technologies that enable the digital transformation of organizations. As a final word on the technologies

enabling omnichannel retailing, it is worth noting how technologies considered disruptive a decade ago (e.g., mobile technologies, social media) are now fully integrated in the context of research on omnichannel retailing, while a new plethora of technologies are getting increased attention from researchers (e.g., blockchain, augmented and virtual reality, artificial intelligence, or Web3 and the metaverse).

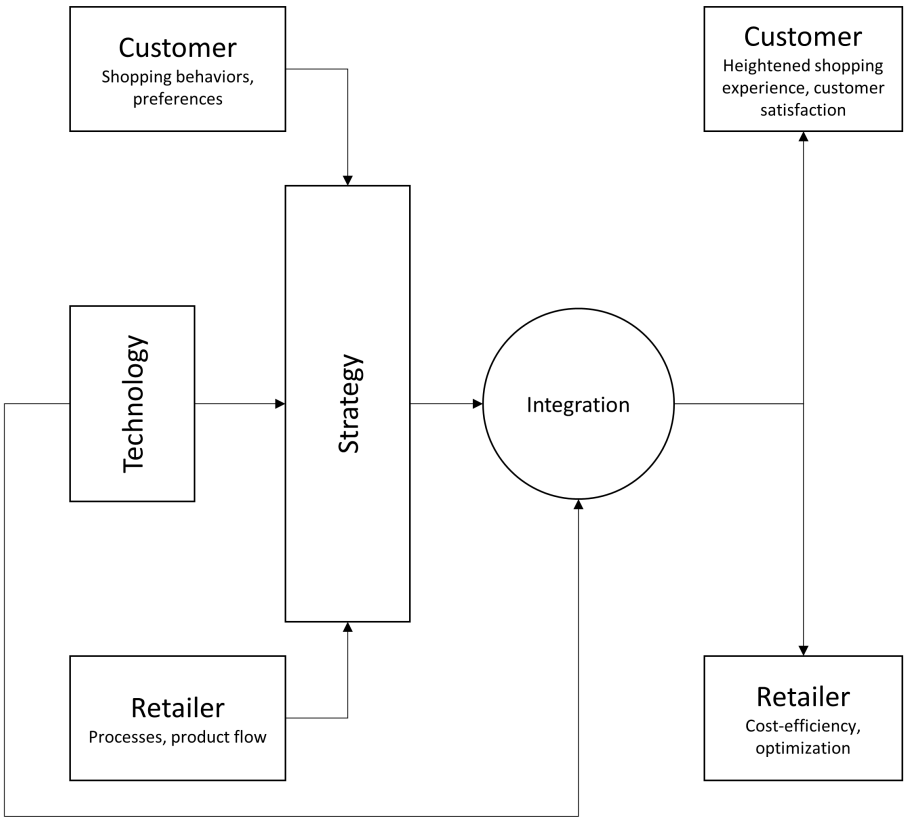

Figure 1. Framework for future research on omnichannel retailing.

Regardless of the strategic decision, an omnichannel approach will ultimately require the integration of the different aspects of the strategy (e.g., elements of the marketing mix, customer service, service offering, and physical and digital flows of information and data about the product and customers) and the different technologies involved. In the end, the integrated action of these elements must seek to achieve improved performance of the firm (e.g., lower costs, increased efficiency) and create consistent and seamless shopping experiences. We would like the reader to note the word *and* in the last sentence, as our approach involves that the effect of the integration effort reflect in both the customer and the retailer perspectives. For example, customer data management should help manage sales processes more efficiently, but also help provide more personalized services; multi-device content management helps optimize promotion efforts and also provide consumers with multi-device delivery of products and services; smart routing lowers fleet costs, but also optimizes shipping and delivery, increasing customer satisfaction.

