Operations in an Omnichannel World: Introduction

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Abstract The world of retailing has changed dramatically in the past decade. Sales originating at online channels have been increasing an average 15% every year since 2010, and are expected to reach 25% of US retail sales by 2024. A much larger fraction of sales is affected by online channels in different touch points during the customer path to purchase. Omnichannel customers increasingly expect to be able to use a combination of channels in their interactions with retailers, and retailers are trying to provide customers with a seamless shopping experience across multiple touch points. This book presents state-of-the-art research in omnichannel retail from various contributing authors who are recognized field experts in this area. Readers will find a deep discussion of these issues through the lenses of operations management, emphasizing the changes in the marketing and operations interface associated with serving an omnichannel demand. This chapter serves as an introduction to the book and presents the structure of its three parts: "Omnichannel Business Models", "Data-Driven Decisions in an Omnichannel World", and "Case Studies in Omnichannel Retailing".

Keyword Omnichannel retailing

1 Introduction

The world of retailing has changed dramatically in the past decade. Sales originating at online channels have been increasing an average 15% every year since 2010, and are expected to reach 25% of US retail sales by 2024 (Internet Retailer 2017).

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A much larger fraction of sales is affected by online channels in different touch points during the customer path to purchase. Shopper behavior and expectations have been evolving along with the growth of digital channels, challenging retailers to redesign their fulfillment and execution processes to better serve their customers. Omnichannel customers increasingly expect to be able to use a combination of channels in their interactions with retailers, and retailers are trying to provide customers with a seamless shopping experience across multiple touch points. For example, today a customer expects to be able to buy online and return a product in a store, buy online and have a product shipped to a store, or buy online and have a product shipped home from a store. These changes are having a profound impact on retailers' operations. Brendan Witcher, from Forrester Research, puts this bluntly: "In the past, you had inventory teams ordering products for the store channel and then the online channel separately. Today, customers are saying, 'I'm going to buy online and pick up in store; or buy in-store and have it shipped to my home.' It has completely turned inventory models on their ear." (Guy 2015). The underlying business models associated with omnichannel retail are novel, and this has sparked academics to study different aspects of this new phenomenon.

This book presents state-of-the-art research in omnichannel retail from various contributing authors who are recognized field experts in this area. Readers will find a deep discussion of these issues through the lenses of operations management, emphasizing the changes in the marketing and operations interface associated with serving an omnichannel demand.

2 The Omnichannel Transformation: What Is New?

During times of big transformation in an industry, the changes and the uncertainty that companies experience can make them lose focus and confuse what is important and what is only circumstantial. On the one extreme, there is the risk to think that everything has changed and that the way to succeed is to rethink everything from the ground up, that things "as we know them" are no longer a relevant reference point. On the other extreme, managers can argue that "there is nothing new under the sun" and that this new wave of changes will pass like the ones before. Wise managers should balance these two positions by understanding the things that have not changed and then build what is needed to succeed in the new environment.

Fig. 1 Google search index for the term "Omnichannel"

The omnichannel transformation is not different from other cases where these two extreme positions are represented. Figure 1 shows the evolution of the searches of the term "omnichannel." The term went from virtual inexistence prior to 2010 to being one of the most popular retail-related search terms in the 2010s. Some may argue that this reflects the undergoing radical transformation of the industry. On the other extreme, some may argue that this is "yet another buzzword," and that nothing is fundamentally new. In this section, we discuss the old and the new: what are the fundamental areas that continue to be important, and what is changing with the omnichannel transformation. For this discussion, we reached out to more than a dozen executives from leading retailers with experience in omnichannel issues, and we conducted detailed interviews with many of them.[1] Their responses allow us to better understand the importance of retail fundamentals in the new omnichannel context, and the new challenges and opportunities presented by the omnichannel transformation. Section 3 describes the contents of this volume, which we hope will shed additional light into these issues.

2.1 What Should Not Change?

Retailers today are trying to benefit from the rich data they can access and the new technologies available to them. They are investing to incorporate new features and services to the customer experience and leave behind an often siloed legacy organization where brick & mortar (B&M) and online used to be two independent parts of the business living under the same roof. However, retailers can fall into the trap of getting overexcited about the opportunities that data and new technologies are opening and forget that retail fundamentals are still the cornerstone to their success.

