McKinsey & Company

The winning formula: What it takes to build leading omnichannel operations

December 2021

Cover image:
© onurdongel/Getty Images

Contents

Sector- and channel-specific deep dives

Introduction

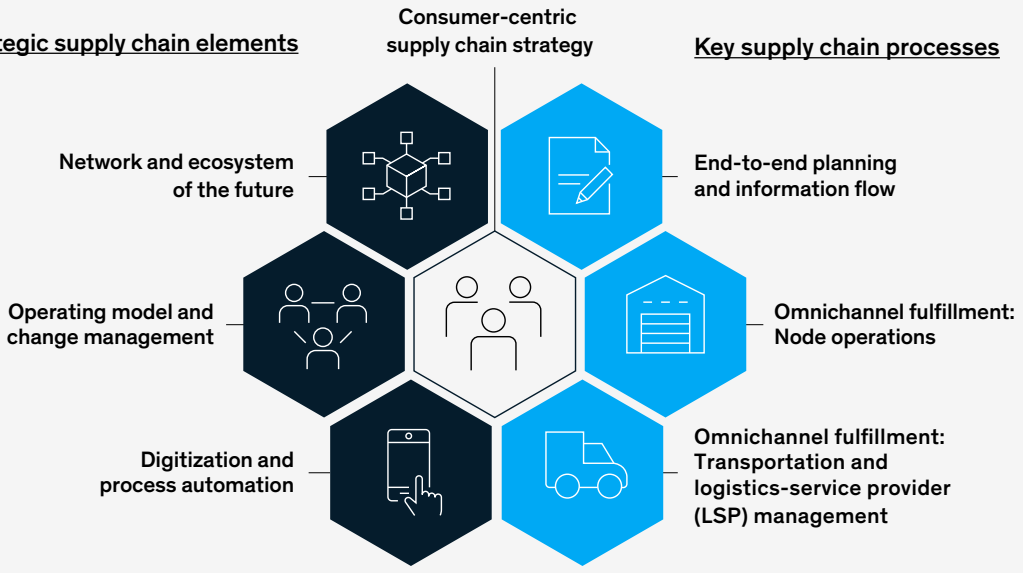
The push toward omnichannel shopping has been under way for years. But the disruption caused by the COVID-19 pandemic has made omnichannel a top priority for consumer-product companies, retailers, and direct-to-consumer brands as they seek to fuel sustainable and inclusive growth, enhance consumer experience, and become more profitable.

Therein lies the challenge. Building omnichannel operations is like asking a sprinter to compete in the decathlon. Companies, especially those that excel in traditional operations, must develop a wide range of new skills and capabilities—and do so quickly.

From our experience working with executives across consumer sectors, we know that omnichannel can seem challenging and demanding. Organizations must become proficient in every part of their operations and adopt a whole new set of rapidly evolving best practices for the supply chain, store shelves, physical stores and e-commerce, logistics and distribution, automation and analytics, and pricing and promotions (exhibit). The sheer number of areas required for omnichannel can be daunting.

Exhibit

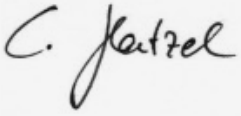
The seven key building blocks of future omnichannel supply chains combine best practices with digital innovation.



Yet omnichannel is an imperative for survival and growth, so we asked our leading experts to help us compile this compendium of strategies and insights. In these pages you will find a range of fresh perspectives on everything from supply chain strategy to key omnichannel processes, as well as deep dives into specific sectors and channels.

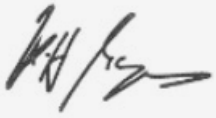
We hope that these insights collectively provide a road map for omnichannel players—regardless of their starting point—to make progress in capturing the largest transformation opportunity in the history of the consumer and retail sector.

Praveen Adhi
Partner, Chicago



Christoph Glatzel
Senior partner, Cologne

Tim Lange
Partner, Cologne



Karl-Hendrik Magnus
Senior partner, Frankfurt

Frank Sänger
Senior partner, Cologne

Into the fast lane: How to master the omnichannel supply chain

Consumer-product and retail companies looking to jump into the fast lane of modern shopping will need to overhaul their operations to master the seven building blocks of an effective omnichannel supply chain.

by John Barbee, Joyce Chai, Tim Lange, and Andreas Seyfert

Omnichannel shopping has become the new normal for almost all consumer products and is likely to remain so for the foreseeable future. Through omnichannel shopping, consumers can shop across multiple sales channels—online using their laptop or phone, in physical brick-and-mortar stores, or at wholesale stores—while benefiting from a seamless, holistic consumer experience.

This new normal has important implications for consumer product companies, including direct-to-consumer businesses such as retail, grocery, apparel, and CPG companies. To survive, these companies must accept the challenge of delivering a great consumer experience across sales channels and shape their supply chains accordingly. Most companies' supply chains predate omnichannel, however, and layering the newly required capabilities on top of legacy systems can be difficult. Organizations need to undertake broader and deeper transformations to meet rising consumer expectations in consumer experience, individualization, and delivery speed, while keeping delivery costs under control.

Our experience in working with consumer-product and retail companies across categories, including grocery, suggests that organizations looking to master omnichannel supply chain excellence should focus on seven key building blocks. These building blocks—which cover strategy, strategic supply chain elements and key supply chain capabilities—are the principal subject of this article.

The challenge is significant, but consumer-product companies that respond effectively to the changing market environment have an opportunity to gain an advantage over their peers. Players that fail to make this shift will struggle to remain competitive.

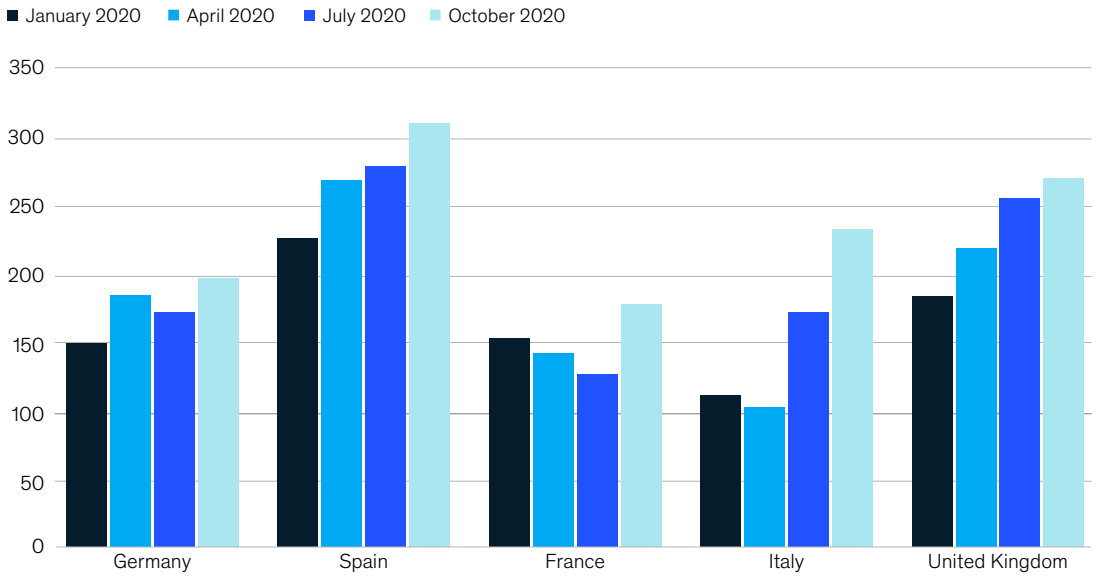
The importance of omnichannel: E-commerce is booming, but physical stores remain important

E-commerce was booming even before the pandemic, and the COVID-19 crisis has increased the pace of growth (Exhibit 1). This shift does not necessarily spell the end of brick-and-mortar stores, however. Forward-thinking consumer-product companies have been using their stores to educate consumers on product offerings, reinforce their brands' positioning, and support e-commerce sales. Despite the pandemic, for example, Nike opened a 26,000-square-foot flagship store in

Exhibit 1

Retail sales online or via mail order grew quickly in 2020.

Index of first month for each quarter in 2020 for five European countries, 2015 = 100, retail sales via mail order or the internet



Paris that features a "digitally empowered" end-to-end consumer experience.[1] Prepandemic research found that opening a new location increases traffic to a retailer's website by 37 percent in the following quarter.[2] This complementarity is why it is vital for consumer-product companies to invest in—and master—omnichannel supply chains that can deliver a great consumer experience across multiple channels.

The seven building blocks of omnichannel supply chain excellence

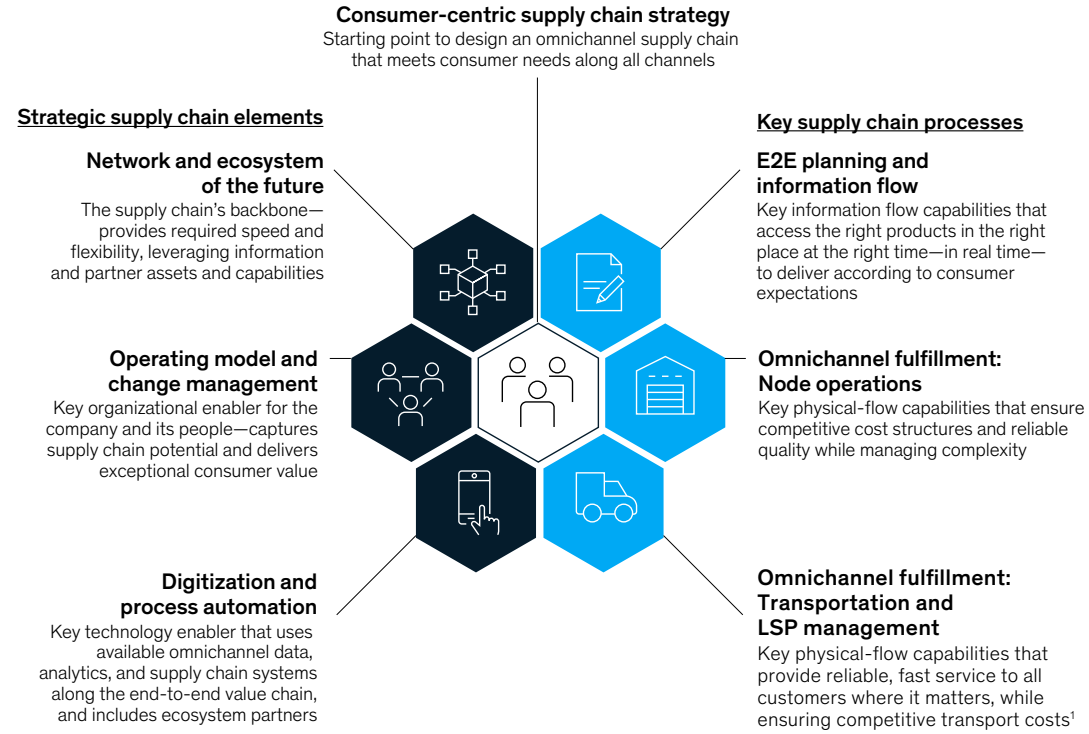
Most companies will need to fundamentally transform their supply chains to deliver omnichannel excellence, but the effort will be worthwhile. The remainder of this article lays out the seven essential building blocks for the omnichannel supply chain of the future (Exhibit 2).[3]

The first and most important building block is a consumer-centric supply chain strategy. This building block is followed by three strategic supply chain elements—the network and ecosystem of the future, operating model, and digitization and process automation—and also three key supply chain processes—end-to-end planning and information flow, omnichannel fulfillment node[4] operations, and transportation. Consumer-product companies looking to master omnichannel excellence should ask themselves some key questions (see sidebar, "Essential questions for each of the building blocks of omnichannel excellence").

[1] Sheena Butler-Young, "Why Nike opened a sprawling Paris flagship in the middle of a pandemic," *Footwear News*, July 29, 2020, footwearnews.com.
[2] "Physical stores key to retail success, study finds," International Council of Shopping Centers, October 15, 2018, icsc.com.
[3] While the focus of this article is on supply chains, a complete omnichannel operational overhaul would also include an examination of the upstream value chain (sourcing, product development, and production), particularly if e-commerce is a large share of the business.
[4] A node is any location that can store and ship products. This could be a shop, a warehouse, or even a pop-up venue.

Exhibit 2

The seven key building blocks of future omnichannel supply chains combine best practices with digital innovation.



[1]Logistics-service provider.

Essential questions for each of the building blocks of omnichannel excellence

Consumer-centric supply chain strategy

- How many supply chain segments are required to deliver the supply chain mission, and what is the objective of each?
- What is the consumer offering across different segments, and how can we differentiate ourselves from competitors?
- How can we tailor the assortment to a retailer or to a channel?
- What are the key supply chain risks, and how can we best prepare for disruptions?

Network and supply chain ecosystem of the future

- What is the physical flow of goods through the network? What is the impact of different product–supply speed models?
- How are suppliers managed and integrated to support an agile upstream supply chain that responds quickly to changes?
- Is the distribution network designed for each channel individually, or would an omnichannel network be beneficial? What is the right composition of distribution centers (DCs), new node types, and partner locations?
- How can inventory be shared across channels? Does each channel have its own inventory?
- What are key areas for customer collaboration that could improve information exchange and product flow along the value chain?

End-to-end planning and information flow

- What are the different demand signals in the omnichannel environment, and how can they be captured to predict demand potential through advanced analytics? How can we combine them into an end-to-end (E2E) marketplace perspective?
- What is the optimal inventory level at each stage of the value chain? How can we actively manage inventory to increase availability and keep cash requirements under control?
- How can we best synchronize the product supply with customer demand in stores, in DCs, and with partners?
- How can we align the different organizational entities and plans at key milestones? How can we manage trade-offs and locate and prioritize customers, channels, and orders?
- How can we ensure real-time visibility and accessibility of inventory across all channels and locations?

Consumer-centric supply chain strategy

Being truly consumer centric—meeting consumer needs across all channels and grounding all decisions in deep understanding of the consumer—is a widely held objective, but it is difficult to achieve. Common pitfalls include a failure to listen to consumers and a one-size-fits-all supply chain, which leads to a lack of differentiation of services and, consequently, higher costs.

First, companies need to be absolutely clear about which consumer segments they aim to serve. Most companies understandably want to deliver a great service to all potential consumers, but resources are limited; companies need to decide which consumer segments matter most so that they can focus their resources on the most important targets.

After they have identified their target segments (ideally through cross-functional decision making), omnichannel players need to figure out what to deliver to each of these segments. This decision will, in turn, determine how many supply chain segments they need.

For example, a leading global sportswear player has implemented a state-of-the-art supply chain strategy, clearly differentiating among individual segments and defining distinct supply chains for each segment. The company's most prestigious segment is premium consumers in cities such as London, Berlin, or Paris. These consumers are offered a premium service, which includes a two-hour delivery window on special items, and early access to newly launched products. The supply

Essential questions for each of the building blocks of omnichannel excellence (continued)

Omnichannel fulfillment: Node operations

- How can we achieve warehouse excellence in a more complex environment?
- How can we manage returns in an efficient and effective way?
- How can we enable the whole downstream supply chain for omnichannel and optimize in-store layout and processes to enable local fulfillment while providing a great consumer experience?

Omnichannel fulfillment: Transportation and logistics-service-providers management

- What do we need to manage transport operations efficiently in an increasingly demanding world? How do we keep transport cost under control and create end-to-end transparency of product flows?
- What are the right logistics partners for the different supply chain segments? How do we get competitive rates and services?

Operating model and change management

- How do we design supply chain processes to support omnichannel optimization? How can digital innovation be integrated in the process design?
- How can we adjust the organizational structure to capture cross-channel benefits and make change happen?
- Which additional skills are needed to enable the future organization? How can we best address the cultural change toward omnichannel behavior?
- How should performance of the E2E supply chain be measured? How can we incorporate the omnichannel dimension, measuring the joint performance rather than individual channels?

Digitization and process automation

- What software and other tools are needed to enable the omnichannel supply chain?
- How can we capture data and use them along the value chain? How are legacy systems integrated? How do we integrate into an ecosystem with our partners?
- How can we contextualize data to conduct relevant analyses? Are operational data consolidated and accessible to the right decision makers?
- How can we employ advanced digital tools such as robotic-process automation, blockchain, and the Internet of Things to enable omnichannel optimization?

chain for this segment is therefore focused on fast delivery and reliability. Consumers living in rural areas cannot access the same benefits; the supply chain of this segment has a much stronger focus on efficiency, and standard delivery times are two or three days.

Network and supply chain ecosystem of the future

The shift to omnichannel is forcing consumer-product companies to rethink the supply chain ecosystem they are operating in. As described in a previous article,[5] players need to choose the right combination of distribution centers (DCs), new node types, and partners to deliver their consumer-service aspirations within each channel.

The supply chain ecosystem should be an end-to-end collaboration involving all stakeholders, from suppliers to consumers. Companies are only able to deliver on ever-changing consumer requirements if information is shared along the entire value chain, and if all network assets and capabilities are fully leveraged. One example of the importance of collaboration is the growing demand for late customization;[6] suppliers produce a "blank sample,"

[5] Manik Aryapadi, Ashutosh Dekhne, Wolfgang Fleischer, Claudia Graf, and Tim Lange, "Supply chain of the future: Key principles in building an omnichannel distribution network," January 15, 2020, McKinsey.com.

[6] Late customization refers to consumer requests for customization as part of an online order; for example, by requesting a specific color or inscription.

which is stored as inventory and customized shortly before delivery.

Collaboration is also a great driver of innovation. For example, consumer expectations have forced consumer-product companies to move from simply shipping products from a warehouse or distribution center to more innovative fulfillment options, such as shipping directly from production facilities or dark stores.[7]

Another example of retail partner–driven innovation is "inventory sharing," as pioneered by Adidas and Zalando, a European e-commerce platform.[8] The two companies have adopted a partnership model that involves a shared pool of products; if a specific Adidas product is unavailable at Zalando, the consumer is automatically redirected to the Adidas website. Alternatively, Zalando may deliver products ordered on the Adidas website in order to decrease lead times.

End-to-end planning and information flow

The shift to omnichannel involves an increase in operational complexity; omnichannel operations involve multiple sales channels, multiple network nodes, and a decentralized inventory. Meanwhile, customers expect to be able to access the right products in the right places and in real time. Therefore, omnichannel operations require thoughtful end-to-end planning, which requires significant changes to three key elements:

— *Forecasting* should be done by market and product group and then disaggregated to channel level. The overall forecast, for example, would predict the total volume of sports shoes to be sold in London. This total number would then be disaggregated into those sports shoes the company expects to sell in stores, through e-commerce, and through other channels. Finally, the forecast needs to take into account omnichannel effects such as cross-channel cannibalization; for example, customers who have a great e-commerce experience may stop purchasing items in stores.

— *Inventory* should not be dedicated to one channel; companies should have cross-channel inventory pools. Algorithms—which should take into account factors such as forecast demand, the accuracy of past forecasts, lead times, and lead-time reliability—should define optimum inventory levels at each node in the supply chain, including in DCs and stores and with partners. Inventory levels should then be actively managed to maximize cross-channel availability and optimize cash flow. Consumers should have real-time visibility into inventory, and orders should be fulfilled efficiently through continuously reoptimized allocation across all channels and locations.

— *Information flow* should be seamless among functions, channels, and systems. Players aiming for a truly omnichannel supply chain need to fully digitize cross-channel planning processes and tools, but they can choose whether to start this on one channel or to digitize and move to an omnichannel supply chain simultaneously.

Omnichannel fulfillment: Node operations

The shift in volume from in-store purchases to e-commerce forces consumer-product companies to reevaluate their fulfillment networks,[9] which are integral to their supply chains. Omnichannel players need to build key capabilities regarding the flow of products to make sure they achieve competitive costs and reliable quality while managing the complexity of omnichannel operations.