3. Contributions to the Special Issue on Multichannel Retail and Its Applications in the Future of E-Commerce

We now present the different contributions accepted for publication in this special issue. In particular, and even though some contributions were related to technology through the creation, use, assessment, and application of mathematical models and algorithms (e.g., [23–25]), none of the final accepted research studies had a technology focus. One of the studies [26] offered a nice starting point to set the tone of the special issue by exploring the previous literature on multichannel and omnichannel retailing, three of them

had a mostly strategic focus (e.g., [27] on promotional strategy, [23] on digital marketing strategy, [28] on location selection for physical stores), four studies took a customer-centric view ([5] on channel integration from a consumer perspective, [29] on emotional responses to omnichannel systems, [30] on green communication and channel switching, and [31] on perceived quality of online and offline servicescapes), two studies had a retailer-centric approach ([24] on inventory replenishment in the fashion industry and [25] on optimization of last mile delivery). Finally, while the last contribution [32] leaned toward the retail-centric approach, we considered it to be a good representative of the mixed and integrative views mentioned in the previous section, since the authors explicitly stated related research objectives that combined both views.

3.1. Overview of Multichannel and Omnichannel Retailing

We deemed it necessary to have a featured contribution that covered the current state of multichannel and omnichannel retailing and could provide readers not familiar with the topic with insight on the most influential contributions to the field and the most relevant themes. In *Multichannel and Omni-Channel Retailing in the Scientific Literature: A Text Mining Approach*, Cicea et al. [26] use text mining to explore the themes associated with multichannel and omnichannel retail covering pre- and post-pandemic periods. The authors identify 35 influential research articles and find that research on this area started to attract interest after 2011. Their research groups the main topics into seven categories: client (e.g., customers and customer behavior), economic features (e.g., logistics, management, marketing, social issues), market (e.g., sales, supply and demand), marketing mix, research and analysis (modeling, theory, trends), retailing modes (single-channel, multichannel, omnichannel), and retail environment (online, physical). The analysis also shows that the greatest share of research is based on the United States, and that the most frequently used descriptors are those referring to online retail environments and consumer behavior.

3.2. Multichannel and Omnichannel Strategy

Research on multichannel and omnichannel retail has previously explored the different elements of the retail mix, such as the effects of price and price sensitivity [33–36], optimal allocation and integration of distribution channels [37–39], the influence of the type of product on different outcomes [40,41] or changes owing to the emergence of new promotional media [42]. However, little attention has been paid to the effects of omnichannel retailing on the promotional strategy of retail organizations. In *The Effects of Omni-Channel Retailing on Promotional Strategy*, Schrotenboer et al. [27] argue that the study of such effects can help better understand how to adapt the promotional strategy to the ever-changing needs of customers in a way that the company or brand can provide customers with a seamless omnichannel experience. Using a systematic literature review, the authors identify two fundamental omnichannel phenomena (showrooming and webrooming) and four types of promotional mix in omnichannel retailing (merchandising, sales promotion, selling, and word-of-mouth), which are associated with those phenomena. In addition, the study proposes ways in which promotional instruments can be used to reduce competitive showrooming, an undesirable behavior in omnichannel retailing, or to lower free-riding behaviors.

In this same vein, a follow-up question is that of 'what digital marketing strategy, or strategies, should be adopted when incorporating websites and social media big data?'. In *Multichannel Digital Marketing Optimizations through Big Data Analytics in the Tourism and Hospitality Industry*, Sakas et al. [23] explore possible answers to this question. Using web analytics and big data, the authors build a fuzzy cognitive map and an agent-based simulation model to illustrate the use of social media and user experience in multichannel marketing in the tourism and hospitality industry. A relevant finding of this study is the confirmation that some aspects of omnichannel retailing research are sector-specific. For example, the study finds that it can be beneficial for tourism websites to keep the attention of customers on their website to increase visibility; this is in contrast to websites in

other industries, where customers take a purely transactional approach and want to finish their inquiries as quickly as possible and leave the website. With the increasing number of channels available, consumers can use multiple touchpoints, including social media platforms, and companies struggle to find solutions on how to orchestrate their marketing activities across channels. The study argues that little research has been conducted on how multichannel shoppers react on different online social media platforms and how digital advertising messages could be best processed to potential customers, and further stresses the importance of social media interactivity as a means of boosting e-WOM. The authors' final statement advocates for user-generated content and personalization through hypertargeted ads and the use of artificial intelligence.