The omnichannel transformation should be pursued without losing focus on four fundamental areas that are essential to any retailer's success: forecasting, inventory management, product assortment, and employee management. Retailers who want to excel in these areas need to incorporate the latest tools and data available to build an omnichannel company on solid ground.

Incorporating, new, relevant data into the *forecasting* process can provide better accuracy to a fundamental task in the retail business. Today, by leveraging the latest tools and a rich data environment, it is possible to estimate demand across channels and at a more granular level than before with relatively low effort. At the same time, omnichannel customers use different channels at their will, and in some cases this makes the task of coming up with channel-level forecasts more challenging. A reliable forecast continues to be a keystone to successful retail execution.

Retailers have always been aware that *inventory management* is critical to their success. The cost of goods sold is at the top of the expenses a retailer incurs to run his/her business, and this has not changed. While there is no question about the relevance of this factor, the complexity to manage it has increased. Historically, retailers bought products, stored them in a warehouse, shipped these products to stores to be sold, and eventually liquidated inventory during clearance. This was a challenging task, but it is simple compared to the one retailers face today. To offer a gratifying omnichannel experience, retailers have opened multiple warehouses to serve their online customers and B&M stores. The larger share of online transactions increased return rates and required retailers to become experts in reverse logistics. Pursuing a seamless experience across channels, retailers are allowing customers to buy products online and return them in stores. Customers expect to have products delivered to them faster than before, and their tolerance to stock outs has decreased. In this environment that pushes towards higher service levels, better customer experience, and intense competition, retailers need to be extremely thoughtful about their inventories. The challenge today is not only how much inventory to carry but when and where the inventory should be available, and whether or not it can be used across multiple channels.

It is not uncommon that experienced retail managers will describe their job as a delicate balance between art and science. *Assortment planning* is the area of the retail business where most managers will agree that the art component of the decision dominates the science one. Having the "right" merchandise is at the heart of a successful retail strategy, and it is hard to overstate the importance that assortment has. This critical task has also become more complex than before, while still being at the top of the things that retailers need to get right. The drivers that make assortment decisions harder are linked to the ones that are affecting inventory: managing multiple channels (with potentially different assortments), higher customer expectations, and increasing competition. However, the additional challenge when tackling assortment decisions is the need for a change from a merely "artistic" approach to one that is more systematic. Retailers need to incorporate more sophisticated ways to make assortment decisions systematically. These decisions need to capture the artistic challenge in a way that can be replicated and scaled at the fast pace required by the business. Recognizing this need does not imply negating the value of experience or not acknowledging that there are aspects of the assortment decision that are hard to model. The change is a consequence of the volume of decisions that need to be made and the speed at which these decisions need to happen. Retailers today need to allocate resources more wisely than ever before, and this involves knowing when experience and art can make a difference, and when mining into the company's data can give an effective and reliable decision. Today, assortment decisions are not made exclusively at the moment that the retailer places the order for the next season. Retailers need to adapt the assortment presented to customers, across locations and channels, and even personalize the view an individual customer may get in the online store, since this capacity to adapt can positively influence the customer experience and can become a competitive advantage.

Finally, successfully *managing employees* should continue to be at the top of the list of the retail business. Talented employees are not only nice to have but also a fundamental part of a solid retail strategy. This is true across the organization, from the leadership positions to the sales associates in the stores. Traditionally, retail companies were not the natural place where graduates from the best schools aspire to work. This is no longer the case. The exciting changes and opportunities in the retail space have been reinforced by a large number of the brightest graduates joining retail companies. Retailers who want to navigate the omnichannel space successfully need to understand that employees are a fundamental asset and not an expense. In the past, many retailers have seen payroll as a large cost to be minimized; this is an understandable reaction to the need to become more efficient. However, as Marshall Fisher puts it, "Cutting cost is OK if you're cutting fat, but if you're cutting muscle, that does more harm than good.",[2] and this is not only going to reduce cost but can also seriously affect the ability of the retailer to remain in business. More than ever before, retailers need to provide high service levels and a rewarding experience to their customer and this is hard to do without loyal and committed employees.