Companies looking to add e-commerce offerings to their offline business often add the operations of the new channel to the existing supply chain without sufficient consideration of the new channel's distinct requirements. The physical flow of e-commerce products, for example, is very different from the flow of products within a distribution center. E-commerce buyers generally expect very short lead times, while cost is more important than speed in the shipping of seasonal stock to the DC of a wholesaler. Stores, DCs, and e-commerce also have different units of measurement; DCs typically

[7] Dark stores are large retail facilities that resemble conventional stores but are not open to the public. They are used to hold stock and to fulfill online orders via delivery or click and collect.
[8] "Multi-channel pilot in Paris: Zalando delivers same-day for adidas.fr," Zalando, August 19, 2019, zalando.com.
[9] "Supply chain of the future," January 15, 2020.

think in terms of full truckloads or pallets, while e-commerce is primarily concerned with individual units.

A supply chain that is purpose-built for omnichannel will take into account the varying channel requirements. Warehouse automation is a good option[10] and can improve speed, quality, and efficiency.

Cross-channel operations should be organized to maximize the value-capturing potential of each channel, including traditional brick-and-mortar stores. In an ideal omnichannel consumer experience, different points of sale are fully connected and integrated. Today's consumers expect a seamless shopping experience across channels, such as click-and-collect services that allow them to order online and pick up in a store. This expectation means that consumer-product companies also need to reassess in-store processes and layouts to ensure a great consumer experience if both online and offline consumers are served in the same store.

Omnichannel fulfillment: Transportation and LSP management

Transportation and the management of logistics-service providers (LSP) are also significantly more complex for companies with multiple channels to serve, due to the different requirements of each channel. The orders of brick-and-mortar consumer-product companies can generally be booked in advance and delivered by truck. E-commerce services, on the other hand, must process a high number of individual orders at short notice using transportation modes such as couriers or postal services. Omnichannel players need to ensure that they can provide reliable, fast service to all customers while ensuring competitive transport costs.

Success requires organizations to identify the right logistics partners for each segment of the supply chain. Omnichannel players need partners who can deliver small shipments quickly, reliably, and relatively inexpensively, but they likely also need partners that can deliver specialized services, such as "try at home" or electronics installation. Organizations need to carefully source and manage these numerous partners to keep costs down and ensure a consistently high quality of service.

Last mile is generally the most costly transportation segment. Success in this segment requires efficient IT systems, local fulfillment networks, and carefully chosen third-party logistics partnerships. Players need to find solutions that meet consumer expectations on service and lead time, while also offering full transparency about, and control over, costs. These solutions may include leveraging preexisting brick-and-mortar stores or using nontraditional approaches such as bicycle deliveries or local couriers.

To facilitate the supply chain transformation detailed above, and to ensure that each stage runs smoothly, companies also need to invest in two additional supply chain setup elements. These are the focus of the final two sections of this article.

Operating model and change management

To realize the full benefits of omnichannel, companies must undertake a full transformation of their operating models,[11] including a redesign of processes, structures, mindsets, capabilities, and performance management. This building block is key to ensuring that the company—and its people—can capture the full potential of the supply chain and deliver exceptional consumer value.

As a first step, players need a cross-channel omnichannel team; without such a team, it is very difficult to break down siloed thinking and operations. Consider inventory management when demand exceeds supply or capacity, for example. To ensure good consumer service and enable profit-optimizing

[10] Ashutosh Dekhne, Greg Hastings, John Murnane, and Florian Neuhaus, "Automation in logistics: Big opportunity, bigger uncertainty," April 24, 2019, McKinsey.com.
[11] Ibid.

inventory allocation, players need one person or team to take ownership of all inventory across channels. The full team also needs to be trained—and given incentives—to optimize for the company as a whole, rather than for any individual channel.

In addition, companies need to be structured in a way that enables intense collaboration with value-chain partners. Assigning clear end-to-end responsibility—from supplier to consumer to the omnichannel team—is an effective way to do this. A leading apparel and footwear player, for example, has set up "city teams" that are responsible for everything from supply management to cross-channel inventory management.

Many companies assume that a full transformation of their operating model will be highly complex, so they tend to apply incremental improvements rather than launching a full overhaul. Ultimately, this approach will not be sufficient to deliver on the opportunity of omnichannel. Instead, companies can simplify their operating-model transformation by taking an agile approach, which breaks the process down into manageable chunks. This process involves built-in test phases and many opportunities to learn and improve.

Digitization and process automation

As this article has demonstrated, technology and effective data-and-analytics strategies that incorporate the right partners are key enablers of an omnichannel supply chain. Players need to ensure that they have the software and tools to capture the requisite data and, crucially, to leverage it.

Rising consumer expectations are pushing consumer-product companies to digitize and automate. The demand for same- or next-day delivery is increasing, for example, at the same time that orders are increasing in both volume and complexity. To meet these expectations, organizations need order-management processes with a high degree of automation and digitization across order capture and sourcing. Digitization and automation are also needed to enable the required instant updates on order status.

Seamless integration of systems and planning tools across channels is also crucial, both to meet consumer expectations and to facilitate management and decision making. For consumers, cross-channel system integration is essential to provide real-time information on product availability and delivery times. For companies, effective cross-channel decision making requires the integration of planning tools with real-time simulation capabilities, especially in situations of scarcity.

The implementation of digitization and automation strategies must be holistic. Separately managed initiatives often add up to less than the sum of their parts and are not sufficient to deliver the required step change in consumer service. But it is equally vital to remember that simply adding smart analytics and automation will not be enough—a

Rising consumer expectations are pushing consumer-product companies and retail players to digitize and automate.

fully redesigned operating model is necessary to drive these changes through and deliver omnichannel excellence.

Starting the omnichannel journey

Mastering omnichannel to become a best-in-class player is clearly a significant undertaking, and there is no one-size-fits-all approach to prioritizing. However, a "crawl, walk, run" approach can be an effective way to undertake, and then complete, the omnichannel journey (Exhibit 3).

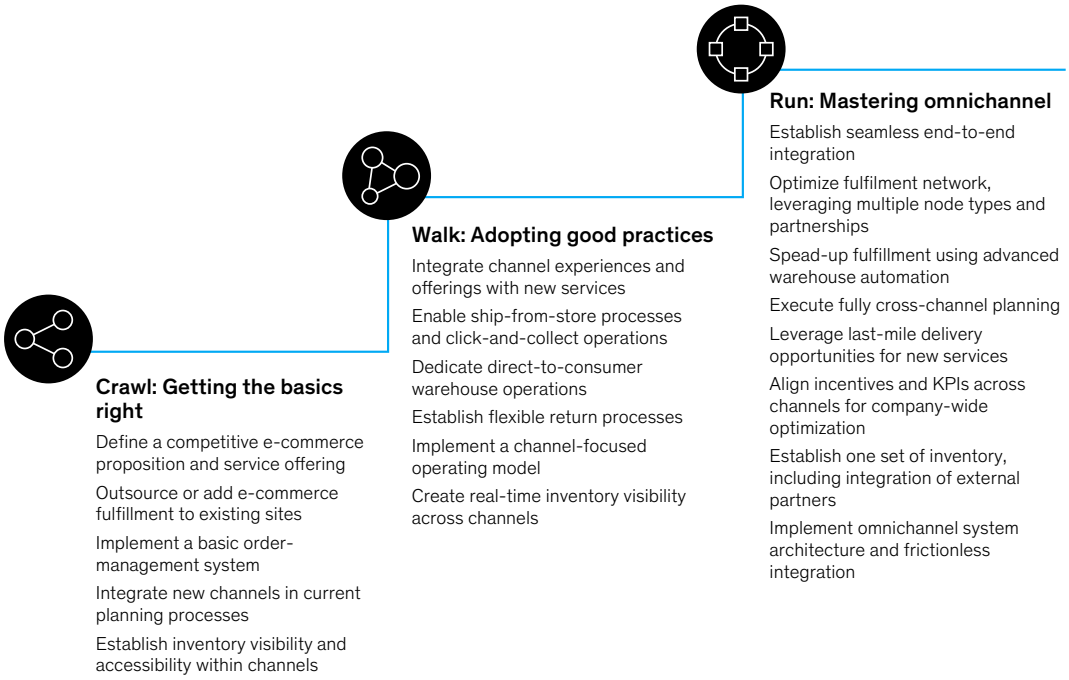
The aim of aspiring omnichannel players—those at the "crawl" stage of the journey—should be to get the basics right. Above all, it is crucial to define a competitive service proposition regarding the omnichannel journey; companies need to be clear on key issues such as which services to offer and their key differentiating factors. Once players have mastered the basics, they should shift focus to adopting omnichannel best practices and then—finally—to developing distinctive omnichannel offerings. At the end of this process, the operating model will work seamlessly to align incentives and key performance indicators (KPIs) to avoid competition for limited resources. This approach ensures that the various channels are complementary, which is the driving principle of omnichannel.

Consumer-product companies looking to define a starting point for their omnichannel transformation will need a structured maturity assessment on each of the seven building blocks. This assessment will also be instrumental in defining a road map and developing initiatives that address the areas with the potential to add the highest value. The

Exhibit 3

Companies can benefit from using a 'crawl, walk, run' strategy.

The omnichannel journey



final step before implementing the road map is to develop an effective governance model and powerful change story.

Companies that want to deliver a great consumer experience across multiple sales channels will need to comprehensively rethink many of their traditional supply chain approaches, especially in these times of economic uncertainty. The challenge is considerable, but so is the opportunity—companies that get the seven building blocks of omnichannel right will grow their consumer base and build a compelling, long-term competitive advantage.

John Barbee is a partner in McKinsey's Atlanta office, **Joyce Chai** is an associate partner in the San Francisco office, **Tim Lange** is a partner in the Cologne office, and **Andreas Seyfert** is a senior expert in the Berlin office.

Where the transformation begins: Creating a consumer-centric supply chain strategy

The key to success in today's consumer industry lies in a clearly segmented approach that focuses on the supply chain and accounts for the varying requirements and preferences of consumers.

by Joyce Chai, Aniket Joglekar, Tim Lange, and Kumar Venkataraman

One of the few constants of the consumer industry is change. The sector has always evolved, especially in the years leading up to the COVID-19 pandemic. Consumer preferences have been shifting for several reasons: e-commerce has gained momentum, established players have been leveraging scale and reach to unseat mom-and-pop stores, and shopping malls have lost relevance as a primary shopping destination. The pandemic not only accelerated these trends but also added new layers of complexity. Consumers today expect increased convenience, higher cost competitiveness, and fast delivery to complement their omnichannel buying journey.

So what does this mean for consumer product and retail companies today? All aspire to provide the right products sustainably and delivered at lowest cost possible, at the right speed, and with a great consumer experience. However, to succeed in the omnichannel world, the conventional one-size-fits-all approach will no longer be sufficient. The key to winning in today's environment lies in a segmented approach that clearly distinguishes offerings across consumer segments based on their respective requirements, product preferences, and locations, and that adjusts the supply chain structure to enable a differentiated strategy. And this segmented approach must extend beyond consumers. Any consumer product and retail company that owns brick-and-mortar stores or works with wholesale and marketplace partners must include these channels and customers in the segmentation to serve the end consumer in a holistic, omnichannel way.

In this article, we articulate a three-step approach to creating and implementing this consumer-back segmentation:

1. Define the target consumer-back segments for the future supply chain as a combination of consumer requirements, product characteristics, and supply chain structure.

2. Define the consumer-centric "North Star" vision and dimensions of differentiation for each segment.

3. Create a differentiatied supply chain strategy, including the right network strategy, world-class planning and allocation muscle, omnichannel-fulfillment capabilities, and the right omnichannel operating model to enable each consumer-back segment.

1. Define the target consumer-back segments

The anchor of a consumer-centric strategy is a deep understanding of consumers. However, to create the right differentiated strategy, organizations need to understand not only consumer requirements and preferences but also how those factors intersect with product characteristics and supply chain structure:

— *Consumer requirements and preferences.* Crafting a segmentation strategy begins with a clear understanding of who the relevant consumers are, including whether they are digital end-consumers, stores, or wholesale partners. It's also important to understand factors such as their demographics, geographic location, and product preferences (Exhibit 1).

Companies then need to consider what consumers are demanding. Are they cost-conscious or premium shoppers? Do they prioritize speed of delivery or care more about sustainability? For example, consumers looking for a sustainably produced, organic-cotton garment are likely to value sustainability over speed of delivery. This could be supported by promising a slower but low-carbon-footprint mode of transportation and efficient packaging.

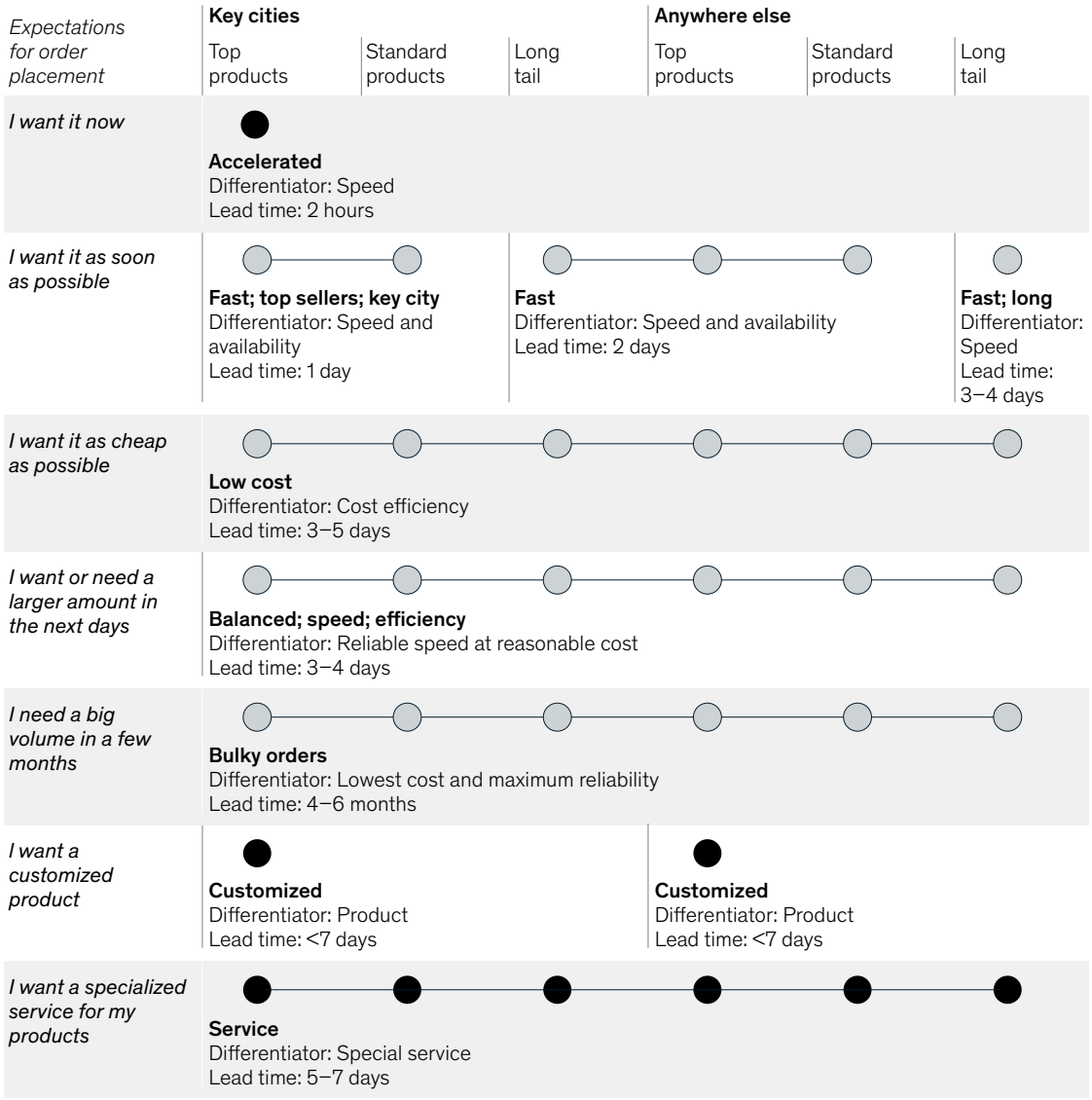
— *Product characteristics.* Once there is a clear understanding of consumer requirements and preferences, it is important to understand how these intersect with core product characteristics. The characteristics to consider are the velocity of sales and volatility (for example, demand ebbs and flows with seasonal products); the product type and availability, including how the product flows and how it is replenished; and how demand tracks with different consumer segments.

Exhibit 1

Ultimately, consumer preferences for lead time have an impact on the consumer-back segmentation.

Illustrative segmentation strategy based on consumer location, motivation, product characteristics

● For top customers or stores ○ For all customers or stores



— *Supply chain structure.* Based on consumer requirements and preferences and on product characteristics, the final element in understanding consumer-back segmentation is the current supply chain structure. Given the existing structure, including node structure and fulfillment methods, which consumer requirements can you deliver, and which consumer-back segments can you satisfy without changing the supply chain? Does this match your priority consumer-back segments for the business?

Providing optimal value in the omnichannel world will require tailored strategies for each part of this structure. That's the core of the segmented supply chain strategy.

2. Define the 'North Star' vision and dimensions of differentiation for each segment

Once consumer product and retail companies have a clear understanding of the consumer-back segments, they need to define the vision and dimensions of differentiation for each priority segment. In today's environment, it is critical to define which expectations to deliver to which customers to avoid common and costly mistakes, such as providing speed at a premium to consumers who value price, or building offerings that quickly become outdated and irrelevant. For example, the conventional model of promising free seven-day shipping across a wide variety of products and channels may drive consumers away from certain product types that they need more quickly.

Companies therefore need to tailor the promise to each product segment. Four dimensions of differentiation are typically considered in this process:

— *Service.* The proliferation of comparable products across channels and brands makes the retail experience a critical dimension for differentiation. Three key factors of service should be considered and carefully defined. Each has "hygiene" elements—those that must be included in the offering—as well as elements that are opportunities to drive competitive differentiation (Exhibit 2):

- *Speed.* While many companies are moving toward a standard of three- to five-day delivery in the United States and two-day delivery in the European Union, there is an opportunity to further differentiate on this dimension. For select products and geographies, for example, consumers with Amazon Prime can receive one- to two-day delivery (along with other members-only perks). As another example,

Exhibit 2

Various service elements offer opportunities for top consumer product and retail companies to differentiate themselves.

Service elements menu, nonexhaustive

● Opportunity ● Hygiene

		Most common service level	Hygiene element or opportunity to differentiate
Speed	Quickest delivery time option	Next day	●
	Standard lead time and price	2–5 days	●
Optionality and flexibility	Green delivery options	Not prevalent	●
	Delivery or pickup locations	Click and collect	●
	Dropoff locations for returns	Store or post office	●
	Options for delivery times	Not prevalent	●
	Last-minute redirect	Not prevalent	●
Convenience	Delivery window	Not prevalent	●
	Refund lead time	3–11 days	●
	Gift wrapping	Not prevalent	●
	Tracking	Track and trace	●

Gorillas, a start-up based in Germany that is expanding into the United States, is offering ultrafast delivery (15 minutes or less) for groceries and convenience goods as a point of differentiation.

- *Optionality and flexibility.* In the omnichannel world, there are many ways to receive and return products—for instance, delivery to door, curbside pickup, or buying online and picking up in-store or from a locker. The opportunity to choose from a menu of options and the flexibility to change that decision can also be a key differentiating factor. Target, for example, quickly instituted curbside pickup during the pandemic. It offers this option for many in-store categories and also maintains an easy system for changing pickup dates and times based on consumer preference.[1]

- *Convenience.* Increasing consumer convenience through incremental offerings is another potential point of differentiation. One major home-goods retailer offers white-glove service and instructions for assembly or installation at different price points. Instacart offers the convenience of precision in delivery windows, including the option to pay for faster delivery times; conversely, DoorDash—which recently partnered with Safeway for grocery delivery—dictates an estimated delivery time without the option of selecting a precise time window. For some consumers, this level of differentiation is key in choosing one service over the other.

— *Availability.* A deep understanding of consumers and their core products offers savings by allowing for a conscious adjustment of availability and supply. While world-class planning and allocation muscle will help companies furnish different stores with select SKUs based on geospatial demand data (rather than keeping every SKU in every store), additional options for differentiating from competitors include the following:

- *End-of-life availability.* What do you do with a product at the end of its life cycle? Do you cater to loyal customers by maintaining availability, or do you stop producing it to reduce supply chain costs and complexity?