With the shift to omnichannel operation, the location of physical stores becomes a key element in the company's omnichannel strategy. Wan et al. [28] develop in *Location Optimization of Offline Physical Stores Based on MNL Model under BOPS Omnichannel* a location optimization model for offline physical stores that considers consumers' choice behavior and aims to minimize costs on the retailer side. The model seeks to provide a solution for online retailers that are initiating physical operations and implementing BOPS (Buy Online and Pick Up in Store). This study emphasizes the importance of freight levels and return rates in omnichannel retailing. The authors find that online retailers can significantly reduce their costs by improving the freight level and service level of the physical store, in such a way that the higher the return rate of the online channel, the more necessary it is to expand offline physical stores, and the lower the enterprise cost.

3.3. Customer-Centric Views

Channel integration has been an important area of interest in omnichannel retailing and is expected to remain one of the main themes in the future. In *Do or Die? The Effects of COVID-19 on Channel Integration and Digital Transformation of Large Clothing and Apparel Retailers in Spain*, Acquila-Natale et al. [5] analyze how the COVID-19 pandemic affected large clothing and apparel retailers in Spain. In their study, the authors employ a measurement instrument to explore a company's level of channel integration across six dimensions (customer touchpoints, channel consistency, integrated promotion, integrated access to information, integrated fulfillment and integrated customer care services) and the digital transformation of its service offering, with a focus on communication with customers. Their approach takes a customer perspective, and the study finds that, contrary to the expected result, there were more large clothing and apparel companies after the pandemic and that single-channel retailers did not embrace multichannel operation after the pandemic. The only significant changes after the pandemic were the adoption of cross-channel gift cards and integrated customer care services offered through WhatsApp. Their analysis also indicates a decline in the use of some social networks, such as Pinterest and Twitter. The study points out the importance of the size of the company and suggests that the pandemic hit SMEs more heavily than large retailers, which are better prepared for transitions to digital customer-centric strategies and omnichannel retailing. Additionally, the analysis supports the idea that large clothing and apparel retailers did not suffer from the devastating effects of the pandemic that affected other sectors, such as tourism and hospitality, likely due to their high e-commerce and multichannel readiness prior to the pandemic.

Consumer shopping behaviors have been a central aspect of omnichannel retailing, but the emotional effect of omnichannel retailing remains largely unexplored. In *How Does Anxiety Affect the Relationship between the Customer and the Omnichannel Systems?*, Khoa and Huynh [29] investigate a specific emotional response (anxiety) to omnichannel retailing at the different stages of the shopping process. The study proposes the premise that several causes, such as the incorrect implementation of omnichannel or consumer habits in offline retailing, can cause anxiety, which can lead to abandonment of purchases and ultimately reduces loyalty to a firm or brand when it spreads across several channels. The authors develop a novel concept, customer anxiety in omnichannel systems, and find that increased anxiety about an omnichannel platform reduces customer's shopping on the site, even

when the use of the platform is beneficial for the customer. As practical applications of their research, the authors mention that accurate tracking information and clear return and refund policies should be established to alleviate consumer anxiety.