2.2   What Has Changed?

Today, retail customers are omnichannel customers. Customers interact with retailers in a new way, and they bring to these interactions new, more sophisticated expectations than ever before. Omnichannel customers are the catalyst for some of the most meaningful changes in retail today.

Historically, customer transactions were attributed to a specific channel, generating a siloed perception, and it was not uncommon to hear retailers refer to their "online customers" and their "brick and mortar customers." Today, retailers are increasingly aware that channels are simply touch points where customers engage with brands in different parts of the customer journey.

Customer behavior and expectations have driven the need to present a seamless experience across channels. Customers learn about new features available to them in one retailer (for example, "buy online, pick up in store") and assume that this has become the new standard. They are not aware of the challenges that incorporating new technologies can impose on legacy systems or the complications that arise when employees see the online channel as a threat to their sales commissions. This should not be a surprise, since, for the most part, customers are also unaware of all the things that need to happen to have the stores up and running, with the desired in-stock levels and the right assortment.

Today, more than ever before, the retailers' internal processes and customer-facing services need to provide customers with a consistent experience regardless

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[2]http://knowledge.wharton.upenn.edu/article/retail-staffing-model/.

of the point of contact. Retailers have learned this, and one manifestation is that it is becoming rare to find different prices across channels for the same retailer. This consistent and unified experience goes beyond prices, and reaches subtler and more challenging issues for retailers. For example, returns should be accepted in any channel, regardless of where the product was bought; customers should have the possibility to place an online order at the B&M store; customers should be able to look into their past transactions, finalized online or at the store, to confirm the size or the color for a product bought before. Each of these use cases involves very challenging process redesigns. This is no simple task, and it is particularly challenging since, for many retailers, the capabilities needed to fulfill these expectations are new to the organization. The level of sophistication and the data requirements to provide a personalized experience to thousands of customers is new to many retailers and presents a level of complexity that is significantly bigger than what they had been doing in the past. However, retailers who want to stay relevant cannot ignore this challenge and need to incorporate the capabilities necessary to provide rewarding interactions to their customers.

Another significant change in the omnichannel environment is the access to customers. New brands are not depending exclusively on existing retail companies to reach customers. This has been made evident by a large number of start-up companies, some of them very successful, that started to reach customers directly through their online stores. These digitally native vertically integrated brands (Dunn 2016) designed and manufactured their products and started selling exclusively direct-to-consumer through an online store. While their original attempt was to stay in the online world, many of these native digital retailers noticed the need to offer to their customer an omnichannel experience. This drove them to develop a presence in the physical world as well. With the advantage of having no legacy systems and an intense entrepreneurial culture, many of these companies are pushing the boundaries of experiential retail. Interestingly, when the focus for revenue growth starts to fade out and the need to show profitability ensues, digital native brands are also starting to recognize the relevance of the retail fundamentals.

The retail industry is at a fascinating place today. In simple terms, the retail landscape has traditional retailers with a solid understanding of the fundamentals of the business but the challenge to change their legacy systems and practices, and new retail players that have the flexibility and entrepreneurial attitude to interact with omnichannel customers but struggle with the challenges to grow while internalizing the fundamentals. The future will be thriving for those companies that are able to fulfill omnichannel customer needs with a solid retail execution.

3   About This Book and Its Content

The book is divided into three parts. In the first part, "Omnichannel business models," we present four studies that explore how retailers are adjusting their fundamental business models to the new omnichannel landscape. The second

part, "Data-driven decisions in an omnichannel world," includes five chapters that study the evolving data opportunities enabled by omnichannel retail and present specific examples of data-driven analyses. Finally, in the third part, "Case studies in Omnichannel retailing," we include four studies that provide a deeper dive into how specific industries, companies, and markets are navigating the omnichannel world.

3.1   Part I: Omnichannel Business Models

The first part of the book includes four chapters that collectively examine how business models are evolving in an omnichannel world, and how some of the most fundamental decisions in retail are affected by this transformation.