- *Limited access.* This entails providing different levels of access to limited-supply products based on the expected long-term value of customers. Luxury-goods retailers have long been experts at this, deliberately limiting supply of high-demand products and offering them exclusively to established customers first.

— *Cost effectiveness.* As consumers have become increasingly accustomed to near-instant gratification, as well as high degrees of flexibility, optionality, and convenience when shopping online, consumer product and retail companies know well the costs associated with these decisions. Offering same- or next-day delivery and free returns (which consumers are also now used to), fragmenting the flow of products to allow optionality, and providing incremental convenience factors all take a toll on overall cost efficiency and profitability. As companies define their strategies for differentiation, they need to take a holistic view and understand the fully loaded cost of delivering the strategy.

— *Sustainability.* The extent to which a company acknowledges environmental, social, and governance (ESG) issues is an increasingly important dimension of differentiation. Of the respondents to our 2020 pulse survey on consumer sentiment on sustainability in fashion, 57 percent have made significant changes to their lifestyles to lessen their environmental impact, and more than 60 percent report going out of their way to recycle and to

[1] Mary Hanbury, "Curbside pickup became one of Target's most valuable weapons to compete with Amazon during the pandemic, and it shows no signs of slowing down," *Business Insider India*, May 19, 2021, businessinsider.in; "Can I change my Drive Up or Order Pickup after the order is placed?," Target, help.target.com.

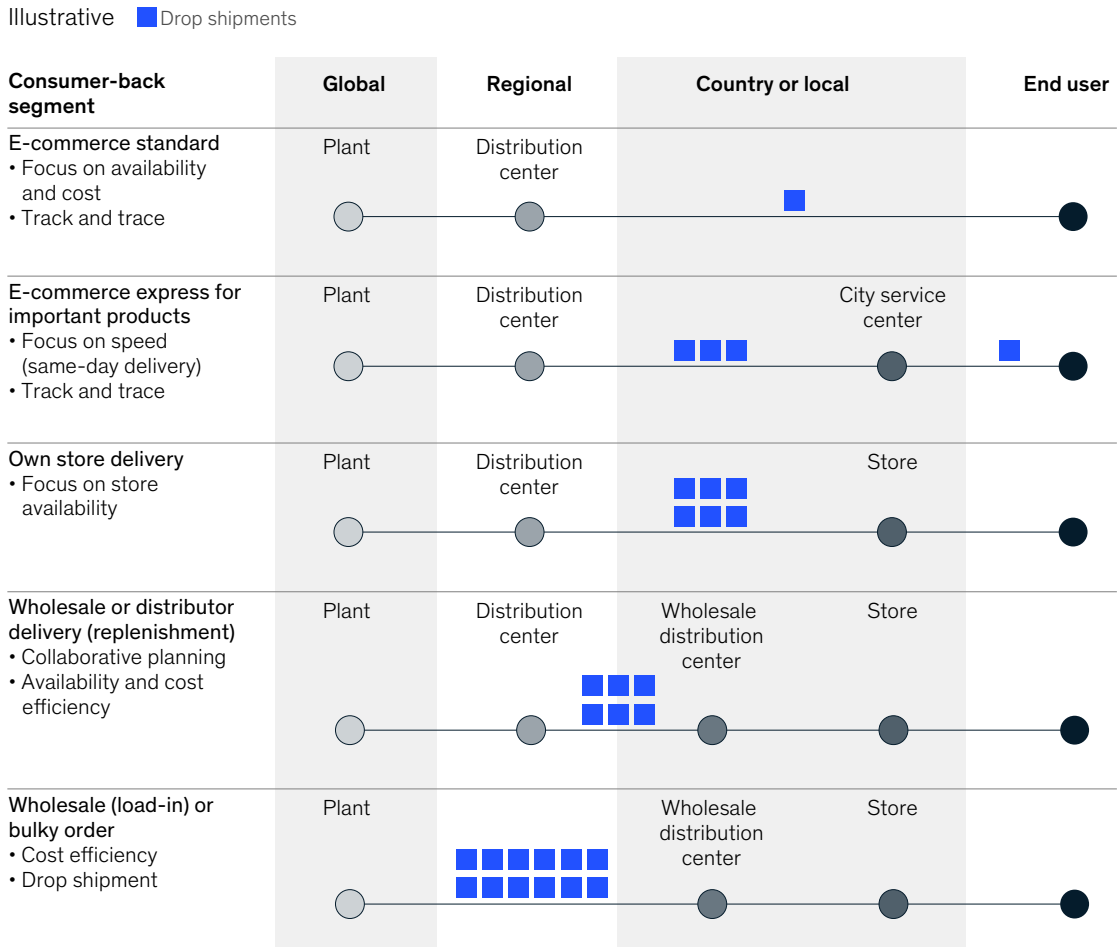
purchase products in environmentally friendly packaging.[2] As consumers increasingly emphasize social and environmental commitments, we are also seeing companies more publicly declare their dedication to ESG issues. Companies can choose to pursue sustainable options for products (for example, glass packaging or multiuse materials) rather than less expensive one-time options (such as nonrecyclable plastic). Similarly, consumer product and retail companies may choose to partner only with sustainable or socially responsible suppliers, even if that increases the cost of goods and demands deeper supply chain tracking.

3. Create a differentiated supply chain strategy

The third and final dimension of this segmented approach for consumer product and retail companies is creating a differentiated supply chain strategy (Exhibit 3). There are four critical enablers to consider:

Exhibit 3

Consumer-back segmentation can be used to shape differentiated supply chains.



[2] Anna Granskog, Libbi Lee, Karl-Hendrik Magnus, and Corinne Sawers, "Survey: Consumer sentiment on sustainability in fashion," July 17, 2020, McKinsey.com.

— *Creating the right network and ecosystem strategy to support the supply chain strategy and necessary inventory flows.* The location of your manufacturers, vendors, and distribution nodes will be critical in enabling a differentiated, multispeed supply chain strategy. For example, ensuring you have the right nodes in the right locations (for example, warehouses, stores, or dark stores) is fundamental to achieving the speed and flexibility you may seek.

— *Developing world-class planning and allocation muscle.* In addition to the right node placement, the right inventory must be allocated to and placed in these nodes based on the segmented inventory product flow. These two enablers must work in tandem to successfully deliver speed, flexibility, and convenience options at the lowest cost for consumers and the company.

— *Enabling omnichannel fulfillment capabilities.* As consumers engage with companies in a more omnichannel manner—such as by buying online and picking up in the store—it is critical for companies to enable the right omnichannel fulfillment capabilities to deliver the right product to the consumer via their desired fulfillment method. In addition, the complexity of fulfilling order profiles—ranging from single units for e-commerce consumers with millions of ship-to locations to full cases or even full pallets for wholesalers and distributors with only a few ship-to locations—requires new capabilities in warehousing and transportation.

— *Integrating the right omnichannel operating model.* Finally, as with all transformations, ensuring the organization is rooted in the right omnichannel operating model is critical. Using apparel as an example, the traditional model separating wholesale and e-commerce business is no longer relevant; consumer product and retail companies need to take a combined, coordinated view to maintain sufficient fluidity and visibility across channels and throughout the business.

Consumer expectations have changed dramatically. To succeed in the omnichannel world, the conventional one-size-fits-all method will no longer be sufficient. Consumer product and retail companies first need to define what their consumers are looking for and align on a clear vision for serving them through a differentiated strategy. Only after doing a data-backed exercise to define these service models and trade-offs can they reap the full benefit of building and optimizing a differentiated, omnichannel supply chain.

Joyce Chai is an associate partner in McKinsey's San Francisco office; **Aniket Joglekar** is an associate partner in the Chicago office, where **Kumar Venkataraman** is a partner; and **Tim Lange** is a partner in the Cologne office.

Key principles of designing the omnichannel distribution network of the future

As omnichannel shopping becomes the new norm, consumer product and retail companies must be ready to deliver fast, impeccable omnichannel service. Doing so requires a new supply chain network approach.

This article is a collaborative effort by Manik Aryapadi, Sabine Becker, Wolfgang Fleischer, Prabh Gill, Antonio Gonzalo, and Tim Lange, representing views from McKinsey's Consumer & Retail Practice.

The consumer product and retail landscape continues to evolve as companies race to catch up with leading e-tailers. Traditional brick-and-mortar retailers such as Macy's, Nordstrom, and Walmart are expanding their online offerings and introducing new models, including in-store fulfillment of online orders. Online players such as Amazon and Zalando are opening their own brick-and-mortar stores. Vertically integrated players such as Bose, Burberry, and Nike[1] are strongly pushing their direct-to-consumer business through both online and new physical stores. And players of all kinds are complementing their physical stores and e-commerce offerings with innovative applications and social media to mount a truly omnichannel presence.

With all the difficulties and uncertainties that the COVID-19 pandemic has brought for retailers and consumer product companies, the crisis has also accelerated a preexisting trend toward omnichannel. Online sales have increased significantly across many product categories, and many consumers have tried out new shopping behaviors since the onset of the pandemic.[2] For example, more than one-third of Americans have made omnichannel behaviors—such as buying online for in-store pickup—part of their regular shopping routine, and nearly two-thirds of those individuals plan to continue these behaviors. While some proportion of the online sales boost may be temporary in some categories, online sales will continue to grow in others. Even as shops start to reopen, omnichannel will remain the norm for some product categories.[3] This new normal has already had significant benefits for those who were prepared and could quickly ramp up their online volumes.[4]

However, many players still struggle with omnichannel given its supply chain requirements, particularly in terms of speed, complexity, and efficiency. Consumers expect to be able to receive their products anytime and anywhere—and with a minimal lag between order and delivery, as well as with a high level of convenience. Traditional supply chain networks are often not built for same-day delivery with excellent service. This is an issue in this era of fierce competition; Amazon continually redefines delivery standards, for example.

Companies that can rise to these challenges, however, are already reaping significant benefits: our research shows that consumer experience leaders are more resilient during recessionary periods, experiencing shallower troughs and quicker recoveries.[5]

In this article, we focus on the network and ecosystem of the future, and describe the principles that can guide companies' approaches to omnichannel network design in an increasingly complex environment.

The current e-commerce landscape

While apparel trails industries such as electronics and sporting goods in e-commerce penetration, the number of people shopping for clothes and shoes online has risen in response to the pandemic. This shift to online is true across regions. From 2018 to 2020, for example, online apparel purchases grew at a CAGR of 31 percent in Eastern Europe and 15 percent in Southern and Western Europe. In the United States, online apparel sales grew 13.5 percent in 2020, while the total apparel market actually declined by 23.0 percent. Online sales in 2020, therefore, made up more than one-third of all

[1] Cara Salpini, "How Nike is using DTC and data to expand its empire," Retail Dive, March 23, 2021, retaildive.com.
[2] Tamara Charm, Anne Grimmelt, Hyunjin Kim, Nancy Lu, Mayank, Mianne Ortega, Yvonne Staack, and Naomi Yamakawa, "Consumer sentiment and behavior continue to reflect the uncertainty of the COVID-19 crisis," October 26, 2020, McKinsey.com.
[3] Praveen Adhi, Eric Hazan, Sajal Kohli, and Kelsey Robinson, "Omnichannel shopping in 2030," April 9, 2021, McKinsey.com.
[4] Holly Briedis, Brian Gregg, Kevin Heidenreich, and Wei Wei Liu, "Omnichannel: The path to value," April 30, 2021, McKinsey.com.
[5] Holly Briedis, Anne Kronschnabl, Alex Rodriguez, and Kelly Ungerman, "Adapting to the next normal in retail: The customer experience imperative," May 14, 2020, McKinsey.com.

Traditional supply chain networks are often not built for same-day delivery with excellent service.

apparel sales.[6] In China, total online retail spending grew 18.5 percent in 2020, with 27.3 percent of retail sales taking place online.[7]

Companies of all kinds, not only in apparel, are racing to meet consumer needs. This includes, as we have already seen, paying close attention to their existing supply chains. In particular, e-commerce fulfillment is much more complex than traditional brick-and-mortar or wholesaler fulfillment. When consumers can order 24/7, demand is less predictable and more difficult to shape. Order sizes are significantly lower, and the number of products offered continuously rises.

The increase in speed and complexity drives up fulfillment costs. In our experience, an online order's cost per unit can easily be four to five times higher than traditional brick-and-mortar replenishment order and ten times higher than fulfillment of an order to wholesaler DC. All the while, consumers demand a seamless omnichannel journey.

Building out the omnichannel experience can result in huge value for retailers, e-tailers, and vertically integrated players with direct-to-consumer business; our research has found that consumers shopping online tend to buy more, and consumers who pick up online orders in stores often make additional in-store purchases.[8] With the seven building blocks of a successful omnichannel supply chain in mind, the following principles should be top of mind while working to build the network and ecosystem of the future.

Put the customer's needs first

To start, companies need to adopt a granular perspective on what the consumer really wants, today and in the future. This understanding will inform which channels to serve, which products and services to offer, and where to offer them. For example, a young adult living in a large city, such as London or New York, wants to purchase and receive a newly launched sneaker that a celebrity presented on Instagram that same day. However, the consumer does not know where she will be in a few hours, so it is important that she can track the delivery and reroute it at any time. If, for example, she goes to a café, the shoes are rerouted (via an app) to be delivered there.

Developing this detailed understanding of consumers requires harnessing consumer data. This information should be combined with consumer-behavior insights culled from consumer interviews, observations, and the latest research

[6] April Berthene, "Ecommerce is more than a third of all apparel sales," Digital Commerce 360, July 23, 2019, digitalcommerce360.com.
[7] Euromonitor International Retailing and Apparel 2021 editions.
[8] "Employment situation summary," Bureau of Labor Statistics, October 4, 2019, bls.gov.

from market experts, as well as analyses of competitors' e-commerce offerings. Advanced analytics can be used to process all this information and gain a clear understanding of consumer expectations.

In addition to understanding the consumer today, companies must also look to the future and stay flexible as the market rapidly changes. For example, while next-day service was novel just a few years ago, it is common today. How future incumbents and disrupters will shape the market is still unknown. As such, serving the consumer of the future requires unprecedented agility and the ability to quickly adapt to changing consumer expectations.

Forget one size fits all

A deep understanding of consumer desires should be the foundation of defining the strategy and building various consumer segments based on preferences, product categories, and locations.[9] This segmentation recognizes that a one-size-fits-all approach is a waste of resources. A segmented approach enables the company to prioritize specific services for each consumer group—for example, which speed of delivery to offer for each segment and which differentiated services to offer or not. While the London consumer may expect same-hour service, consumers living in remote areas might not mind waiting a few days. Developing this understanding to undergird the strategy is crucial to avoid common mistakes, such as offering convenience at a premium to consumers who care more about price, or defining offerings that quickly become outdated.[10]

Be fast and collaborative

In the traditional supply chain model, companies often choose a purely quantitative approach to model the perfect fulfillment network needed for the service offering. This generally involves a rather rigid and time-consuming approach: three months of data collection, six months of modeling, and three months of decision making before implementation. This traditional approach leads to a onetime strategy and long implementation times. However, in an ever-volatile environment with constantly changing consumer needs, evolving partnerships, and newly developing competition, reacting quickly is critical to ensure that the supply chain network is responsive, flexible, and efficient.

Therefore, companies should remain agile in their thinking and assemble a cross-functional team. One best practice is to develop the future supply chain network in a workshop-based environment. In practice, this means determining the fulfillment options suitable for each consumer, product, and location segment and defining the required product flow. Starting with the segment that has the most demanding lead time, the best fulfillment option needs to be found for each segment while considering operational needs, such as costs to serve and volume constraints. Once a solution for each segment in each location is defined, it must all be combined into one comprehensive service network.

Seek partnerships and share resources

In an ever-volatile environment, speed of implementation and efficient use of resources are crucial. Therefore, it is necessary to take advantage

[9] Raj Kumar, Tim Lange, and Patrik Silén, "Building omnichannel excellence," April 21, 2017, McKinsey.com.
[10] "Into the fast lane," 2021.

Rising consumer expectations for faster delivery have triggered the development of more innovative fulfillment options.

of existing infrastructure, such as warehouses and retail stores, as well as resources available in the market. Leading companies are actively seeking partnerships, not only along their own value chain but also with players from other industries. Sharing infrastructure brings synergies—costs and risk are split, for example—and enables better consumer service and faster delivery times. For instance, a player operating department stores may offer in-store pickup services to e-commerce companies, and e-commerce companies can offer online order fulfillment to department stores. The partners would establish commercial terms for compensation, such as sharing the margin. Connected inventory is another example of using existing partner resources, enabling players to offer products that are already close to the consumer rather than putting additional inventory into the market. This can increase the availability of certain products with minimal effort from the retailer.

Look for innovative fulfillment options

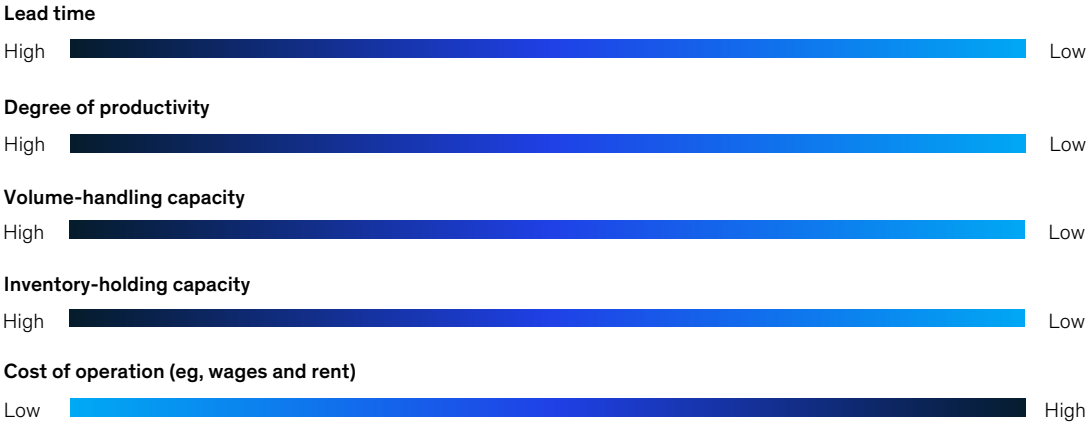
When identifying existing assets within a company and its partners' networks, it is important to consider innovative fulfillment options. The types of fulfillment options a player regards as suitable depend on the specificities of the market and the company, but consumer orders can be fulfilled in a variety of ways. Shipping products from a warehouse or distribution center is the most traditional and cost-efficient way. Warehouses typically have a higher level of automation, handle significant volumes, and seek locations that incur low operating costs, such as rural areas or industrial areas outside of large cities.

However, rising consumer expectations for faster delivery have triggered the development of more innovative fulfillment options. Thus, one should consider that products can also be shipped directly from the production facility or from "dark stores"—miniwarehouses that are not consumer facing, usually within a city, where products are stored, picked, and shipped directly to consumers. Pop-up nodes are another option; for example, a container placed at a major sports event—or a truck, van, or bike driving around a city, holding inventory and delivering products to consumers who order via an app. Products could also be manufactured right where the consumer is—for example, with 3-D printing techniques. The main advantage of these fulfillment options is proximity to the consumer; however, operations are less efficient and more costly, and they require additional capabilities. Indeed, retailers have several elements to weigh when considering the variety of fulfillment options available to them (exhibit).

Exhibit

The omnichannel supply chain of the future has seven key elements that combine best practices with digital innovation.

Ship from factory	Ship inventory in transit	Ship from warehouse or distribution center	Ship from dark store	Ship from retail store	Ship from pop-up node	Consumer
Offshore factory Nearshore factory		Central distribution center (DC) operated by retailer Decentral DC operated by retailer or third-party logistics Decentral DC operated by partner Decentral DC operated by wholesale partner		Ship from own store Ship from partner's store Ship from wholesale partner's store	Mobile node Temporary node Market production 3-D printing	Returns utilization
Shipment from factory or production facility in offshore or nearshore country Typically located in low-cost countries	Products shipped to destination based on specific customer order or demand sensing	Shipment from warehouse or distribution center Operated internally, by partner, wholesaler, or third-party logistics provider	Shipment from noncustomer-facing miniwarehouse—small scale, not automated Located in or close to a city or densely populated area	Shipment from retail stores using back-of-house or in-store inventory Fulfilling walk-in customer purchases Can be own stores, partner stores, or wholesaler stores	Shipment from nonstandardized node, used on as-needed basis (eg, special events) Examples: truck, van, bike, etc carrying a low quantity of products that shoppers order via app; temporary DC with a plug-and-play concept	Customer returns used to fulfill new orders



Regardless of how the omnichannel distribution network looks, it is important to stay flexible and adjust to any road-map changes.