In recent years, and due to the potential environmental impact of omnichannel operations, a stream of research focused on sustainable practices has begun to gain relevance, considering the impact of supply chain operations and acknowledging the growing importance of sustainability for consumers [43–48]. We believe that the study of sustainability issues associated with omnichannel retailing will receive more attention in the future and, while we did not receive any contribution focusing directly on them, in *Green Communication for More Package-Free Ecommerce Returns*, Li et al. [30] explore, to some extent, this area by identifying key factors in green communication that contribute to consumers switching from mail-return services to package-free return services, with the goal of helping e-commerce companies promote their package-free return service. Setting their study in the push-pull-mooring framework, the authors find a surprising positive association between green switching (shifting from a non-green service to a green service, both of which are offered by the same platform) and green loyalty. The authors state that green value is an important aspect in the communication of service value to consumers, but its effect is not dominant in green communication related to package-free returns and that return service convenience, which is a key functional attribute of package-free return services, is a dominant factor in green communication related to package-free returns.

One of the key areas of interest in omnichannel retail research has traditionally been the assessment of the different contributions of online and offline channels to business outcome variables, such as customer satisfaction, loyalty, or purchase intention. In *'Stimuli Are All Around'—The Influence of Offline and Online Servicescapes in Customer Satisfaction and Repurchase Intention*, Ananda et al. [31] investigate the combined antecedents of perceived quality of online and offline servicescapes, and how both servicescapes interplay and affect global customer satisfaction and repurchase intention. In particular, the authors introduce the dominance of mobile devices as the central point of the online environment in multichannel retailing. The study, which covers three different sectors in Indonesia, supports the idea that physical stores are still key in omnichannel strategies and that online and offline servicescapes positively affect customer satisfaction. Their research also points out that ambient conditions and online layout and functionality are the most relevant variables influencing consumers' perceptions of offline and online servicescape quality, respectively.

3.4. Retailer-Centric Views

Effective supply chain management is at the heart of optimization in omnichannel retail. In *A Hybrid Metaheuristic for the Omnichannel Multiproduct Inventory Replenishment Problem*, Lorenzo-Espejo et al. [24] study the optimal allocation of products in a typical supply chain configuration of one main warehouse and several locations. The problem they address is therefore how to dynamically optimize a shop or intermediate warehouse inventory for a wide range of products based on a forecast of sales, while fulfilling the demand of all the channels; this is a problem with nefarious consequences in sectors where brands have to ensure high product availability but prevent overstocking, such as the fashion industry. To solve the problem, the authors propose a method that combines two different metaheuristics: particle swarm optimization and simulated annealing. They find that this approach allows for feasible and efficient solutions in short runtimes compared to other methods, such as mathematical programming, and suggest that the method could be incorporated as a real-time replenishment system using live demand data to achieve cost reduction by balancing stock-out risk, product depreciation, sales fulfillment, and transportation costs.

Multichannel retail has increased the complexity of last mile logistics, which is no longer linear (there are multiple routes for product delivery and returns) [49] and has become one of the most critical parts of retail operations. Inefficiency in the delivery service

can be costly, and the opposite is also true: optimal last-mile logistics management lowers the chance that a service failure occurs, enhancing the overall shopping experience and increasing customer satisfaction. In fact, previous research found that fulfilling delivery orders has the greatest impact on customer satisfaction [50], which stresses the need to deliver products in a precise time and with precise quantity and quality. In *Improving E-Commerce Distribution through Last-Mile Logistics with Multiple Possibilities of Deliveries Based on Time and Location*, Escudero-Santana et al. [25] propose a new perspective on last mile logistics, in which consumers can provide different delivery locations associated with different time windows, and time-based deliveries can be managed with a VRPTW (vehicle routing problem with time windows), considering customer preferences. The study assesses different heuristic and metaheuristic (ad hoc and standard) solutions to the optimization problem using simulations. The authors find that increasing the possibilities of delivery locations, with defined time windows at each location, would favor successful deliveries, and that their methodology achieves high levels of compliance with customer preferences, only using lowest preferred options when there is a strong economic justification.