In the first chapter, Jasin et al. (2019) dive into the fulfillment, pricing, and inventory management challenges and opportunities faced by omnichannel retailers. They start by presenting a historical perspective of omnichannel operations in retail and then move to discuss the challenges associated with the different stages of an omnichannel evolution. Finally, they discuss three different models that focus on prominent challenges faced by retailers today: split shipments, markdowns, and inventory challenges in the presence of demand spillovers.

In the second chapter, Gao and Su (2019) explore the new functions of physical stores in the age of omnichannel retailing, reviewing recent research that analyzes the evolving role of the stores in an omnichannel context. They argue that in the omnichannel era physical stores are far more than a mere selling channel—they are becoming one of the major customer touchpoints in different parts of the customer journey. They discuss how B&M stores are morphing into fulfillment centers where customers can pick up their online orders (with initiatives such as Buy-Online-Pickup-in-Store orders and Click-and-Collect) or into physical showrooms where customers can evaluate products offline before placing an online order.

Next, Rooderkerk and Kok (2019) discuss how assortment decisions are changing in an omnichannel world where consumers increasingly interact with assortments of the same firm across different touch points. They offer a detailed literature review enriched with a variety of real-world examples. Starting from the customer, they study how omnichannel options have affected their journey to complete a purchase and, conversely, how these new journeys are re-shaping omnichannel retailers. Then they present the process of omnichannel assortment planning and contrast it to the traditional assortment planning. The authors argue that addressing the assortment challenges in an omnichannel context requires an intimate connection between the marketing and operations functions of firms.

In the final chapter of this first part, Seeberger et al. (2019) study one of the most challenging issues in an omnichannel world: product returns. In a context where, in some categories, "up to 50% of online purchases are returned," this is a critical issue that retailers need to manage well. They discuss the implications of the two main mitigating measures: defining a restrictive return policy that can lead to fewer returns but also can hinder demand, and developing a successful resale path for

returned items. The authors unite these two and discuss how to allocate returns to different channels. Finally, they present implications for a retailer and recommend, based on their analysis and experience, managerial strategies to mitigate this issue.

3.2   Part II: Data-Driven Decisions in an Omnichannel World

We have argued above about the relevance that data will have for retailers in the years to come. The chapters in the second part of the book highlight some of the challenges and opportunities of using data in an omnichannel context, and present some examples of data-driven applications.

In the first chapter, Goic and Olivares (2019) present a framework for omnichannel analytics, and develop key ideas that should be internalized by retailers when thinking about data-driven decisions. The data that retailers can collect from online and offline channels is different and requires different methodologies. However, the information contained in online and offline data are complementary, and can shed light into different facets of customer behavior. In an omnichannel environment, the boundaries between online and offline data are disappearing, and the methodologies to analyze these data are converging.

The second chapter in this part (Corsten and Gruen 2019) examines a traditional issue, product availability, with a new lens. In traditional contexts, product availability is well-defined, but this concept (and how customer reacts to it) can be subtle in an omnichannel context. Corsten and Gruen (2019) present the results of a study of Online Availability (OLA) at online and omnichannel retailers across six countries. Their results provide interesting insights into Online Availability (OLA) and Non-Online Availability (NOLA) and discuss the encounters of online shoppers with NOLA and their potential reactions to it with a detailed examination of switching behavior to alternative options.

The three following chapters present specific examples of how data can be used in an omnichannel context to drive decisions or to understand the underlying phenomena. Rabinovich and Sodero (2019) revisit the issue of assortment planning with a data-driven approach. They argue and present evidence on how the B&M store has a relevant role to play in today's fashion retail. They explore the opportunities and challenges that drop-shipping can bring and provide a starting point to understand omnichannel assortment integration to the fashion industry. Lee and Kesavan (2019) discuss how data analytics can be used to study the retail industry as a whole to try to understand the connection between excess inventory announcements and the stock market reaction in the U.S. retail sector. The authors discuss how operational competence, as measured by total factor productivity, can explain the retailer's excess inventory announcement and they find that operationally competent retailers have a lower probability of announcing excess inventory in the following year. In an omnichannel context, inventory management is plagued with new challenges and opportunities (for example, some retailers may start using excess inventory from the store to fulfill online orders), and the stock market reactions may become even more subtle. Finally, Gallino et al. (2019) shed light

on the impact of an exogenous factor, weather conditions, on retailers B&M store and online sales, as well as on customers' channel choice. This case study uses a rich dataset from an online and B&M retailer operating worldwide in the winter apparel category. The authors explore how weather factors can lead to a significant shift in sales both for online and offline channels. Their finding suggests that although weather significantly affects retailers store traffic and sales, retailers do not adjust their labor staffing practices: they understaff their stores in cold days and overstaff on hot days.