Think early about new capabilities and never stop learning

To enable the identified solutions, companies must carefully consider the new capabilities required to run their future networks and understand how to build them. Those capabilities include physical flow—ranging from operating new node types, such as dark stores and pop-up nodes, to managing new transport flows and partners, such as last-mile services. Information-flow capabilities—such as planning demand and inventory, stock visibility in the decentral node network, and distributed order management—should also be implemented.[11] For example, a new fulfillment solution such as shipping from a dark store requires new operational processes and systems to run a small-scale node efficiently and an agile and efficient structure that supplies it with small quantities at a high frequency. In addition, the planning landscape needed to have the right inventory in the dark store requires new capabilities, such as demand sensing, dynamic supply allocation, and capacity planning at each location. Finally, the dark store requires real-time and accurate inventory visibility, combined with a distributed order-management system that makes the stock available and accessible.

This connected fulfillment network should be deployed along an agile road map to enable quick testing and learning of different node types that include capabilities in various locations, rather than the traditional approach that initiates only when all node types and capabilities are fully developed. Building these required capabilities should also be planned in modular sequence. Regardless of how the omnichannel distribution network looks, it is important to stay flexible and adjust to any road-map changes, such as an increase in consumer requirements or new logistics service offerings— for example, delivery solutions for fast last-mile delivery. Testing, learning, and adjusting quickly should be the credo. (For two examples of retailers that found success in building a network and ecosystem of the future, see sidebar, “Case studies: Two global brands find omnichannel success.”)

Enabling a truly end-to-end omnichannel experience requires a new way of thinking about the supply chain. The supply chain needs to be readjusted based on changing market conditions, and players should pursue an agile approach that enables them to adjust quickly to changing trends, options, and consumer expectations. These principles can help determine the approach to building the network and ecosystem of the future.

[11] “Into the fast lane,” 2021.

Case studies: Two global brands find omnichannel success

One global brand was becoming a strong omnichannel player and serving its own retail stores, wholesale stores, and e-commerce consumers alike. Due to strong past growth—which jumped to 30 percent during the COVID-19 crisis—it was necessary to rethink the entire supply chain and work in cross-functional teams to define an omnichannel strategy of the future.

The company first conducted intensive market research, including interviews with consumers, store visits, and competitive analyses to understand consumer expectations of omnichannel shopping and delivery. Consumer segments were defined and tied with specific services and delivery times.

The company then defined the supply chain network to serve the consumer segments. The company used its existing infrastructure, and that of its partners, to integrate traditional fulfillment options, such as central and decentral warehouse shipping. At the same time, it was important to be very close to the consumer and replenish retail stores quickly, which is why the solution included innovative fulfillment options such as shipping from a dark store, retail store, or temporary node. The fulfillment network consisted of various individual solutions per location; for example, the company identified a partner e-tailer with spare room for additional inventory in a warehouse close to major cities in Germany, whereas in Southern Europe it was necessary to establish a partnership with a department store and use its wider network of warehouses and stores.

The key to success was going beyond modeling and quantitative analysis to involve a cross-functional team that made sure all relevant elements were considered. For example, marketing ensured that consumer expectations were always prioritized, the supply chain team assessed operational feasibility of fulfillment options, the logistics team played devil's advocate on transportation costs, and the commercial team expanded the partner network.

The implementation road map was built in an agile way to allow for fast testing and learning. Individual elements could be piloted and evaluated quickly to decide if a fulfillment option should be scaled or taken off the solution space.

A different global brand has set an ambituous plan to increase e-commerce sales fivefold from 2020 to 2025. It is experiencing significant capacity shortages across its fulfillment network— a result of overall growth and e-commerce growth, which has increased the warehouse capacity needs rather than traditional bulk shipments to wholesale customers and retail stores). It responded by building its first central omnichannel warehouse but quickly realized that additional measures would be needed to cover the volume and deliver on increased lead-time requirements for e-commerce.

The company decided to change course—instead of adding one warehouse at a time to fill holes, it thought about its future fulfillment network more holistically. First, it launched a long-term business forecast exercise. To plan the business needs for the long term, business owners were interviewed and invited to prepare plans for each channel: in wholesale, per main account together with key account managers; in retail, on a store level; and in e-commerce, for online and major marketplaces. These plans included net sales and average selling price forecasts translated into volumes, as well as any changes in order behavior (for example, greater reorder share and consumer requirements, such as lead times and value-added services). The company substantiated its internal view with consumer interviews and competitive analysis to understand consumer expectations.

Next, these long-term plans were translated into requirements for the fulfillment network by the operations team. This meant defining capacity needs for storage, outbound volumes, and returns, including seasonality and stock-turnover assumptions. It evaluated network flows in form of origins and destinations and made decisions on which service levels to offer.

The company supplemented what it learned by developing archetypes of possible network structures—for example, more central rather than decentral setups, and more omnichannel rather than single-channel setups. These took into consideration competitor intelligence and industry trends as well as existing warehouses. Next, these archetypes were modeled in more detail to understand cost implications as well as service levels that could be achieved. With this, the company developed a concrete road map for building out its network to fulfill its volume growth in the next five years.

Manik Aryapadi is a partner in McKinsey's Dallas office, **Sabine Becker** is an associate partner in the Zurich office, **Wolfgang Fleischer** is a consultant in the Munich office, **Prabh Gill** is an associate partner in the Vancouver office, **Antonio Gonzalo** is a partner in the Frankfurt office, and **Tim Lange** is a partner in the Cologne office.

Better service with connected inventory

It is not just the consumer experience that manufacturers and consumer product companies enhance by extending their reach to the entirety of stocks in the market.

by Manik Aryapadi, Tim Lange, and Karl-Hendrik Magnus

Consumers are very familiar with the scenario: the T-shirt they have set their heart on is no longer available in their local store or their preferred online shop. Or it can't be delivered on time. The consumer could of course go to another retailer, brand store, or online shop. But that is often a time-consuming option or at least inconvenient. In the end the consumer buys another product—or none at all.

That's unquestionably a frustrating outcome for all parties. At best, the consumer experience is tarnished, and in the worst case, the consumer is lost. Wouldn't it be great to have direct access to all inventories available in the market—regardless of what company is stocking them? In fact, available stock levels are typically perfectly sufficient, but they are distributed among a growing number of network nodes: at retailers, at vertically integrated companies with direct-to-consumer business, at e-tailers and wholesalers, in stores, in warehouses, or in transit (Exhibit 1).

In response, some companies are beginning to connect their inventory. This rarely leads to mutual assistance between direct competitors. Therefore it is unlikely to soon see a store of a sports goods retailer providing FC Barcelona soccer jerseys to a neighboring department store with sold-out stock. But why shouldn't the department store place orders directly with an outlet or warehouse of the respective sports article manufacturer? After all, it is in its interest to offer an outstanding consumer experience, irrespective of the sales channel.

Everybody benefits

When two or more companies systematically share their inventory, they essentially construct a network of fulfillment nodes and form a pool of stocks that is larger than what each individual partner had previously. As a result, customers get a better buying experience, but the companies involved also benefit directly.

Not only do connected inventories increase the availability of individual products, they also broaden the product range. Delivery times decrease, too, as goods can be dispatched from multiple points close to customers. Ideally, transport costs thus decrease as well. There are also further benefits for consumers. Any outlet or boutique operated by the partner companies directly or by franchisees can serve as a potential pickup point. That gives more options to buyers, who can lower their environmental impact by picking up their goods at the nearest store rather than having them sent home.

The two greatest benefits for companies are self-evident. First: by connecting their stocks, companies can interlink consumer journeys in online and off-line channels and thereby increase their chances of winning new customers and holding on to existing ones. Second: the improved availability of products, the faster delivery, and the better consumer experience enhance the overall likelihood of making a sale.

Other merits: Thanks to the linked consumer journeys, the partners can now also collect more information about their customers. Participating companies can offer faster delivery times without having to increase the volume of stocks in the market. In addition, the optimization of inventory levels across the entire network avoids excess stocks. That results in a higher sell-through at full price, which means less discounts and inventory markdowns at the end of the season. In turn, working capital is kept low and the overall costs across the supply chain decrease.

Five networking models

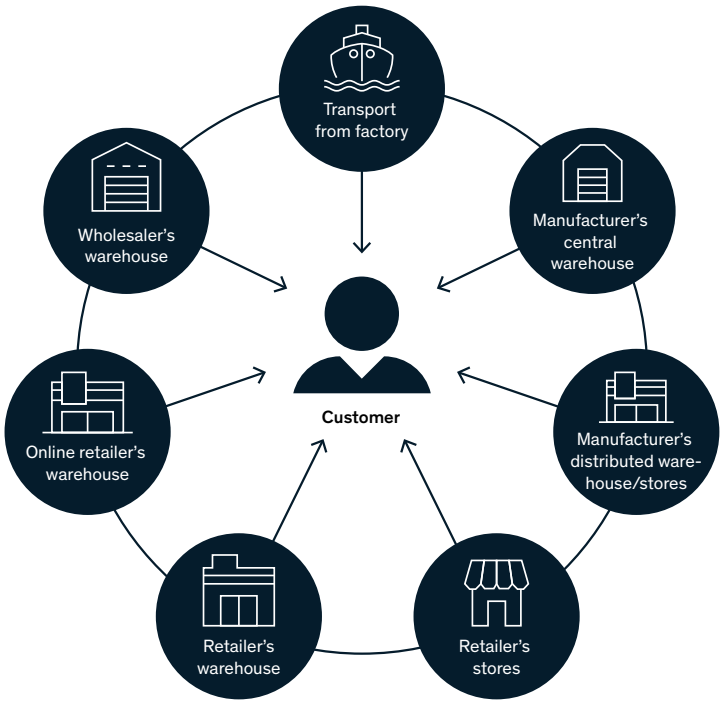
But just how complex is cooperation? Who owns the goods? Who gets what commission when? Or in short: how does connected inventory work in practice?

Inventories can in fact be linked up in a variety of ways. The simplest model involves shedding transparency on intracompany inventories, assuming they are not transparent already. With transparency in place, the mildest form of connected inventory between two companies is a unilateral partnership: the manufacturer assists retailers

Exhibit 1

Goods are distributed to end customers over a growing number of network nodes.

Inventory nodes of retailers and manufacturers



faced with out-of-stock articles by delivering the items ordered. Such partnership arrangements can be extended to provide retailers access to products that they do not normally stock (along the lines of an "endless aisle" concept). More complex, but also more advantageous, are bilateral partnership arrangements in which both partners get access to their respective inventory. Ideally, what results is a virtual inventory pooling several retailers and manufacturers. Such a pooling model allows, for instance, a retailer in Frankfurt to transact a jeans order by a consumer in Cologne through a partner retailer that delivers the jeans from the inventory it holds in its Cologne warehouse (Exhibit 2).

Underpinning the commercial basis of these models are several sales concepts. These concepts are marked by specific ownership structures.

- *Commission model.* The stocks are owned by the company that manages them and that can handle fulfillment. This company processes the order and pays commission to the partner company that concludes the business, whether online or in a brick-and-mortar store.
- *Repurchase model.* Ownership of the inventory is transferred from the party that manages it when it is sold to the party that transacts the sale to the consumer. Commission is paid as compensation to the party that originally managed the inventory.
- *Joint venture model.* The stock is owned by a joint venture founded by the partners seeking to network inventory. In this model, the partners jointly bear the risks and share the benefits, which makes the model particularly appealing.

Determinants of success: From incentive systems to delivery slips

Regardless of the model that the partners choose: building a connected inventory concept inevitably requires new solutions in sales, the supply chain, and IT that are by no means simple. Furthermore, it is important that all parties have sufficient incentives to keep goods in stock. Otherwise, the natural tendency is to keep one's own inventory as low as possible in a bid to lower the risk of excess stocks. In addition, it has to be clear who owns the stocks in the pool—specifically, who owns the stocks in which phase of the fulfillment process and at what points ownership—and the associated risk—is transferred to another partner.

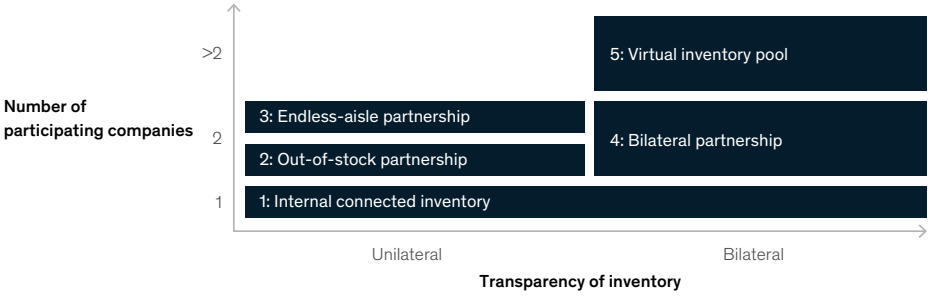
Transparency is also key to success. It has to be clear at all times which product is where and in what quantity. This requires a distributed order management system capable of interlinking the various nodes in the network and instantly determining the optimal dispatch point. Furthermore, to have the right quantity of the right product in the right place, integrated planning that factors in the inventory levels and forecasts of all partners is also needed.

The location of inventory in the market can also have legal and tax implications (e.g., import duties). Consequently, an advanced assessment should be conducted to determine the extent to which a

Exhibit 2

Inventory can be interlinked in a variety of ways.

Connected inventory models



1: Internal connected inventory
A company connects the inventory in its central warehouse together with its local distribution centers and stores. When a customer orders a product online, the most efficient dispatch point measured by time and cost is selected or a store is suggested for personal pickup by the customer. Sales clerks in stores can also check at a click if a sold-out product is available elsewhere.

2: Out-of-stock partnership
Manufacturers and retailers reciprocally disclose their respective stocks of products that the retailer regularly sources from the manufacturer. If the product is out of stock at the retailer, the customer can still complete the purchase because the manufacturer can send the article directly.

4: Bilateral partnership
Manufacturers and retailers reciprocally make their inventory transparent so that they can take care of each other's fulfillment as needed. When a customer places an order in a partner's online shop, the product is sent from the best possible distribution point.

3: Endless-aisle partnership
In the endless aisle model, the manufacturer provides the retailer virtual access to its entire inventory, including products that the retailer does not have in its product range. The retailer can thus offer an extended product range in its online shop that is then directly handled by the manufacturer.

5: Virtual inventory pool
Several retailers and manufacturers connect their inventories. The pooled inventory is held by a neutral entity (eg, a joint venture) to which every partner has access. A customer order is always fulfilled from the best possible distribution point.

specific networking model might be restricted by antitrust law in one or several jurisdictions. In addition, the partners should enter into clear agreements in order to offer customers a seamless consumer experience—regardless of which company executes the order. The partners need to align an array of details, such as their delivery and gift packaging, delivery slips, or conditions for returning goods.

Success stories in other sectors

The associated complexity of requirements is most certainly one reason why the concept of connected inventory is only just beginning to take root—although there are already some high-profile initiatives (Exhibit 3). Other sectors have made far more progress in this regard.

Take the aerospace industry, for example, where one supplier of replacement parts has set up a program for sharing inventory. Aircrafts have expensive replacements parts that nevertheless have to be available everywhere and at all times to enable fast repairs. The planning system ensures the best-possible warehousing of parts by drawing on linked forecasts of requirements. Everybody benefits from the program: The replacement parts supplier can hold on to its inventory and also gain access to the stocks of participating airlines. The latter can then source replacement parts directly from the supplier but also generate revenue from their own inventory by selling it to partner airlines. In addition, the cooperation arrangement allows the airlines to adjust their inventory programs to ensure the local availability of parts while avoiding excess inventory.

Similar initiatives in retail seem only a matter of time—particularly as the same-day or even hourly delivery pervasive in online retail is setting a pace that can likely only be maintained with the backing of powerful partnerships. Against this backdrop, connected inventory can make a substantial contribution toward improving product availability and the consumer experience while reining in costs and capital intensity.

Exhibit 3

Connected inventory is still the exception in retail—although there are prominent early adopters.

Amazon, Procter & Gamble	As early as 2013, Amazon and Procter & Gamble (P&G) joined forces to sell products, such as diapers and toilet paper directly from P&G's warehouses, where Amazon set up on-site distribution centers to deliver goods directly to customers.
Zalando, adidas	In 2015, Zalando and adidas launched a pilot project in which one of adidas' distribution centers was linked up to Zalando's inventory system. As a result, not only do Zalando's customers have access to a larger offering of adidas products, but adidas can fulfill orders of products that Zalando no longer has in stock.
L'Oréal	The cosmetics company L'Oréal offers its customers the option of checking whether a product is available at an online retailer. If so, customers are directed to the corresponding web shop to make their purchase directly.
YOOX NET-A-PORTER, Valentino	In 2017, online fashion retailer YOOX NET-A-PORTER (YNAP) and the luxury label Valentino unveiled their Next Era program, which provides customers access to both Valentino and YNAP products on a shared platform. The program is also intended to allow both companies to reciprocally use each other's logistics infrastructure spanning central warehouses, fulfillment centers, and boutiques.

Source: Fox; L'Oréal; The Street; YOOX NET-A-PORTER; Zalando

Key statements

— The first retailers and vertically integrated players with direct-to-consumer business are beginning to intelligently connect their inventories in the marketplace

— Everybody involved, including consumers, benefits from the advantages of connected inventory: greater availability and faster delivery of goods, greater delivery convenience, and lower environmental impact.

— Retailers and vertically integrated players that enter into corresponding partnership arrangements attract more customers, secure higher conversion rates, and benefit from an array of additional advantages.

Manik Aryapadi is a partner in McKinsey's Dallas office, **Tim Lange** is a partner in the Cologne office, and **Karl-Hendrik Magnus** is a senior partner in the Frankfurt office.

Reimagining the role of physical stores in an omnichannel distribution network

Online is here to stay, but physical stores can—and should—play an important role in omnichannel distribution networks of retailers and vertically integrated brands.

This article is a collaborative effort by Praveen Adhi, Sebastien Calais, Gerry Hough, Tim Lange, and Caroline Lenzen, representing views from McKinsey's Consumer & Retail Practice.

Economies around the world are still recovering from the COVID-19 crisis, and businesses are beginning to disentangle long-term trends from pandemic-specific shifts. Retailers and vertically integrated brands are not exempt from this process. Amid the steady rise of e-commerce and changing consumer behaviors and expectations, many retailers are beginning to consider the future role of their brick-and-mortar stores.

Consumer data show that in-store shopping is here to stay, but it will function differently than in the past and will require new mindsets and capabilities. Especially through offering online-to-offline (O2O) services as well as acting as strategic assets in the race for same-day delivery,[1] physical stores should play an important role in the future network of an omnichannel player. This integration can happen in many ways, but we see three broad archetypes: stores can maintain their current layouts, fully transform into dark stores,[2] or become a hybrid of the two. When choosing among these archetypes, companies will have to consider a broad range of questions across consumer, infrastructure, and store operations, accompanied by rethinking economics.

While the purpose and layout of brick-and-mortar stores will vary from one company to the next, four universal steps will help retailers and vertically integrated brands begin the process of optimizing their physical footprint. They should get up to speed on market and consumer trends, assess their in-store capability gaps, and start small while also planning for a longer-term, holistic transformation journey. Omnichannel players that can do this successfully will be well placed to thrive in, or even shape, the fast-evolving consumer environment.