3.5. Mixed Views

The diversity of purchasing channels (online, offline) and delivery options (delivery at home or in a designated store, immediate or delayed delivery, split or non-split ordering) available for consumers to choose from has increased the complexity of order fulfillment processes. Managing this complexity to deliver high-quality service while keeping operating costs low is critical for omnichannel retailers. Wang et al. [32] propose in *Execution of Omni-Channel Retailing Based on a Practical Order Fulfillment Policy* an order fulfillment policy with the main objective of achieving lower service costs while improving overall customer satisfaction. The order fulfillment policy, substantiated in an algorithm, was tested using simulations with different parameters, such as store service costs and whether demand forecasting was used. Their results show that the efficiency of the store operation dominates the average cost of fulfilling orders and the choice of channel. The authors conclude that the service cost is reduced by a nearby store fulfilling the online order, and customer satisfaction is improved significantly with the adoption of omnichannel, providing strong support to the superiority of omnichannel operation.

4. The Future of Multichannel Retailing: Concluding Remarks

In this article, we provided an overview of the challenges and areas of interest in multichannel and omnichannel retail based on scholarly reflections on this topic in the last decade. From our review of research agendas, we observed an initial strong focus on the retailer's performance and customer-centric approaches (mostly gravitating around the provision of improved and seamless shopping experiences to customers), which has led to more integrative approaches that understand the deep interrelations between customer-centric approaches and (operational) retailer-centric decisions in the shopping process, and the need to achieve a balance between them from a strategic perspective.

Based on this information, we argued that multichannel and omnichannel retail research should aim to achieve a more nuanced understanding of how to balance the internal and external outcomes of the omnichannel strategy. As we see it, integration is the central idea underlying omnichannel retailing, and integrative perspectives in future research should always consider this central concept. Multichannel/Omnichannel Retailing still faces many challenges, one of the most important being the successful integration of various technologies and systems, coupled with integrated channel management.

In addition, a strategic view of omnichannel retailing should take into account not only profitability and performance, but also the careful choice and design of channels, touchpoints, the role of the physical store, and the firm's product and service offerings. Understanding consumer behavior, internal information, and the potential of digital technologies to improve the firm's processes and deliver superior shopping experiences is key to developing this strategic view.

Finally, new technologies (e.g., blockchain, artificial intelligence, Web3) and sustainability issues are receiving increasing attention from researchers in this area and will need to be addressed by future studies on multichannel and omnichannel retailing.