3.3   Part III: Case Studies in Omnichannel Retailing

This third and final section of the book presents four case studies that provide a deeper dive into how specific industries, companies, and markets are evolving in an omnichannel world.

Although banking is not the first industry that comes to mind when omnichannel issues are discussed, this sector has been experiencing a significant omnichannel transformation over the last several years. In the first chapter of this part, Abhishek and Li (2019) present a study on the omnichannel customer behavior in retail banking. They highlight the differences in customer decision making that the banking sector presents when compared to other retail settings. Financial services are complex and can often be better addressed in a specific channel. The differences in the nature of transaction types in banking and retailing drive unique omnichannel behaviors. The authors present a framework to better understand consumer behavior in the omnichannel banking context. They examine the relationship between different channels, and also how the composition and behavior of consumers changes in a world where digital and physical channels co-exist.

In the second chapter of this part Huebner et al. (2019) focus on the grocery sector, which is undergoing a major transformation. The advent of grocery sales via online channels has impacted the distribution of online groceries. Huebner et al. (2019) argue that B&M retailers need to combine efficient and customer-oriented distribution concepts if they want to compete online effectively. They analyze the distribution concepts used to serve customers across channels and their components, from warehousing to the last-mile and show how logistics networks can be determined by the split case packs into the final customer units.

In the third chapter, Caro et al. (2019) present a detailed analysis of clearance decisions at Zara, one of the world's leading fashion retailers. Like many retailers, Zara experiences constraints in their clearance decision, some of which are driven by their supply chain structure. Caro et al. (2019) address the problem of dynamically coordinating inventory and pricing decisions for unsold merchandise during the last month of the regular season and then clearance sales. They propose a new tool to address this problem and show, in a controlled field experiment, how Zara was able to increase revenue by 2.5 percentage points. This result is particularly remarkable for this particular setting, since the unsold inventory is sunk at the time of clearance sales. Hence, this additional revenue translates directly into profits.

In an omnichannel context, clearance decisions are likely to be subject to new interesting dynamics. For example, Zara could be using the online channel to sell merchandise that has not been sold at the stores.

Finally, Fransoo et al. (2019) explore "nanostores," small independent and family owned and operated stores, and the way they affect customer behavior in developing markets. In particular, the chapter focuses on consumer packaged goods sold on this channel. The authors argue that consumers at the base of the pyramid buy mostly at nanostores and that both consumers and nanostores are being affected by the omnichannel transformation. They also show how the availability of low-cost smartphone technology and the availability of venture capital is changing the omnichannel experience by embedding nanostores in a growing online offering of consumer-oriented services.

4 Omnichannel Is Here to Stay

The omnichannel transformation has already resulted in important changes in the way retailers operate during the last decade. As the once new term is starting to age, some have argued that the "omnichannel" term overemphasizes the notion of channels in a world where customers do not think about channels, and favor other terms such as "unified commerce" (Dennis 2017). Irrespective of whether one thinks "omnichannel" is just a buzzword that will be eventually replaced, the underlying fundamental concepts are likely to be enduring. Once customers have become used to interacting with retailers using multiple touch points online and offline during their customer journey, there is no going back. The challenges associated with providing a seamless experience to customers who want to engage with brands in a flexible way are here to stay. Retailers are going to have to operate in an omnichannel world for many years to come.

Ultimately, this book aims to introduce the reader to the fundamentals of operations in an omnichannel context and the challenges and opportunities that are presented in this new landscape. The book contains 14 chapters that analyze new omnichannel business models, illustrate the potential and challenges of using omnichannel data, and describe some illustrative case studies in specific industries, retailers, and markets. Altogether, the book introduces a number of innovative research approaches on these topics using a variety of methodologies. We hope you will enjoy it.

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