Physical store sales during the pandemic

Even before the pandemic, e-commerce had been on the rise for several years. The global health crisis not only accelerated this process but also showed that online sales are likely here to stay. By April 2021, more than a year after the start of the pandemic, total retail trade had nearly reached its pre-COVID-19 level, but the share by channel had shifted; online orders (internet and mail) were 28 percent greater than they had been before the pandemic.[3] Depending on the shopping category, the percentage of consumers who purchase most or all products online has grown by 45 to 100 percent during the pandemic.[4] Even as consumers go back to physical stores, online penetration was about 30 percent higher in August 2021 than pre-COVID-19.[5]

This does not spell the end of in-store shopping, however. The benefits of physical stores go beyond their share of sales. With about 60 to 70 percent of consumers across categories researching and shopping both in stores and online, omnichannel shopping is clearly ascendant.[6] Looking at overall brick-and-mortar store sales trends solely by channel ignores the role physical stores may play in the consumer journey of omnichannel shoppers who go on to purchase through another channel.

When asked about the role of physical stores, senior executives from ten of the largest North American retailers reported that during the pandemic they had seen significantly higher e-commerce growth in sales areas with a physical presence compared with those without any brick-and-mortar stores.[7] In particular, brand presence has a significant halo effect on e-commerce sales.

[1] Manyika Aryapadi, Tim Ecker, and Julia Spielvogel, "A retailer's guide to successfully navigating the race for same-day delivery," in *Future of retail operations: Winning in a digital era*, McKinsey, January 2020, pp. 31–7, McKinsey.com.
[2] A dark store is an urban hub that is closed to consumers and that has a layout optimized for preparing online orders.
[3] "Development of retail trade volume," Eurostat, April 2021, ec.europa.eu.
[4] McKinsey & Company COVID-19 US Consumer Pulse Survey, August 19–23, 2020, McKinsey.com.
[5] Tamara Charm, Janette Hwang, Jackie Laird, Andrea Leon, Nancy Lu, Anirvan Maiti, Jason Rico Saavedra, Kelsey Robinson, Daniela Sancho Mazzara, and Tom Skiles, "US consumer sentiment and behaviors during the coronavirus crisis," October 18, 2021, McKinsey.com.
[6] Ibid.
[7] McKinsey hosted a roundtable on June 11, 2021. Attendees were senior executives from ten North American retailers, representing a combined annual revenue of more than $100 billion.

Defining the future role of the physical store in an omnichannel network

Given this shift in consumer behavior, retailers and vertically integrated brands need to take a holistic view of the benefits of having a physical presence. Online and offline channels are no longer substitutes or competitors. Instead, they are increasingly complementary; online channels provide convenience to consumers, but offline channels offer important opportunities for consumer engagement, brand building, and pickup.

Clearly, physical stores still have a crucial role to play in omnichannel networks. However, the optimal configuration will be unique to each player and environment.

Omnichannel players can choose from three main approaches when reconfiguring their stores (Exhibit 1). Archetype 1 retains the current layout of the physical store, with online picking and pickup services layered on top. Archetype 2 repurposes a portion of the floor layout for order pickup. Finally, archetype 3 involves a full transformation of the retail space into a dark store.

Planning the store transformation along three key dimensions

When deciding among the three broad archetypes—and making more detailed decisions about layout and omnichannel supply chain integration—players should consider a number of questions along three key dimensions: consumer, infrastructure, and store operations, accompanied by a fundamental shift in the players' economic mindset.

1. Consumer

The optimal archetype choice will depend on how omnichannel players address consumer behaviors and preferences around both online orders and in-store experience.

What consumers are buying—and how: The physical size and weight of individual items and overall orders will be an important determinant of overall store layout. Unlike cosmetics and groceries, for example, big and heavy products such as furniture or sporting equipment would not be compatible with archetype 1 or even archetype 2 stores, where the infrastructure would not be able to accommodate the order-preparation logistics of these bulky items. Players that sell furniture, for example, should expect to do more delivery and might therefore consider having a small number of archetype 1 showrooms and a number of archetype 3 dark stores to optimize the order-dispatching process.

Consumer order preferences also require analysis. We see two main factors to consider: the number of daily orders to be processed at the focal store and the average number of items per consumer basket. For example, retailers whose consumer

Clearly, physical stores still have a crucial role to play in omnichannel networks. However, the optimal configuration will be unique to each player and environment.

Exhibit 1

Retailers can choose from three archetypes when integrating their physical stores into an omnichannel network.

Archetype 1
Retains the current layout of the physical store, with online picking and pickup services layered on top

Archetype 2
Repurposes a portion of the floor layout for order pickup

Archetype 3
Involves a full transformation of the retail space into a dark store

baskets are heterogeneous in size and weight of items—such as home and garden stores or generalist sport retailers—would need to complete a detailed analysis to ensure a few products are not jeopardizing overall experience and profitability.

Consumer experience inside the store: Managing consumer experience in archetype 1 stores can be challenging. Having just one queue to serve both offline consumers and those who buy online for pick up in store or return their online orders will inevitably lead to longer wait times for both, risking undercutting consumer satisfaction. The shopping experience of traditional walk-in consumers can also be negatively affected by the "warehouse feeling" of sharing the aisles with picking staff. Two ways to avoid or minimize this clash are shifting picking activities to before store openings or quiet footfall periods, and sending more orders to stores with lower in-store sales. Retailers and vertically integrated brands should be aware of a tipping point—as measured by benefits to both online efficiency and in-store consumer experience—to transition to an archetype 2 store that caters to online and offline consumers separately. Many factors contribute to the consumer experience, including store size, layout, average online-order basket size, and consumer in-store expectations. Players need to find creative ways to understand how these factors play out in their stores. For example, a mystery-shopping exercise can help retailers see their stores from the consumer's perspective.

Target last-mile delivery speed: Maximum delivery speed depends on the proximity of stores to consumers and the availability of last-mile delivery infrastructure. Consumer expectations of delivery speed may vary by location, which will affect the optimal archetype of any store. In rural areas, for example, consumers may be more accustomed to waiting longer for deliveries and traveling to one central location to fulfill all of their shopping needs. In this case, the ideal scenario may be an archetype 2 store in a shopping center with good traffic connections. This location creates a convenient and stress-free journey for consumers who want to shop in store while allowing the retailer to optimize parts of the store layout for order picking. In urban areas, where shoppers may expect delivery in less than 24 hours, it can be beneficial to choose an archetype 3 store optimized for fast order picking and dispatching. Understanding where speed matters will pave the way for a segmented approach regarding delivery-speed promises and solves the speed dilemma of ever-faster omnichannel order fulfillment.

Players can ask themselves the following questions about consumer journey and experience:

- How can we keep omnichannel processes from disrupting the shopping experience for consumers in the store? Can it be done within the existing layout, or does there need to be a degree of physical separation?
- What are the priorities of our online and offline consumers? Are they contradictory, or can we cater to both at the same time? How can we make the in-store experience feel like a continuation of online or mobile, and vice versa?
- What are consumer expectations regarding last-mile delivery speed? Do they expect to receive their products immediately, or might they accept delivery times of more than a day? What role does delivery pricing play here, such as price differentiation between next-day and same-day delivery?

2. Infrastructure

The choice of archetype for any given store will depend on its current overall footprint, store layout, IT capabilities, and financial position.

Density of stores and local last-mile network: Where store density is high, there may be advantages to closing a store completely and transforming it into a dark store (archetype 3). Consumers can switch to a different store with relatively little inconvenience, and the additional dark-store capacity may offer significant benefits. However, retailers should also consider the density of competitors' store networks, as closing a store in an area with a direct competitor can lead to consumer churn.

As an increasing number of retailers aspire to complete the end-to-end click-to-ship delivery in two hours or less, the local fulfillment locations need

to be picked thoughtfully because the drive to the farthest consumer supplied by a given location must not exceed 90 minutes.

However, some retailers may not be able to set up a local last-mile network on their own with given resources, or cannot fulfill deliveries themselves. In this case a strong set of last-mile partners that allow for seamless processes are required to fill the remaining white spots on their distribution map.

Store layout, fixtures, and signage: Not all stores are suitable for each archetype. Companies will need to consider the amenities each store currently offers, as well as the layout and square footage required to provide the level of consumer service for each type of service offering. During the pandemic, for example, forced store shutdowns meant archetype 1 stores could simply use the front registers or main checkout locations of physical stores as online pickup locations. This approach might lead to longer wait times in a postpandemic world, however, necessitating a dedicated and clearly indicated in-store collection-and-return area.

Fast, integrated IT systems and inventory transparency: Archetypes 1 and 2 require highly accurate inventory. Daily stock updates will not be sufficient when online and offline consumers buy from the same stock. Instead, accurate inventory levels must be available in real time to prevent omnichannel players from selling the same product twice. Alternatively, retailers could separate online and offline stock, but this approach would lead to higher stock levels and require additional storage capacity. Another option is segmenting between same-day and next-day store-pickup orders—with the latter picked centrally and shipped to the store overnight with the store deliveries—to reduce the number of orders accessing the store stock.

Some players are also reserving shares of total inventory for offline sales to prevent online purchases from emptying stores, especially during promotions and flash product campaigns. Rewarding physical visits to a store through product availability will be critical to maintaining in-store consumer satisfaction.

Capital availability: Limitations on capital expenditures may be a determining factor in how to integrate the stores into the fulfillment network. For example, archetype 3 might be the best option for a retailer that needs an urban distribution center but has limited available capital.

Retailers can consider the following questions about infrastructure:

- How dense is the current store network, and how are the main competitors in each region positioned? Does the local fulfillment network allow for end-to-end click-to-ship delivery within two hours or less, and do we have a strong set of last-mile partners that allow for seamless processes? Does the store layout allow for in-store click-and-collect points? How much space is needed for omnichannel stock holding?
- Do we have, or are we prepared to develop, the in-store IT systems (such as ordering and inventory management) needed to support omnichannel? If not, do we have space for separate offline and online inventory pools?
- How much capital can we invest in omnichannel?

3. Store operations

The choice of archetype will also depend on assortment size, costs per order, and target delivery speeds.

Assortment size against operational considerations: The larger the online assortment an archetype 1 store offers, the more difficult it is to handle end-to-end fulfillment—from order picking to shipping and returning. In general, archetype 1 stores are only successful with online assortments of less than approximately 1,000 SKUs. Operational inefficiencies can become a significant challenge at higher numbers. But even comparatively small assortments can lead to challenges in areas such as receiving incoming deliveries into the back rooms of stores. In addition, department stores increasingly need to compete with the broader assortments offered by pure-online players such as Alibaba and Amazon. Companies may be able to capture

significant advantages by converting some stores into archetypes 2 or 3.

Costs per order and target delivery speeds: Costs per order tend to be highest for archetype 1 stores. Service employees, who generally have higher wages than logistics staff, have to conduct in-store pickup, and in-store consumer traffic leads to space constraints that prevent optimized store layouts. The average time for archetype 1 order picking can exceed 15 minutes, whereas grocery retailers using archetype 3 sometimes promise a maximum of ten minutes between consumer purchases and order handover. To handle this shorter window, retailers must be able to complete their order picking in significantly less time. In general, the larger the number of incoming online orders per day—and the larger the number of items per basket—the greater the potential for efficiency savings by switching from archetype 1 to archetype 2 or 3 (see sidebar, "Managing costs per order"). In-store fulfillment is more expensive with regards to pick-and-pack operations than orders fulfilled from distribution centers; on the other hand, costs for returning orders at physical stores are lower compared with the cost to return orders by mail. Therefore, they should never be looked at separately, but jointly as part of the end-to-end omnichannel network design with a clear link to consumer benefits.

Employee upskilling for in-store excellence: Sufficiently trained, equipped, and incentivized store staff is key for seamless in-store fulfillment processes. From order picking on the sales floor to manual order packing and decisions about size and shape of packaging materials, the operation costs are mainly driven by labor wages, stressing the importance of improved productivity and best pick-and-pack processes.

Typical questions on store operations include the following:

- What is the volume for omnichannel fulfillment? How many SKUs need to be available in the online store stock?
- What are the costs per order in each store and for each archetype?
- Are full-time-equivalent workers shared between omnichannel and in-store operations, or do these operations have separate teams? How will roles and store staffing levels need to change to account for omnichannel? What level of training is necessary to optimize store productivity?

Managing costs per order

Many factors contribute to costs, so retailers should analyze costs per order on an individual basis for each store. But in general, average costs per order tend to be significantly lower—typically 1.5 to 2.0 times lower—in a distribution center than in in-store fulfillment, because the layout of a distribution center can be fully optimized and pickup staff do not need to watch out for shoppers in the aisles. For example, an internal cost audit at a North American retailer found that average costs for online-order pickup inside stores was about $2.50 per order versus about $0.90 per order at distribution centers.

Each store thus has its own tipping point at which the savings from moving to archetype 2 or 3 outweigh the costs of doing so. For example, a retailer with stores in Germany found that moving a certain type of store to archetype 3 could save the company money on fulfillment costs if the location was processing more than about 1,800 orders per day. As online orders increase in number, size, and complexity, in-store pickup in an archetype 1 store might be a cost-effective option only for retailers offering high-value, low-volume products, such as luxury consumer products.

Rethinking economics for shifting gears

Omnichannel retailers will need need not only an upgrade of their fulfillment networks, IT systems, and store operations but also a fundamentally different economic mindset for shifting gears. Many cases show that in the beginning, shipment costs may exceed $10 per order, and, while most consumers are not willing to bear these greater costs, for retailers it means operating online sales without profit or even in the red, at least for a period of time. Endurance and persistence combined with clear upside aspiration are crucial to master this holistic transition.

Reimagining the omnichannel in-store shopping experience

The omnichannel players that thrive in the future will be those that create inventive, efficient experiences for their consumers. Players across the globe have already begun to successfully deploy innovative strategies to integrate physical stores into their omnichannel networks.

A holistic transformation of a retailer's store footprint

An international department store recently embarked on a holistic transformation of its store network to offer an optimized post-COVID-19 consumer shopping experience, both online and offline. Store leaders began with an examination of how to restructure their current network, focusing on the potential to use their stores to increase last-mile delivery speed while maintaining in-store consumer experience. As a result of this analysis, the retailer closed down some stores; those with time left on their leases functioned as archetype 3 dark stores in the interim. It then moved to optimize the remaining stores and created a plan to transition from the current footprint to the desired end state. Key steps included identifying the right assortment for online channel stock and improving in-store inventory-forecasting ability.

Optimizing store operations for consumer convenience

A leading European do-it-yourself retailer has started to transform its stores to "trade counters," in which just 10 percent of the store is accessible to consumers and the remaining 90 percent is dedicated warehouse space. The stores are designed so that consumers can come in and retrieve products as fast as possible—the time from online order to pickup is just five minutes for all products in stock. This business model means stock records need to be updated in real time across all channels. Inventory and merchandising are set up in the same way for each floor, increasing efficiency for both consumers and staff.

Using digital technology to deliver an 'Amazon-like' in-store shopping experience

A US-based retailer of men's apparel uses digital technologies to deliver a state-of-the-art shopping experience. Consumers can scan product tags with their smartphones to look up product details in real time, enabling them to select their size and have it sent automatically to the fitting room within 30 seconds. Consumers can also complete self-checkout at pay stations in the dressing rooms or throughout the store.

Launching a new digital concept store

A British catalog retailer has replaced traditional, laminated paper catalogs and stock checkers with a table of digital tablets. It also introduced dynamic, digital product and sales display screens and installed "fast track" 60-second collection points for online orders in stores. Staff have been upskilled to become fully enabled "navigators" who can help consumers make the most of the new digital tools.

Expanding omnichannel experiences beyond traditional stores

A leading beauty retailer uses digital self-service kiosks to support sales outside the traditional store environment, with availability in, for example, malls

across the United States. These kiosks feature digital touch screens to guide consumers through the product selection-and-purchase process, often with an option to immediately share their experience on social media.

Getting started

No one-size-fits-all concept will suit the needs of all omnichannel players or the demands of all consumers. However, four universal steps can help kick off a holistic assessment of physical stores and support the process of creating an integrated omnichannel fulfillment network:

1. *Get up to speed:* A detailed analysis of market and consumer trends, and of the competitive environment, will help retailers size the prize and begin to answer critical questions.

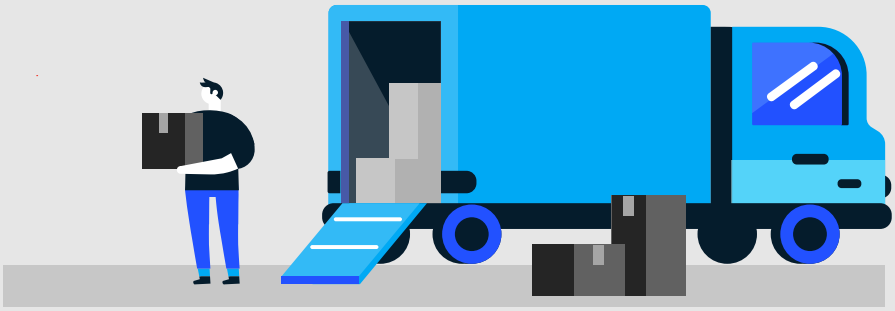
2. *Assess in-store capability gaps:* Players must understand both their existing in-store capabilities and those they need to support online sales. With this knowledge, they can determine the required levels of investment and the likely ROI of store transformations.

3. *Start small, balancing optimal assortment against operational considerations:* Underdelivering on service promises will jeopardize consumer satisfaction and sales performance. Retailers and vertically integrated brands should start with the best-performing and most iconic SKUs before gradually increasing assortment size as capabilities develop.

4. *Take a holistic approach to upgrading stores and upskilling employees:* A successful transformation journey means rethinking all aspects of store organization, including updating roles, upgrading infrastructure, and redefining what constitutes good performance. A robust change-management approach—involving both in-store and central-office roles—and a fundamentally different economic mindset will be crucial for success.

For many vertically integrated brands and traditional retailers, getting the role and layout of their physical stores right will be one of the keys to competing in the increasingly digital landscape. But rethinking store strategy is not just about rationalization or survival; innovative stores that are integrated into efficient omnichannel networks can be a crucial source of differentiation and can set retailers and vertically integrated brands up to thrive in the postpandemic world.

Praveen Adhi is a partner in McKinsey's Chicago office, where **Gerry Hough** is a senior expert; **Sebastien Calais** is an alumnus of the Paris office; and **Tim Lange** is a partner in the Cologne office, where **Caroline Lenzen** is a consultant.



Stores as a strategic asset in omnichannel retail

Incumbent omnichannel players are seeking ways to compete with same-day delivery speeds. There are four key places to start.

by Manik Aryapadi, Simon Bills, Christian Haehl, and Julia Spielvogel

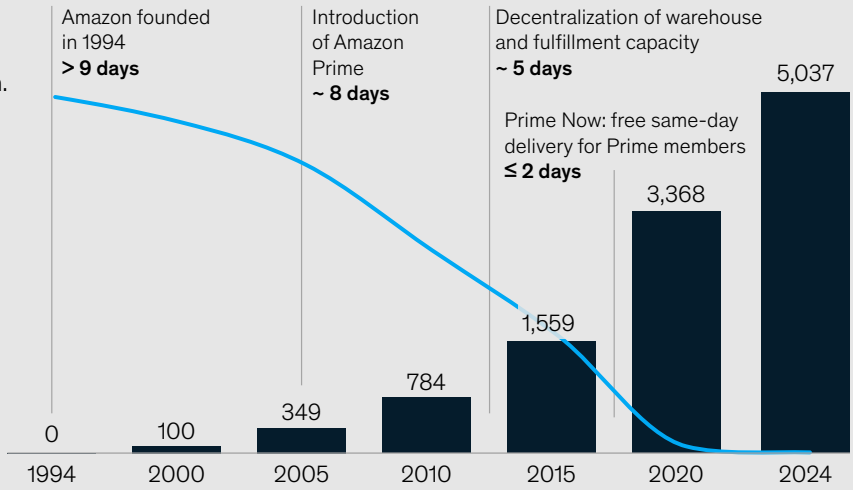
Consumer expectations for online delivery speed and costs have been driven by players such as Amazon. Market leaders, including Amazon, Alibaba, and JD.com, recognize the importance of delivery speed and costs in the consumer decision journey and use their capabilities and resources to create competitive advantage. How can incumbent store-based retailers and direct-to-consumer brands compete when the benchmark is free same-day delivery?