Author Contributions: Conceptualization, S.I.-P. and E.A.-N.; methodology, S.I.-P. and E.A.-N.; validation, S.I.-P. and E.A.-N.; formal analysis, S.I.-P. and E.A.-N.; investigation, S.I.-P. and E.A.-N.; resources, S.I.-P. and E.A.-N.; data curation, S.I.-P. and E.A.-N.; writing—original draft preparation, S.I.-P.; writing—review and editing, E.A.-N.; visualization, S.I.-P. and E.A.-N.; supervision, S.I.-P. and E.A.-N.; project administration, S.I.-P. and E.A.-N. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: The authors thank Ángel Hernández-García for his valuable feedback on earlier drafts of this article. We are also grateful to all the anonymous reviewers of the different manuscripts submitted to the special issue for their time and effort, and their contribution to the improvement of the published research studies. We extend our gratitude to the Editorial Team of the Journal of Theoretical and Applied Electronic Commerce Research for their support in the preparation of the special issue.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Sheth, J.N. Future of brick and mortar retailing: how will it survive and thrive? *J. Strateg. Mark.* **2021**, *29*, 598–607. [CrossRef]
2. Grewal, D.; Gauri, D.K.; Roggeveen, A.L.; Sethuraman, R. Strategizing Retailing in the New Technology Era. *J. Retail.* **2021**, *97*, 6–12. [CrossRef]
3. Jocevski, M. Blurring the Lines between Physical and Digital Spaces: Business Model Innovation in Retailing. *Calif. Manag. Rev.* **2020**, *63*, 99–117. [CrossRef]
4. Lehrer, C.; Trenz, M. Omnichannel Business. *Electron. Mark.* **2022**, *32*, 687–699. [CrossRef]
5. Acquila-Natale, E.; Chaparro-Peláez, J.; Del-Río-Carazo, L.; Cuenca-Enrique, C. Do or Die? The Effects of COVID-19 on Channel Integration and Digital Transformation of Large Clothing and Apparel Retailers in Spain. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 439–457. [CrossRef]
6. Grewal, D.; Gauri, D.K.; Das, G.; Agarwal, J.; Spence, M.T. Retailing and emergent technologies. *J. Bus. Res.* **2021**, *134*, 198–202. [CrossRef]
7. Krishnan, S. eCommerce in the Web3 Era. In *The E-commerce Era [Working Title]*; IntechOpen: London, UK, 2022. [CrossRef]
8. Neslin, S.A.; Grewal, D.; Leghorn, R.; Shankar, V.; Teerling, M.L.; Thomas, J.S.; Verhoef, P.C. Challenges and Opportunities in Multichannel Customer Management. *J. Serv. Res.* **2006**, *9*, 95–112. [CrossRef]
9. Piotrowicz, W.; Cuthbertson, R. Introduction to the Special Issue Information Technology in Retail: Toward Omnichannel Retailing. *Int. J. Electron. Commer.* **2014**, *18*, 5–16. [CrossRef]
10. Verhoef, P.C.; Kannan, P.; Inman, J.J. From Multi-Channel Retailing to Omni-Channel Retailing. *J. Retail.* **2015**, *91*, 174–181. [CrossRef]
11. Simone, A.; Sabbadin, E. The New Paradigm of the Omnichannel Retailing: Key Drivers, New Challenges and Potential Outcomes Resulting from the Adoption of an Omnichannel Approach. *Int. J. Bus. Manag.* **2017**, *13*, 85. [CrossRef]
12. Chen, Y.; Cheung, C.M.; Tan, C.W. Omnichannel business research: Opportunities and challenges. *Decis. Support Syst.* **2018**, *109*, 1–4. [CrossRef]
13. Liu, H.; Lobschat, L.; Verhoef, P.C. Multichannel Retailing: A Review and Research Agenda. *Found. Trends® Mark.* **2018**, *12*, 1–79. [CrossRef]
14. von Briel, F. The future of omnichannel retail: A four-stage Delphi study. *Technol. Forecast. Soc. Chang.* **2018**, *132*, 217–229. [CrossRef]
15. Cai, Y.J.; Lo, C.K. Omni-channel management in the new retailing era: A systematic review and future research agenda. *Int. J. Prod. Econ.* **2020**, *229*, 107729. [CrossRef]
16. Bijmolt, T.H.; Broekhuis, M.; de Leeuw, S.; Hirche, C.; Rooderkerk, R.P.; Sousa, R.; Zhu, S.X. Challenges at the marketing–operations interface in omni-channel retail environments. *J. Bus. Res.* **2021**, *122*, 864–874. [CrossRef]
17. Gerea, C.; Gonzalez-Lopez, F.; Herskovic, V. Omnichannel Customer Experience and Management: An Integrative Review and Research Agenda. *Sustainability* **2021**, *13*, 2824. [CrossRef]