We conducted a broad effort in which we took stock of the current situation, focusing on Europe, particularly Germany, from both a market and a consumer perspective. Our analyses show that although the pressure on incumbent players may appear to be overwhelming, retailers and direct-to-consumer brands with their own stores have a strategic asset they can leverage in the future: their dense store networks, which give them proximity and (potentially) quick access to their consumers. But to fully benefit from their networks, omnichannel players will need to consider changing gears in four areas: consumer preferences, shopping experience and delivery speed; infrastructure and systems; store operations; and economic mindset.

Same-day delivery: Ready for takeoff

E-commerce has been one of the business success stories of the past 20 years. And as online sales have surged, shipping durations have gone down.

Amazon's free delivery time



US e-commerce market size
Index (2000 = 100)

Source: Forrester; McKinsey analysis

50%

of consumers list convenience as the main reason why they opt to buy groceries and household supplies online

28%

of consumers opted to shop online during the COVID-19 pandemic because it was contactless and safer

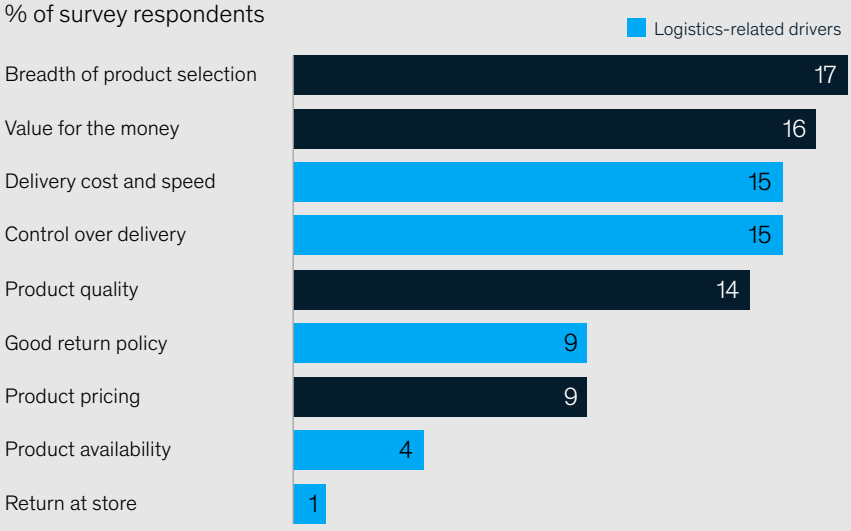
Source: McKinsey 2021 Global Sentiment Survey

Today, consumer value is driven by a number of factors, but logistics play a role. A brick-and-mortar presence can provide proximity and accessibility, helping retailers achieve faster delivery and convenient returns.

5 out of 9

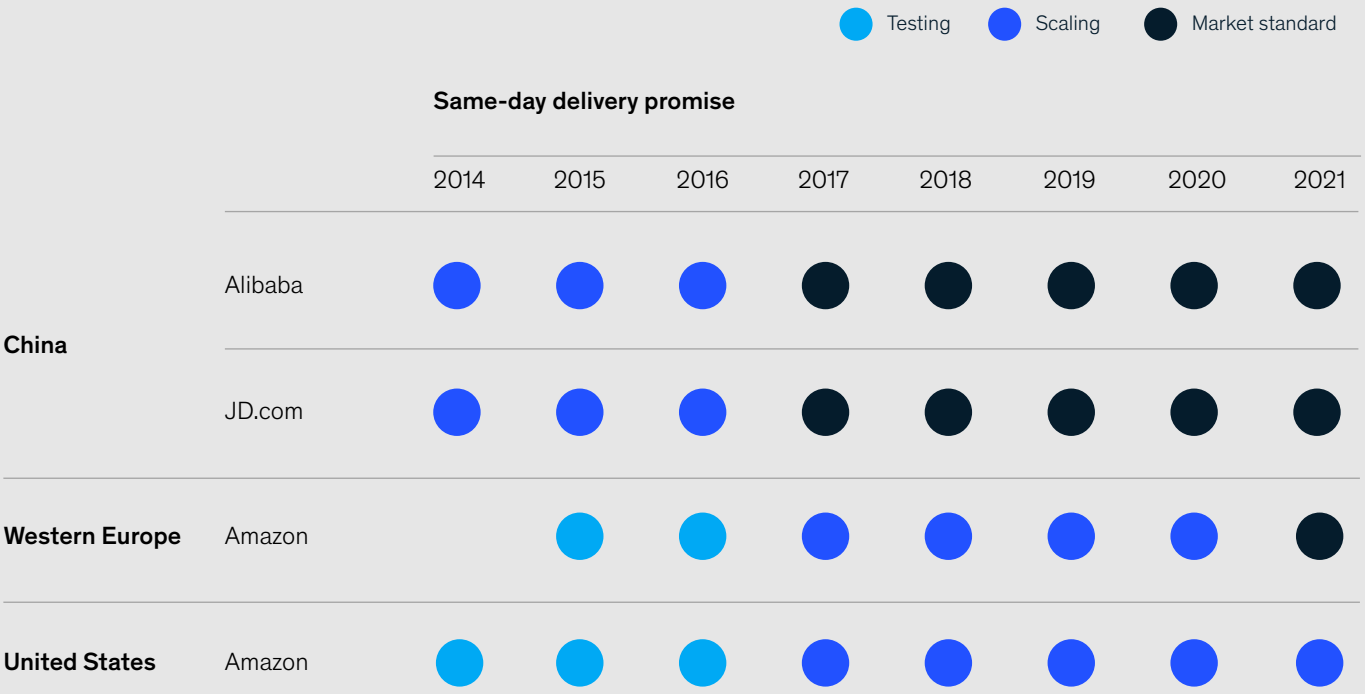
omnichannel consumer-value drivers are related to logistics

What US consumers value in omnichannel retail,
% of survey respondents



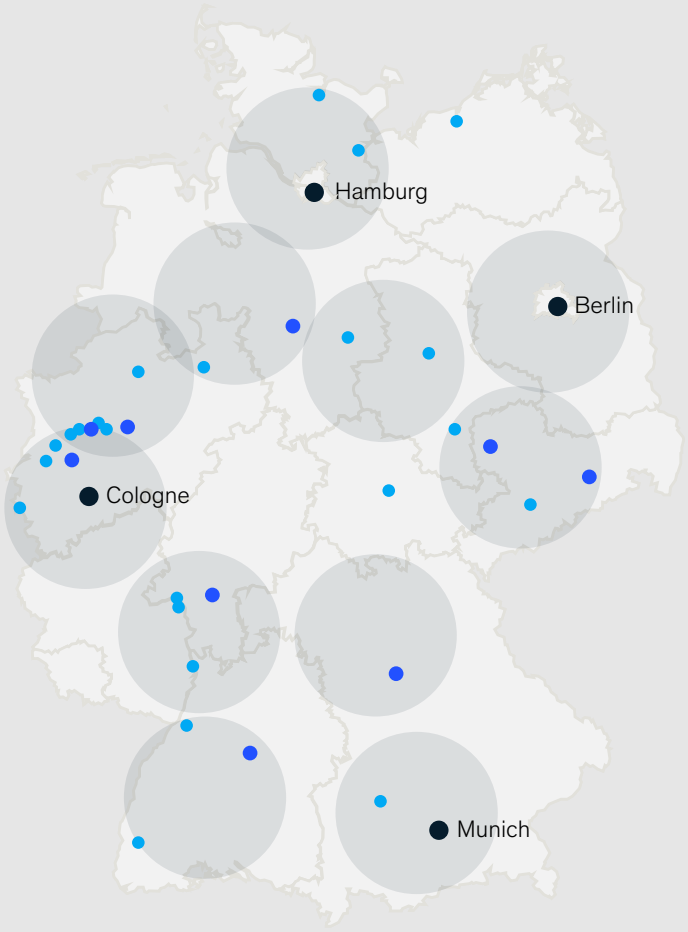
Source: McKinsey Digital Consumer Survey

To capture the growing consumer market, e-commerce super-giants Alibaba, Amazon, and JD.com are committed to pushing same-day delivery into the mass market now.



Retail stores: The return of a strategic key asset

The one central requirement for same-day delivery is simple, yet challenging: a dense network of warehouses. In Germany, for example, a company would need 11 well-placed warehouses that stock the same assortment and are able to move it from click-to-ship in two hours or less to cover all tier 1 and tier 2 cities.



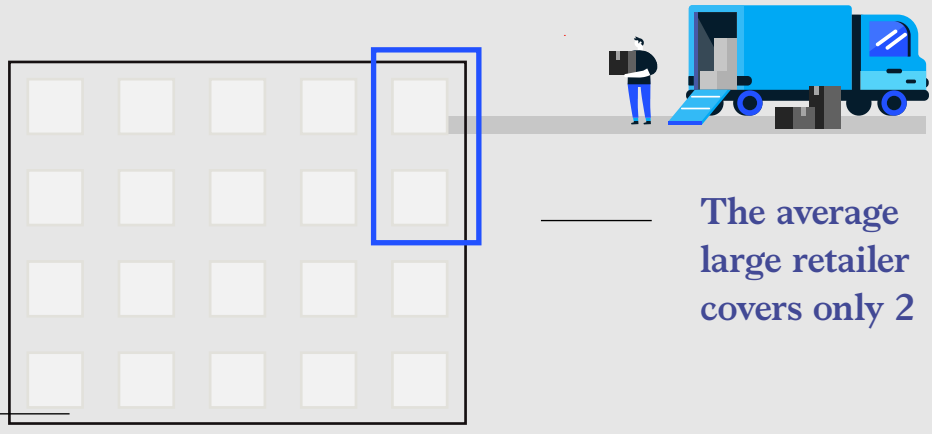
Warehouse coverage

Inhabitants

- >1,000,000
- 500,000–1,000,000
- 200,000–500,000

Amazon has a very dense delivery network, putting the industry leader far ahead of almost all other major Western retailers with its same-day offering. For these retailers to catch up, the obvious option would be to invest hundreds of millions of euros or dollars to match Amazon's footprint one to one.

Retailer same-day offering in top 20 cities
Amazon vs top 20 nonfood and top 13 grocery retailers



Amazon's same-day shipping promise covers all 20 of Germany's largest cities

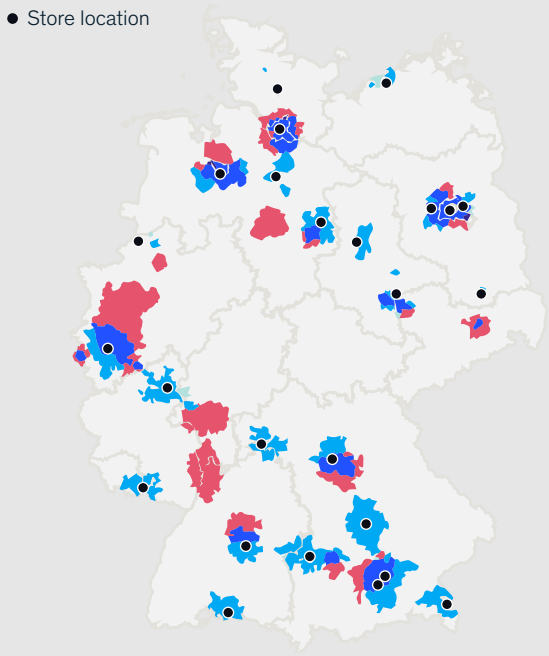
The average large retailer covers only 2

But there is a better and much cheaper option for today's fast-growing but still moderate market volumes: retailers should shift the rules of the game and use their existing store networks for same-day shipping.

Same-day coverage of relevant population,[1] Amazon vs disguised omnichannel fashion retailer
by type of competition, %

28 stores across Germany, covering 5 of Germany's 20 biggest cities | Ongoing testing and buildup of ship-from-store capabilities

	Competition area (Amazon and retailer)	Area at risk (Amazon only)	Retailer monopoly area (retailer only)
Population	22	16	7
Purchasing-power coverage	23	17	7

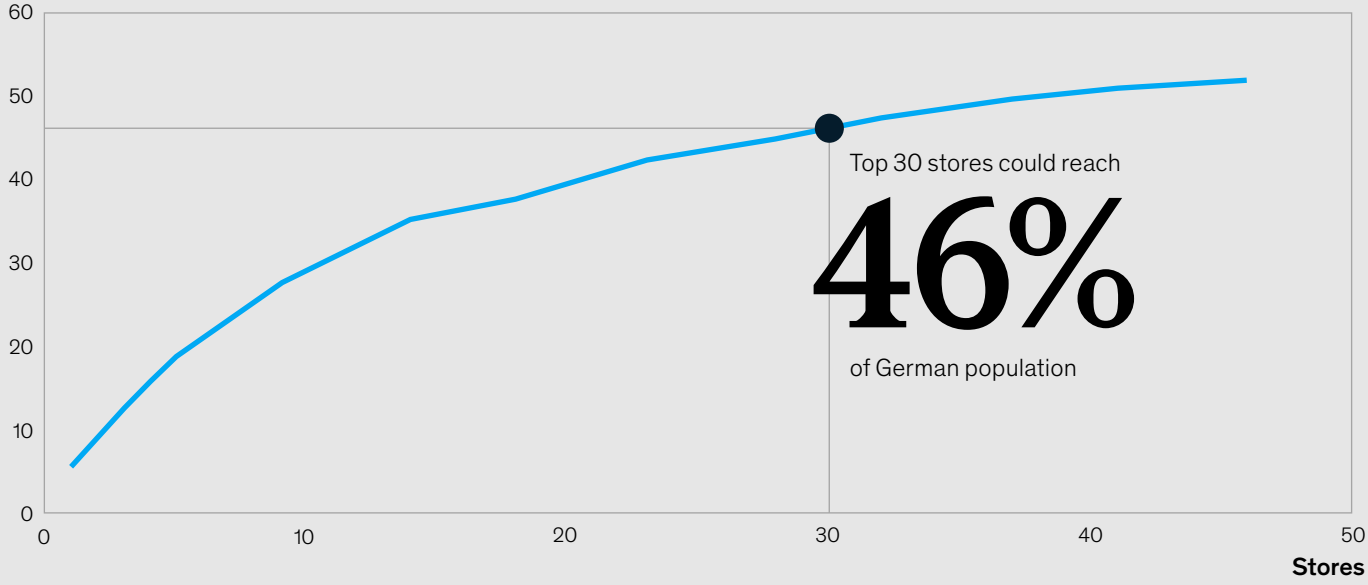


[1] Relevant population areas defined as high density (>750 inhabitants/km^2) and/or high income (purchasing power >€21,900 per capita); viable market coverage defined as area within a 30-minute drive from respective retail location.

Source: Alteryx; BKG; Esri ArcGIS; MB-Research; McKinsey analysis

Viable market coverage for same-day delivery via ship from store[1]
%

In Germany, connecting 30 stores to the grid would be enough to reach almost half the population and come close to matching Amazon's current service offer.



[1] Relevant population areas defined as high density (>750 inhabitants/km^2) and/or high income (purchasing power >€21,900 per capita); viable market coverage defined as area within a 30-minute drive from respective retail location.

Source: Alteryx; BKG; Esri ArcGIS; MB-Research; McKinsey analysis

This strategy—using existing stores rather than new warehouses—could be the entry gate to same-day delivery for aspiring retailers.

Innovation road map: four areas for shifting gears

Omnichannel players who follow this strategy will need to upgrade not only fulfillment but also IT and store design, as well as a fundamentally different economic mindset.

1. Consumer preferences, shopping experience, and delivery speed dilemma

- ☐ Transparency on consumers' buying preference including channel decision
- ☐ In-store consumer-experience management
- ☐ An understanding of where speed matters for a segmented delivery-speed approach

2. Infrastructure and systems

- ☐ Analyses of store-network density, including competitor monitoring and network optimization
- ☐ Urban fulfillment locations within a 90-minute drive from the consumer
- ☐ Optimized end-to-end click-to-ship in two hours or less
- ☐ Strong set of last-mile partners that allow for seamless processes
- ☐ Integrated IT systems for direct transfer of order data between web shop and (in-store) fulfillment
- ☐ Real time full inventory transparency across all warehouses and stores

3. Store operations

- ☐ Balanced optimal assortment against operational considerations
- ☐ Holistic approach to upskilling employees for in-store fulfillment excellence
- ☐ Adjusted store and backroom layout and fixtures to optimize order packing and consumer pick up and returns

4. Rethinking economics

- ☐ Understand timeframe and capital-expenditure requirements to transition to omnichannel excellence, including a willingness to bear initial extra costs that can exceed €10 per shipment
- ☐ Pressure-tested make-vs-buy logic along the entire supply chain
- ☐ Optimized costs per order and target delivery speeds
- ☐ Clear upside aspiration (eg, increase in customer lifetime value or subscription income, or both)

Manik Aryapadi is a partner in McKinsey's Dallas office, **Simon Bills** is an expert in the London office, **Christian Haehl** is a consultant in the Hamburg office, and **Julia Spielvogel** is a partner in the Vienna office.

Make the change stick: Transforming your supply chain operating model for an omnichannel world

In this age of omnichannel commerce, most supply chains run on old principles and processes. A few leaders can show us how a new operating model can answer the needs of today—and tomorrow.

by Stefana Karevska, Tim Lange, Andreas Seyfert, and Kumar Venkataraman

Whether they choose to be faster, more innovative, or closer to the consumer, consumer product and retail companies are finding it increasingly difficult to launch new channels or routes to market along with products and better services that react flexibly to shifting demand while still maintaining (or even improving) their profitability.

The trend of shoppers continuing to embrace online and omnichannel is a core growth driver, but it also significantly increases the complexity for the supply chain. As the world moves toward a new normal after the pandemic, omnichannel players face a complex operating challenge: remaining consumer-centric while serving their customers effectively and efficiently through both old and new channels.

Many companies have tried to optimize their warehousing and shipping processes, improve their planning, and develop other core supply chain topics—but often with only modest success. And too often, operational improvement initiatives have failed to make any real impact on the profit-and-loss (P&L) or balance sheet. Why? Organizations have neglected to evolve their supply chain operating model—its processes, structures, and people—resulting in its inability to achieve synergies among channels and to sustain changes once focus has shifted to another area.

To build a foundation for successful omnichannel operations and unlock their full potential, companies need to reshape the entire supply chain operating model. Traditional B2B operating models are outdated. A siloed organization with separate processes for each channel is not enough to create a successful omnichannel approach. A new perspective on processes, structures, and people is required.

A next-generation model goes far beyond the organizational design of structures and workflows—it defines the ways in which a company operates its supply chain (see sidebar, "A new supply chain operating model challenges all dimensions of the supply chain").

New challenges

The expansion of digital channels such as online stores, retail apps, and marketplaces, combined with the ongoing importance of traditional channels, presents several new challenges to consumer product and retail companies:

Seamless consumer experience and consistently high satisfaction across all channels: Most consumers today use multiple channels and have a variety of touchpoints through their purchasing journey, so companies need to provide the same quality of consumer experience, responsiveness, and satisfaction throughout all channels seamlessly. This requires consistent performance targets and incentives across channels as well as fast decision making to adjust the consumer offer, react to a complaint, or pilot new services within a couple of days rather than months.

Efficient and flexible omnichannel operations: The increased complexity and the multiplicity of channels create pressure on supply chain functions in terms of cost and productivity. New market conditions frequently result in a growing number of products, warehouses, and logistics-service providers, requiring more frequent and more detailed planning. This also creates a need to scale up personnel resources in indirect functions such as scheduling and distribution management.

Moreover, the contemporary challenges of omnichannel can't be solved by single-channel thinking in which each channel operates in a silo, managing its own inventory and measuring its own team performance. For best results, organizations must establish omnichannel structures and processes that will provide a consolidated view of demand and manage deliveries and inventories appropriately.

Data, digital technologies, and advanced analytics: Omnichannel gives companies the chance to collect more data and consumer insights, which the organization can use to improve consumer

A new supply chain operating model challenges all dimensions of the supply chain

The strategic objective is clear: more revenue, lower costs, and satisfied customers.

To reach that objective, companies must align their operating models with the demands of the digital world by scrutinizing all dimensions of the supply chain: structures, processes, and people. By asking core questions about these dimensions, organizations can establish the foundation for a next-generation operating model.

Processes

Process design. How should we design functional, cross-sector, and support processes? How can we best integrate innovations? How can we accelerate decision making?

Performance management. What are our most important key performance indicators (KPIs)? How do we set and track targets? How do we encourage collaboration and an orientation toward making decisions based on achieving targeted improvements?

IT systems and technologies. What technology infrastructure does the company need? What is the ideal organization and governance for IT in the age of big data and analytics?

Structures

Organizational structure. What organizational form supports both stable day-to-day operations and agile development and innovation? How should reporting lines run?

Ecosystem. Which capabilities are core competencies to keep in-house, and which ones can we source from current partners or other external providers? How should the corresponding network be organized?

People

Skills. What skills do our people need to do their jobs? How should we fill any gaps—M&A, recruitment, or internal capability building?

experience and align its own operations accordingly. Digital technologies enable improved and more efficient operations. For example, AI-based forecasting and advanced analytics can help companies plan and manage their inventories and organize deliveries effectively. However, innovative technologies and methods place new demands on employees, management, and IT infrastructure along the supply chain; all three elements need to be continually realigned to reflect the latest trends. Companies that do not respond to these challenges by radically reshaping the structures and processes of their supply chains will realize few of the benefits that the transformation promises.

Seven guiding principles for designing tomorrow's omnichannel operating model

To realign the supply chain with the new omnichannel environment and related challenges, the next generation of operating models integrates state-of-the-art guiding principles for reshaping processes, structures, and people.

1. Consumer-centric, channel-agnostic culture

The key principle for consumer product and retail companies today is keeping the consumer at the center. To achieve that goal in the new omnichannel environment, companies will need to create a channel-agnostic culture in which the

consumer experience is the top priority across all functions. While it sounds straightforward, putting the consumer in the center is a challenge for many players because they have a culture of designing and branding cool products or driving operational excellence. While they should not neglect their history, it will be key to start this mindset shift immediately because it is the basis of success.

They will also need to take an approach that combines multiple skills and capabilities. For example, an international furniture company strives to improve the consumer experience by acquiring the full range of capabilities needed for all-around consumer experience—the best designers, merchants, marketers, technologists, and data scientists.

2. Integrated omnichannel teams

Improved performance requires an organizational shift from single-channel or multichannel teams to integrated omnichannel teams. Changes to P&L management are also required to correctly account for new sales channels; for example, store managers become fulfillment managers. In other words, stores are not merely serving customers who are visiting and shopping traditionally; through the "click and collect" concept, stores are also supplying customers who shop online.

These new integrated teams have an end-to-end responsibility from supplier to consumer and work together to manage inventory, delivery, and consumer experience of a particular consumer group. For example, a leading apparel and footwear player established "city teams." Each team took responsibility for the omnichannel supply to a certain city, handling everything from supply management to cross-channel inventory management. Other organizations have combined their online and in-store merchant operations to create a larger purchasing team, enabling the less experienced online merchants to learn from the store merchants.

3. Omnichannel key performance indicators and aligned incentives

To build a successful omnichannel model, organizations should establish performance measurements based on key performance indicators (KPIs) that incorporate the omnichannel dimension and reflect joint performance—not individual channels. They can provide incentives for employees to improve performance across appropriate channels and teams. For example, an American luxury department-store chain rewards store associates and merchandising teams for online sales that originate in stores. Aligned incentives eliminate siloed thinking and ensure optimum performance for the whole company, not just a single channel.

4. One-inventory concept

An integrated one-inventory concept is crucial for efficient omnichannel operations. Inventory shouldn't be dedicated per channel but rather managed in a way that ensures fast and timely restocking through all channels. In this approach, allocation of supply and inventory is based on clear segment priorities, not on channels. This requires an integrated, cross-channel, real-time understanding of availability at each step of the value chain. Companies can use this understanding, combined with AI-driven forecasting, to actively manage inventory levels.

5. Agile ways of working

The short product-introduction life cycle in the consumer industry, combined with complex demand forecasting on new products, demands an agile way of working to ensure that new products are successfully introduced through all channels. This agile approach is based on the principles for test and learn and empowers teams to make fast decisions. One model is the "fast-track" model, in which new offerings are piloted very fast but teams are agile and learn fast as well. Fast-track procedures are typically based on business cases or risk assessments with a reduced number of criteria. Thereby, agile principles are associated with continuous oversight of progress along with clear decisions about whether to continue or abort the project.

6. Process digitalization and automation

In tandem with rising numbers of digital and other channels, the number of transactions has increased drastically. Consumer lead time has dropped, especially in e-commerce, and improving operations depends on automatization

and digital technologies. Digital technologies can help to simplify and automate new processes and algorithms. For example, by combining product data and real-time tracking, a single data set can be created and used for integrated, improved inventory planning. Digitalization enables transparency and real-time visibility of product inventory across all locations and channels, empowering teams to make the right restocking decisions. Furthermore, with automated no-touch and distributed-order management, companies can establish automatic store restocking and thereby avoid stock-outs and oversupply.

7. Intense collaboration with value chain partners

To remain consumer-centric and improve the consumer experience, consumer product and retail companies that operate in complex omnichannel environments should consider establishing strong partnerships within the ecosystem. Downstream operations in particular have a variety of dynamics that can be managed successfully with good partner integration. For example, serving individual clients who shop online requires individual last-mile delivery of just one or a few pieces, combined with well-organized, highly responsive operations. To enable this, organizations need to partner with third-party logistics providers and transportation companies that specialize in small-lot deliveries. But they also need to fully integrate these partners' IT processes and governance into their own systems to avoid creating additional silos. All partners should have visibility of the full inventory and use this as one pool for suppling their consumer.

The COVID-19 pandemic has had a dramatic and long-lasting impact on consumer behavior. The rise of digital channels, combined with the continued importance of in-person shopping, increases the pressure on consumer product and retail companies to serve customers seamlessly and effectively across all channels, not just a few.

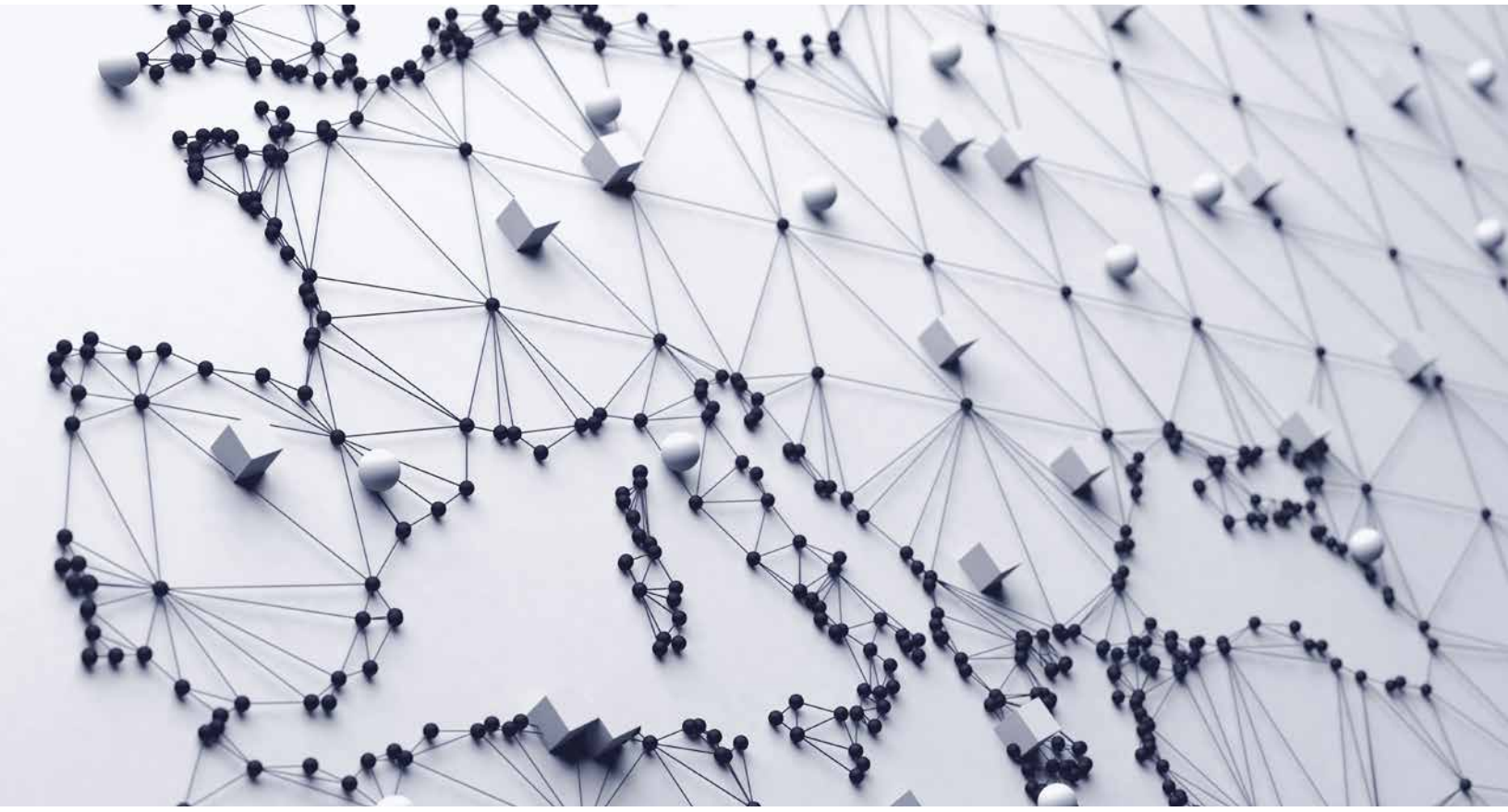
To meet these accelerating demands, companies need to rethink traditional operating models and siloed approaches. Organizations that reimagine the entire supply chain operating model by reshaping processes, structures, and people across all channels will be poised to overcome challenges, maintain profits, and succeed in an ever-changing world.

Stefana Karevska is an associate partner in McKinsey's Frankfurt office, **Tim Lange** is a partner in the Cologne office, **Andreas Seyfert** is a senior expert in the Berlin office, and **Kumar Venkataraman** is a partner in the Chicago office.

The brain behind the omnichannel supply chain: End-to-end omnichannel planning

Enabling the omnichannel supply chain to deliver on the consumer experience will require consumer-product companies to embrace a tech-driven, end-to-end planning approach.

This article is a collaborative effort by Manik Aryapadi, Joyce Chai, Jeremie Ghandour, Prabh Gill, Tim Lange, Andreas Seyfert, and Alessandro Turco, representing views from McKinsey's Consumer & Retail Practice.



Supply chain planning for consumer-product companies across all categories—such as fast-moving consumer goods (FMCG), apparel and sportswear, and consumer electronics—has never been easy. A competitive environment, the high requirements of retail customers, the high complexity of assortment, demand volatility, and supply shortages have increased the importance of planning and created key challenges for the supply chain.

Shoppers' continued embrace of online and omnichannel is a core growth driver for consumer-product companies, but it also significantly increases the complexity of the supply chain's ability to deliver the required service at reasonable cost and inventory requirements. Independently, if players use retail-enabled e-commerce channels or their own direct-to-consumer channels, the requirements in terms of speed, flexibility, convenience, and accuracy for the supply chain increase tremendously.

In such an omnichannel environment, the planning function plays an even more important role in enabling the company to deliver on its promise in an efficient way. One of the most critical capabilities is the collective ability to sense consumer demand, decide on optimal supply source, and ultimately fulfill orders in line with consumer expectations. This seamless process is normally referred to as end-to-end planning.

Managing an even bigger assortment—with inventory allocated to various channels and contracts in a more decentralized distribution network, with order profiles ranging from single items to full trucks—increases the complexity of planning and the number of objects by a factor of five to ten. Solving this complexity with traditional planning practices will lead to low service performance, high inventory levels, and exploding costs for supply chain overhead.

The answer to these challenges is an omnichannel planning transformation that reimagines planning operations from end to end, with a focus on processes, governance and structure, capabilities, and technology. Technologies such as advanced analytics and machine learning will play a major role, but to be effective they must be supported by a new operating model.

Companies should start their journey by focusing on five discrete priorities that could generate significant value. The benefits will be well worth the effort.

Pinpointing growth and margin opportunities

A high-performing omnichannel planning function can provide consumer-product companies with the ability to capture value across both the top and bottom lines.

In such an omnichannel environment, the planning function plays an even more important role in enabling the company to deliver on its promise in an efficient way.

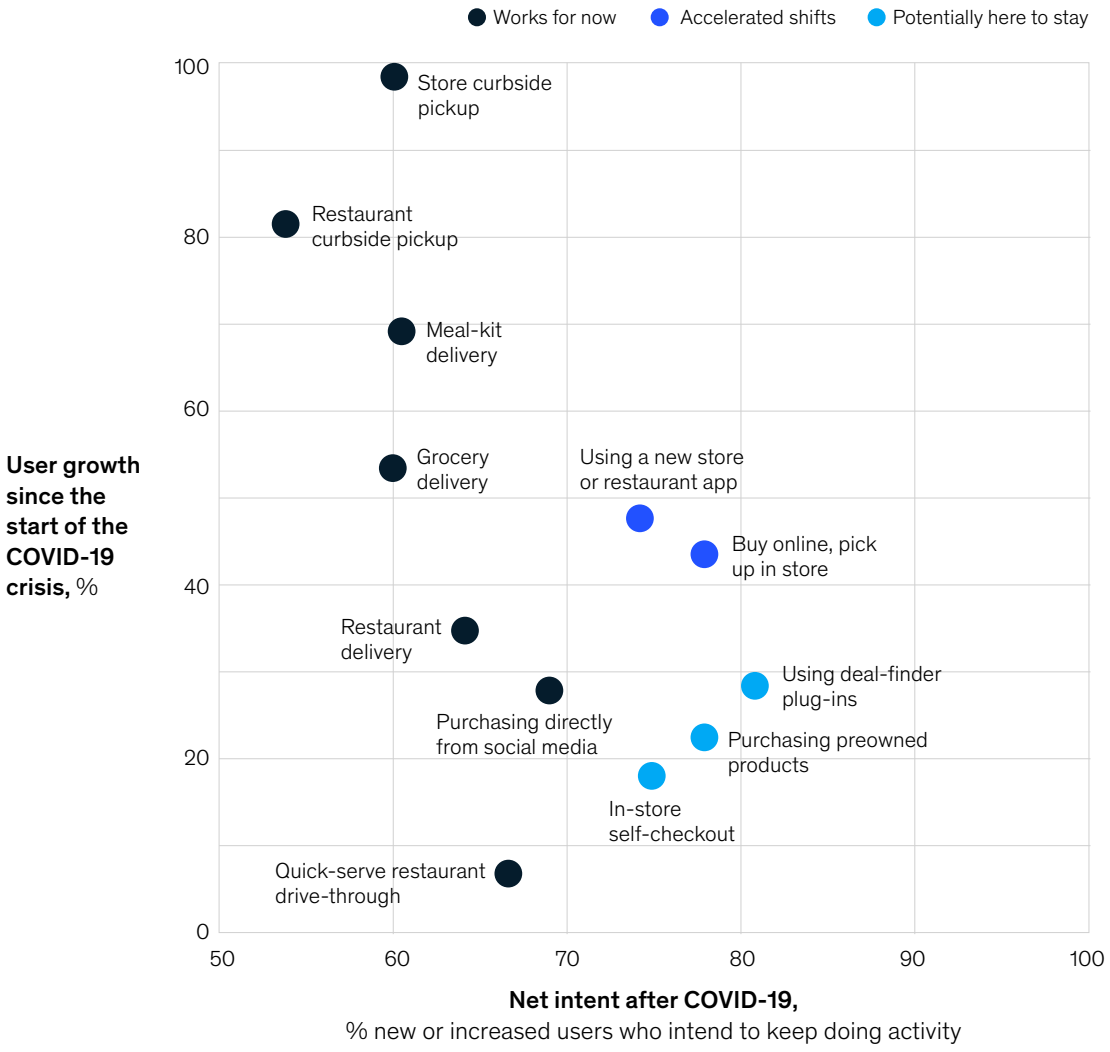
Top line: Growth and revenue

In recent years, e-commerce has accounted for 65 percent of growth. The pandemic reshaped the e-commerce landscape because consumers were forced to change the way they buy. This trend led to the creation of a number of new channels and routes to market, several of which seem set to endure beyond the pandemic (Exhibit 1). For instance, the adoption of applications such as DoorDash and Instacart and grocery and omnichannel models such as "buy online, pick up in store" has spiked.

Despite the rapid growth of e-commerce, traditional B2B channels still represent the largest share of sales for consumer-product companies. While these companies have historically made significant investments in technology, service levels and consumer experience have not improved. The accelerated growth in e-commerce has only compounded the number of challenges that companies are facing in this space. To start, product portfolios have become more complex, and an understanding of the balance across traditional

Exhibit 1

Many consumers intend to continue newly acquired habits even after the COVID-19 crisis is over.



Source: McKinsey analysis

channels and e-commerce has taken on greater importance. The more decentralized inventory, often allocated to multiple channels and contracts, also requires a more targeted approach to planning and allocation. If consumer-goods companies are unable to look at planning of demand, inventory, and supply through an omnichannel lens, existing issues with stockouts, missed revenues, excess inventory, and negative consumer experience will only worsen, causing companies to miss the large growth opportunity.

Bottom line: Margin and cost

Companies are also scrambling to hold down costs and protect margins. On one hand, increased consumer expectations around service and experience, the proliferation and availability of products across brands, and higher manufacturing and logistics costs have already led to eroding margins for many consumer-product companies. In addition, the increased complexity of new channels in an omnichannel environment has added significant challenges to end-to-end planning, causing more excess inventory, markdowns, and ultimately even lower margins.

Ending this vicious cycle has become a core goal for planning functions, becoming even more critical for organizations seeking to maximize growth and profitability. Making optimal planning and allocation decisions based on consumer insights from multiple channels has become impossible without cutting-edge algorithms that can process vast amounts of live data and give planners the ability to quickly react to any change in demand. Most consumer-product companies have undertaken ambitious IT transformations to improve data consistency and accessibility, but many have failed to significantly increase planning accuracy or agility. Indeed, many continue to struggle with generating insights that could deliver superior business value or reduce manual planning efforts.

Establishing a 'North Star' for end-to-end omnichannel planning

Many companies have been making investments in planning tools and capabilities. Although some have made progress in one or even a few areas, only recently have some started to tackle planning with the end-to-end, omnichannel perspective needed to significantly elevate performance and address the complex suite of issues. The best-in-class, end-to-end omnichannel planning of the future embodies the following principles:

Cross-functional integration. Different planning activities (for example, demand, inventory, and supply) are managed in a comprehensive, coordinated way to produce the best decisions for the entire value chain.

Integrated planning perspective across channels. A product group conducts demand, inventory, and supply or replenishment planning on a marketplace level (for example, London), integrating individual channel plans by assessing omnichannel effects (such as demand shifts and cannibalization). Dedicated omnichannel planning teams oversee, review, and proactively shape the integrated plan across channels. Inventory is owned by the omnichannel planning team, which makes allocation decisions based on cross-channel prioritization of segments in line with company priorities.

Short planning cycles. Traditional monthly planning cycles are accelerated to weekly or even continuous planning processes to enable the agility required by the consumer-goods industry.

Advanced-analytics enablement. Advanced analytics helps to improve planning quality—for example, by enabling better demand forecasts across microchannels, production planning, scheduling, and workforce planning.

High degree of automation. Systems and algorithms support the automation of standard tasks and trigger interventions based on "basic" deviations, allowing planners to focus on exception management and decision making. Tools for automated root-cause identification and the fast, efficient assessment of alternative actions support planners in their core tasks and enable them to manage the massively increasing number of transactions of an omnichannel business.

Full supply chain visibility across the entire value chain and across all channels. Consumer-product companies can use real-time data and performance

transparency along the entire supply chain and all channels (for example, inventories across all nodes and flows, including stores, and all consumer orders along all channels) to identify risks and exceptions early in the process and suggest potential countermeasures. In addition, automated scenario-planning capabilities allow companies to understand the financial implications of potential actions and provide the basis for fact-based, profit-maximizing decisions.