18. Verhoef, P.C. Omni-channel retailing: some reflections. *J. Strateg. Mark.* **2021**, *29*, 608–616. [CrossRef]
19. Salvietti, G.; Ziliani, C.; Teller, C.; Ieva, M.; Ranfagni, S. Omnichannel retailing and post-pandemic recovery: Building a research agenda. *Int. J. Retail. Distrib. Manag.* **2022**, *50*, 1156–1181. [CrossRef]
20. Thaichon, P.; Phau, I.; Weaven, S. Moving from multi-channel to Omni-channel retailing: Special issue introduction. *J. Retail. Consum. Serv.* **2022**, *65*, 102311. [CrossRef]
21. Iglesias-Pradas, S.; Acquila-Natale, E.; Del-Río-Carazo, L. Omnichannel retailing: a tale of three sectors. *Econ.-Res.-Ekon. IstražIvanja* **2022**, *35*, 3305–3336. [CrossRef]
22. Acquila-Natale, E.; Chaparro-Peláez, J. The long road to omni-channel retailing: an assessment of channel integration levels across fashion and apparel retailers. *Eur. Int. Manag.* **2020**, *14*, 999–1023. [CrossRef]
23. Sakas, D.P.; Reklitis, D.P.; Terzi, M.C.; Vassilakis, C. Multichannel Digital Marketing Optimizations through Big Data Analytics in the Tourism and Hospitality Industry. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 1383–1408. [CrossRef]
24. Lorenzo-Espejo, A.; Muñuzuri, J.; Guadix, J.; Escudero-Santana, A. A Hybrid Metaheuristic for the Omnichannel Multiproduct Inventory Replenishment Problem. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 476–492. [CrossRef]
25. Escudero-Santana, A.; Muñuzuri, J.; Lorenzo-Espejo, A.; Muñoz-Díaz, M.L. Improving E-Commerce Distribution through Last-Mile Logistics with Multiple Possibilities of Deliveries Based on Time and Location. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 507–521. [CrossRef]
26. Cicea, C.; Marinescu, C.; Banacu, C.S. Multi-Channel and Omni-Channel Retailing in the Scientific Literature: A Text Mining Approach. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *18*, 19–36. [CrossRef]
27. Schrotenboer, D.; Constantinides, E.; Herrando, C.; de Vries, S. The Effects of Omni-Channel Retailing on Promotional Strategy. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 360–374. [CrossRef]
28. Wan, P.; Zhang, J.; Liu, Y.; Jiang, X. Location Optimization of Offline Physical Stores Based on MNL Model under BOPS Omnichannel. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 1633–1654. [CrossRef]
29. Khoa, B.T.; Huynh, T.T. How Does Anxiety Affect the Relationship between the Customer and the Omnichannel Systems? *J. Theor. Appl. Electron. Commer. Res.* **2023**, *18*, 130–149. [CrossRef]
30. Li, Y.; Martínez-López, F.J.; Feng, C.; Chen, Y. Green Communication for More Package-Free Ecommerce Returns. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 1450–1472. [CrossRef]
31. Ananda, A.S.; Hanny, H.; Hernández-García, A.; Prasetya, P. 'Stimuli Are All Around'—The Influence of Offline and Online Servicescapes in Customer Satisfaction and Repurchase Intention. *J. Theor. Appl. Electron. Commer. Res.* **2023**, *18*, 524–547. [CrossRef]
32. Wang, K.; Li, Y.; Zhou, Y. Execution of Omni-Channel Retailing Based on a Practical Order Fulfillment Policy. *J. Theor. Appl. Electron. Commer. Res.* **2022**, *17*, 1185–1203. [CrossRef]
33. Jiang, Y.; Liu, L.; Lim, A. Optimal pricing decisions for an omni-channel supply chain with retail service. *Int. Trans. Oper. Res.* **2020**, *27*, 2927–2948. [CrossRef]
34. Harsha, P.; Subramanian, S.; Ettl, M. A Practical Price Optimization Approach for Omnichannel Retailing. *INFORMS J. Optim.* **2019**, *1*, 241–264. [CrossRef]
35. Gao, D.; Chen, J.; Wang, Y. Study on Omnichannel Service for Time-Sensitive and Price-Sensitive Demand. In Proceedings of the 2018 15th International Conference on Service Systems and Service Management (ICSSSM), Hangzhou, China, 21–22 July 2018; pp. 1–6. [CrossRef]
36. Gupta, V.K.; Ting, Q.; Tiwari, M.K. Multi-period price optimization problem for omnichannel retailers accounting for customer heterogeneity. *Int. J. Prod. Econ.* **2019**, *212*, 155–167. [CrossRef]
37. Prabhuram, T.; Rajmohan, M.; Tan, Y.; Robert Johnson, R. Performance evaluation of Omni channel distribution network configurations using multi criteria decision making techniques. *Ann. Oper. Res.* **2020**, *288*, 435–456. [CrossRef]
38. Qu, T.; Huang, T.; Nie, D.; Fu, Y.; Ma, L.; Huang, G.Q. Joint Decisions of Inventory Optimization and Order Allocation for Omni-Channel Multi-Echelon Distribution Network. *Sustainability* **2022**, *14*, 5903. [CrossRef]
39. Hübner, A.; Holzapfel, A.; Kuhn, H. Distribution systems in omni-channel retailing. *Bus. Res.* **2016**, *9*, 255–296. [CrossRef]
40. Yurova, Y.; Rippé, C.B.; Weisfeld-Spolter, S.; Sussan, F.; Arndt, A. Not all adaptive selling to omni-consumers is influential: The moderating effect of product type. *J. Retail. Consum. Serv.* **2017**, *34*, 271–277. [CrossRef]
41. Kim, E.; Park, M.C.; Lee, J. Determinants of the intention to use Buy-Online, Pickup In-Store (BOPS): The moderating effects of situational factors and product type. *Telemat. Inform.* **2017**, *34*, 1721–1735. [CrossRef]
42. Singh, J.; Goyal, G.; Gill, R. Use of neurometrics to choose optimal advertisement method for omnichannel business. *Enterp. Inf. Syst.* **2020**, *14*, 243–265. [CrossRef]
43. Buldeo Rai, H. Environmental Sustainability of the Last Mile in Omnichannel Retail. Ph.D. Thesis, Vrije Universiteit Brussel, Brussels, Belgium, 2019.
44. Buldeo Rai, H.; Verlinde, S.; Macharis, C. The "next day, free delivery" myth unravelled: Possibilities for sustainable last mile transport in an omnichannel environment. *Int. J. Retail. Distrib. Manag.* **2019**, *47*, 39–54. [CrossRef]
45. Hänninen, M.; Kwan, S.K.; Mitronen, L. From the store to omnichannel retail: looking back over three decades of research. *Int. Rev. Retail. Distrib. Consum. Res.* **2021**, *31*, 1–35. [CrossRef]
46. Sousa, P.R.d.; Barbosa, M.W.; Oliveira, L.K.d.; Resende, P.T.V.d.; Rodrigues, R.R.; Moura, M.T.; Matoso, D. Challenges, Opportunities, and Lessons Learned: Sustainability in Brazilian Omnichannel Retail. *Sustainability* **2021**, *13*, 666. [CrossRef]

47. Jena, S.K.; Meena, P. Competitive sustainable processes and pricing decisions in omnichannel closed-up supply chains under different channel power structures. *J. Retail. Consum. Serv.* **2022**, *69*, 103114. [CrossRef]
48. Galli, M.; Sebastiani, R.; Anzivino, A. Sustainability and Omnichannel Strategies in the Italian Wine Industry. In *Corporate Responsibility, Sustainability and Markets*; Simões, C., Stancu, A., Grigore, G., Eds.; Springer International Publishing: Cham, Switzerland, 2022; pp. 31–51. [CrossRef]
49. Zarei, M.M.; Chaparro-Pelaez, J.; Agudo-Peregrina, Á.F. Identifying consumer's last-mile logistics beliefs in omni-channel environment. *Econ.-Res.-Ekon. IstražIvanja* **2020**, *33*, 1796–1812. [CrossRef]
50. Pham, T.S.H.; Ahammad, M.F. Antecedents and consequences of online customer satisfaction: A holistic process perspective. *Technol. Forecast. Soc. Chang.* **2017**, *124*, 332–342. [CrossRef]