This future state represents a lighthouse for consumer-product companies. While end-to-end omnichannel transformation is aspirational, the required technologies already exist, and companies are making progress across these elements.

Charting a path to value

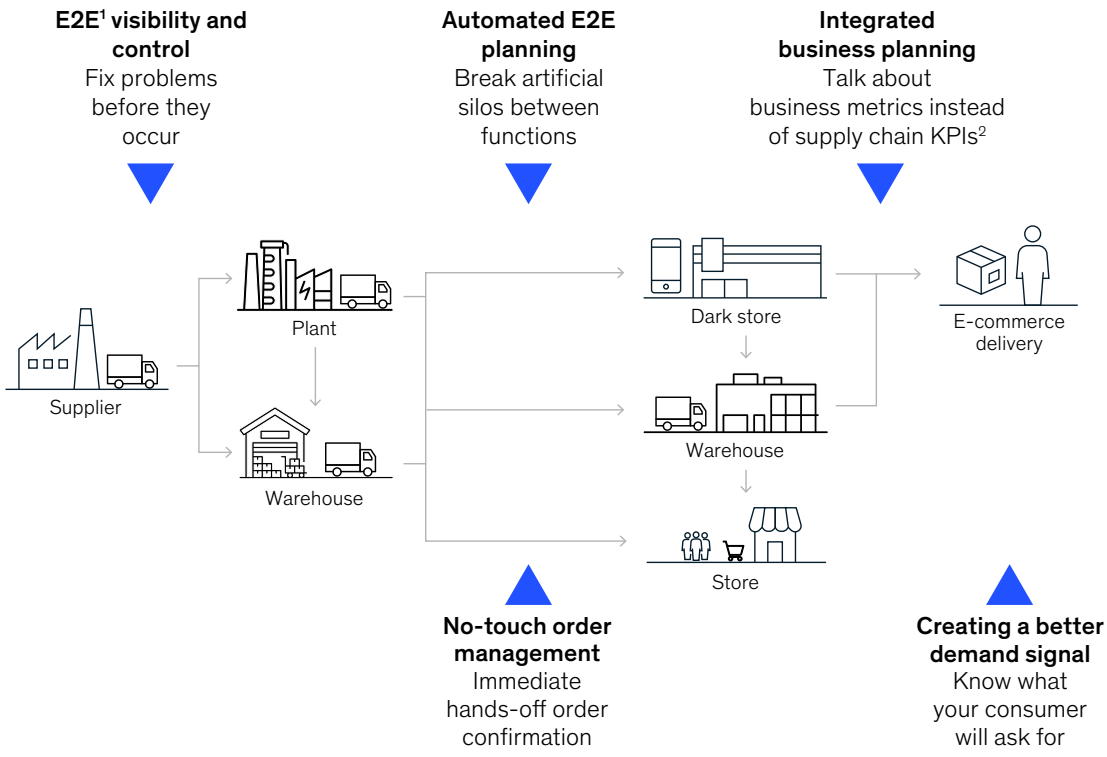
To unleash maximum value from omnichannel planning operations, companies need to embark on a comprehensive transformation. This effort encompasses five main priorities and embeds the right mix of processes, governance and structure, capabilities, and technology required to make the journey successful (Exhibit 2).

Know what your consumer will ask for: Creating a better demand signal

Machine-learning forecasting algorithms use internal and external data sources as well as their ability to "learn" from historic demand patterns to continually improve forecast accuracy and minimize manual planning. Leaders harness the capabilities

Exhibit 2

An end-to-end planning transformation in consumer packaged goods encompasses five main areas.



[1] End-to-end.
[2] Key performance indicators.

of advanced-analytics forecasting tools to leverage the increased availability of demand data of direct-to-consumer channels as well as the ability to consider cross-channel demand effects. That allows for improving the robustness and granularity of their integrated demand plan and strengthening the fact base for planning and decision making.

Machine-learning algorithms are also able to help close the gaps between demand forecasts and commercial targets. They can model the expected impact of sales activities (such as promotions) on demand, help to optimize activity management, and generate demand and profitability projections. Along with helping to fulfill a company's strategic objectives, these tools contribute to an improved online and offline consumer experience by increasing the availability of the right offerings through the right channels. An omnichannel planning center of excellence collaborates with central data-analytics and channel teams to continuously improve cross-channel planning and assess omnichannel effects. For example, a global apparel retailer built the capabilities to understand demand across e-commerce and brick-and-mortar channels at a geospatial level and used these data to inform upstream planning and allocation activities.

Break artificial silos between different functions: Automated end-to-end planning

Integrated and highly automated planning processes and systems seamlessly optimize the planning process from forecasting to replenishment and even production planning decisions. These tools give companies the ability to react in real time to changes in demand or supply exceptions and to determine the ideal trade-offs between functions and channels. To achieve the full impact of advanced demand-sensing solutions, leading consumer-product players establish automated, end-to-end planning systems to support agility in supply and inventory planning. That capability, in combination with the ability to access inventories across channels, allows companies to react to changes in short-term forecasts, manage costs and inventories more effectively, and improve service levels. One leading food company, for example, invested in advanced-planning capabilities and reduced its inventory by 30 percent while raising consumer service levels (the share of occasions when an order is delivered by the expected date) by three percentage points.

Focus on business metrics instead of only supply chain key performance indicators: Integrated business planning

Integrated business planning (IBP) builds on real-time scenarios that increase the quality of planning decisions and agility of the process to optimize cross-channel profits . Key enablers of efficient IBP for omnichannel players are the cross-channel alignment of inventory, shared profit-and-loss ownership, and incentives. These elements are built upon foundational elements such as supply chain and financial-planning excellence, system capabilities for real-time scenario evaluation, and the identification of exceptions supported by machine learning. IBP is increasingly important for all consumer-product players, but it is crucial for omnichannel businesses that rely on cross-channel decision making, such as prioritization decisions in case of bottlenecks, stocking strategies, and inventory allocation. By enabling coordinated category, product, and channel strategies, companies can make complex trade-offs among pricing, promotions, and availability, a task that is extremely hard to achieve with traditional planning systems and capabilities.

For example, an international packaged-food company that was already holding less than 30 days of inventory and had service levels above 95 percent embraced this challenge. The company started by cleaning its data to improve availability and transparency and introduced new cross-functional processes to enable data-driven decision making. Through these efforts, it decreased finished-goods inventory by 20 percentage points, improved forecast accuracy by six percentage points, and achieved a threefold increase in response time. Another example is an apparel brand that leveraged IBP to synchronize the product-ordering and flow decisions across different channels and departments (such as procurement, design, and supply chain) for predefined milestones. This led to a significant increase in forecast quality and on-time ordering, with lower costs from avoiding expedited shipments, write-offs, and so on.

Fix problems before they occur: End-to-end visibility and control

Key elements of a resilient, responsive supply chain include real-time, cross-channel visibility and the early identification and rapid resolution of exceptions (ideally before they have an impact on customers or finances). Establishing service and inventory control towers is a pragmatic way to create transparency, enable fast reactions, and continually address root causes. This visibility is pivotal to get the right product to the right place at the right time and through the right channel to fulfill consumer demand and maximize growth. The COVID-19 pandemic clearly demonstrated the need for transparency across the supply chain, including customers and suppliers. Companies with this capability have been able to react much faster to the disruption, make fact-based decisions, and minimize the negative impact on their supply chains—or even gain a competitive advantage.

One home and personal-care company improved consumer service levels by 25 percent through a rapid turnaround of its supply chain performance. It achieved greater supply chain visibility by implementing a governance structure (a control tower) that enabled faster response times when identifying exceptions in the supply chain.

Similarly, a leading fashion retailer established inventory visibility across all of its warehouses and stores to provide a single view of product availability to shoppers and store associates. The switch to that end-to-end transparency helped to double conversion rates and to increase the inventory turnover rate by 12 percent.

Immediate hands-off order confirmation: No-touch order management

The growth of omnichannel business elevates the importance of automated order-management processes, which enable immediate, automatic confirmation of orders—across planning levels and channels—for optimal allocation based on consumer requirements and product availability. Efficient, rapid order processing and continuous replenishment optimization for different types of points of sale (such as stores, e-commerce fulfillment centers, or business-to-business warehouses) allow planners to focus on critical exceptions—but they require automation. As planning becomes more automated and moves toward a touchless operation, employees have more time for upskilling, allowing them to focus on more value-added tasks.

For example, a large consumer-goods distributor developed a stand-alone digital use case to pinpoint inventory position along its supply chain and accurately confirm expected delivery dates and transportation lead times. As a result, client satisfaction rose 30 percentage points.

Key success factors in omnichannel planning transformations

In our experience, an omnichannel planning transformation is particularly complex. Successful companies must simultaneously manage a large stakeholder base and technological enablement while embedding new ways of working throughout an organization that may be used to traditional planning methods and timelines. Executive leadership is a vital component; without the engagement of the top team, any transformation is destined to fail. Business leaders should focus on five actions to accelerate their planning transformation:

1. *Lead from the front and identify executive sponsors beyond the supply chain*
   Because the supply chain touches so many different parts of an organization, a successful omnichannel planning transformation requires engagement from the CEO and COO. Their presence will lend credence to the transformation and ensure decisions are made in a cross-functional way. A transformation also gives companies the opportunity to ingest external data—from retailers, contract manufacturing organizations, co-packers, trade partners, and proprietary databases—to generate value for a company and its ecosystem (such as through better visibility on capacity or algorithms to predict safety of supply).

2. *Develop a plan starting with high-value areas*
   End-to-end omnichannel planning transformations run the risk of remaining too conceptual—and therefore being difficult to implement. To make efforts more tangible,

organizations should select one of the top five use cases and identify its relevance at the level of product family, geography, and consumer segment (called cells). This exercise enables organizations to develop a portfolio of applications that can be deployed over 12 to 24 months, focusing first on high-impact cells and on those with sufficient data. Organizations should be careful to avoid several risks, including starting too small and never scaling up. One solution is to start with a cell that holds significant business value. Once a sizable flagship has been established and has generated results, it can be much easier to convince the organization to scale.

3. *Select the right ecosystem of tech partners*
   Several tech partners offer advanced integrated solutions, and many startups have developed specialized supply chain offerings (for example, for a specific planning process or industry). While some organizations have specific planning challenges that require a customized solution, executives should start by considering more than one major tech partner. This wider set of candidates can ensure companies are concentrating first on the expected business outcome and then on the technology required to address it.

4. *Reinvent your organization to ensure end-to-end optimization and more agile decision making at the interfaces*
   While omnichannel planning transformations focus mostly on digital and technology enablement, we see organizations achieve the greatest planning improvements and efficiency gains through an organization-and-process redesign. This approach ensures end-to-end decision making in a fit-for-purpose way that considers geography, product segment, channel, and customer type. Advanced algorithms can solve the most complex issues and identify an optimal solution for the company as a whole. However, solutions can include implications that aren't beneficial to some individual functions, making decisions and actions seem counterintuitive.

   Organizational changes can take different forms. Radical changes include the creation of a central product organization representing all functions to make optimized trade-offs for a given brand and geography. A less radical approach is to develop an official network of colleagues in charge of a product or brand while still keeping functional structure. A good way to start can also be to simply establish a cross-functional board and ensure it makes decisions based on the recommendations of advanced algorithms. Still, additional elements, such as properly aligned incentives for objectives and target functions (for example, by product and channel), are required for planning to unlock optimal trade-offs. In starting such a journey, organizations must engage all affected functions with a compelling narrative, starting with sales, marketing, and operations.

5. *Engage in a massive upskilling program*
   The planning team typically still handles a lot of work manually, including consolidating, checking, and reviewing data. As the transformation proceeds, the role of the planning team must evolve to focus more on strategic decision making, trade-offs, and stakeholder engagement. Given the size of the team and scarcity of those resources on the job market, companies must invest in upskilling as a critical pillar of the planning transformation.

How to get started

Companies that want to explore the potential of omnichannel planning should start by identifying and aligning on a core list of strategic business priorities across their operations and set clear improvement targets for each one. They should then understand how true end-to-end omnichannel planning across the five priority areas can achieve each of those targets and set a path for the transformation. Last, they need to devise a clear deployment plan that embeds key success factors across organizational structures, skills, processes, and technology to make sure that all typical pitfalls are addressed from the start.

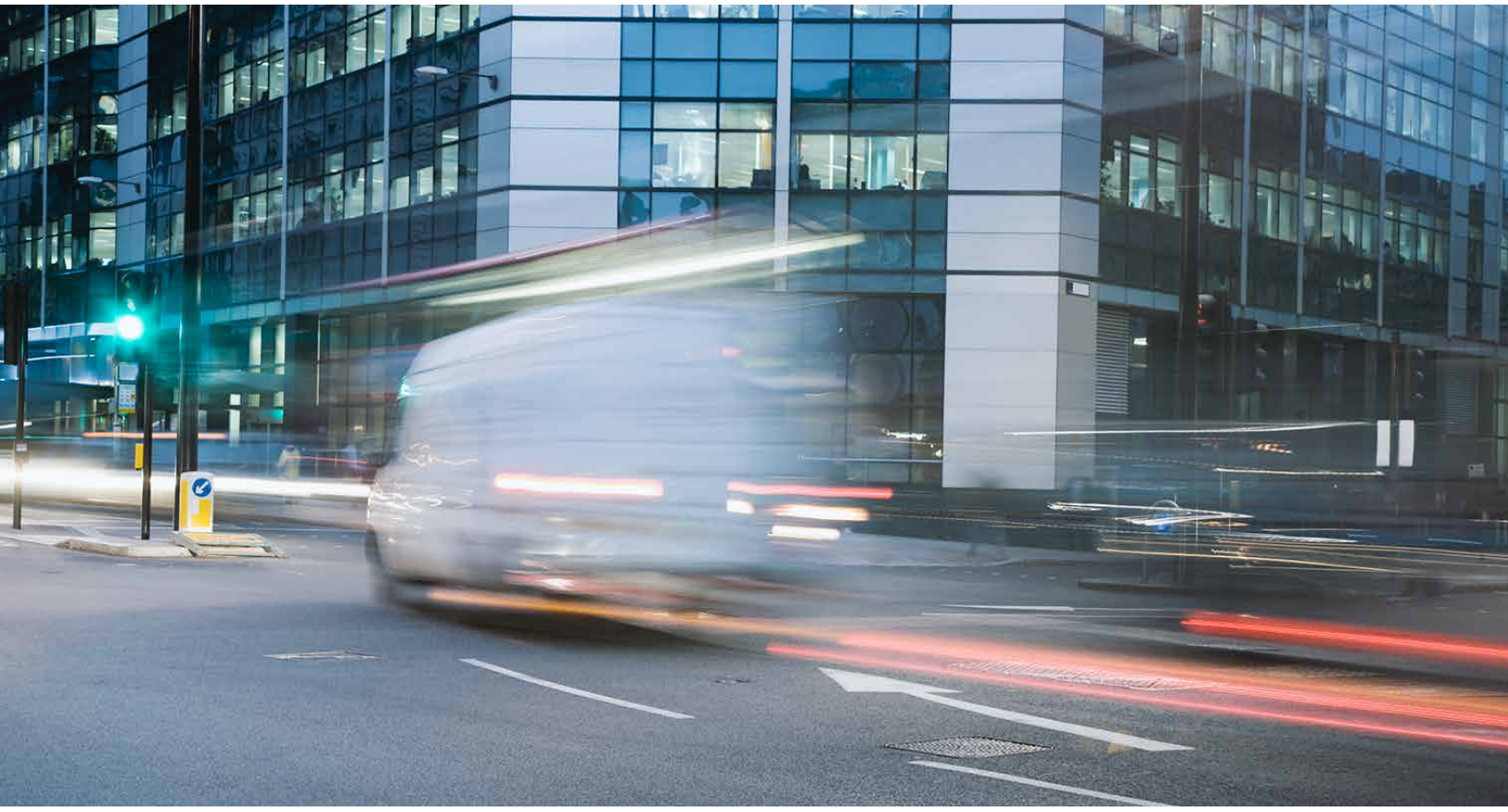
Planning activities have traditionally been a supply chain topic. However, digital and advanced analytics are now unlocking the ability to make complex trade-offs among functions such as sales, production, and the supply chain that will become more critical in the coming years. This dynamic challenges the way companies should think about their planning operations and organization. Given the value at stake and the threat posed by digital natives, an omnichannel planning transformation should be at the top of the agenda for consumer-goods CEOs, and it should focus on five main priorities: creating a better demand signal, automated end-to-end planning, integrated business planning, end-to-end visibility and control, and no-touch order management.

Manik Aryapadi is a partner in McKinsey's Dallas office, **Joyce Chai** is an associate partner in the San Francisco office, **Jérémie Ghandour** is an associate partner in the Paris office, **Prabh Gill** is an associate partner in the Vancouver office, **Tim Lange** is a partner in the Cologne office, **Alessandro Turco** is an associate partner in the Milan office, and **Andreas Seyfert** is a senior expert in the Berlin office.

Unlocking value in omnichannel fulfillment

The race to provide ever-faster omnichannel order fulfillment is on. Where should omnichannel players keep up—and what are the value-creation opportunities in doing so?

This article is a collaborative effort by John Barbee, Jai Jayakumar, Tim Lange, Sarah Touse, and Kumar Venkataraman, representing views from McKinsey's Consumer & Retail Practice.



Retail has experienced more change over the past five years than in the prior 50. Indeed, the pace of change accelerated throughout the COVID-19 pandemic as retailers adapted to changes in consumption, channel shifts,[1] and rising consumer expectations around speed and convenience. In fact, the race to shorten click-to-consumer cycle time is arguably the single greatest influence on the shape of future omnichannel supply chains. Needless to say, the bar continues to rise for retail and direct-to-consumer brands.

How much does speed matter? Our research shows that when delivery times are too long, almost half of omnichannel consumers will shop elsewhere. As for how long is too long, we've found that more than 90 percent of US online shoppers expect free two- to three-day shipping.[2] As retail supply chains accelerate, US consumers largely remain unwilling to pay for speed. McKinsey research shows approximately one in five US consumers will accept a marginal increase in shipping fees for faster shipping than standard free-delivery options.[3] Given the high and rising costs of omnichannel order fulfillment, roughly 10 to 20 percent of sales in omnichannel retail, companies are faced with tough decisions as they work toward improving delivery speeds profitably. Should they continue to build, should they partner, or can technology help unlock value in the speed equation where infrastructure and operations fall short?

The challenges of accelerated delivery

Omnichannel players know speed matters: we estimate that Amazon's free-delivery offering has accelerated more than 75 percent since the early 2000s, from more than eight days to two-day shipping by 2015—with select markets offering one-day delivery by 2019. Amazon continues to be a catalyst across retail, setting a high bar for direct-to-consumer delivery. In our experience, other retailers have closely followed this path. McKinsey's recent survey of chief supply chain officers found the pace will continue to accelerate over the next two years. We found roughly 75 percent of apparel, hard goods, and specialty retailers intend to build out network capabilities that offer two-day or faster delivery, and 42 percent are aiming for one-day click-to-consumer lead times by 2022.[4]

As delivery times compress, the detailed physics of the supply chain becomes increasingly important. Simply put, seconds count. Most fulfillment operations need time to pick and pack deliveries—by itself, that process takes an average of four to eight hours, though best-in-class omnichannel operations can fulfill orders within two hours of consumer purchase. Once picked, parcel carriers then must pick up shipments from the distribution center, which often influences order cutoff times—the latest time an order can be accepted to meet the promised delivery time. Once a package is in the parcel network, traveling the final mile to the consumer can take an additional day or more. Bringing it all together, one- or even two-day shipping requires tight cycle times and great execution across multiple parties in the supply chain.

To combat these challenges at least partially, most omnichannel players already use their stores for fulfillment or pickup. There are clear benefits to using stores, for example, enabling greater overall inventory productivity, quickening speed to consumer, and avoiding markdowns. While these benefits can be meaningful, challenges still must be overcome:

— **Inventory accuracy.** Stores generally have lower inventory-accuracy rates (70 to 90 percent) than distribution centers typically enjoy (more than 99.5 percent).

[1] Jessica Young, "US ecommerce sales climb 39% in Q1 2021," Digital Commerce 360, May 18, 2021, digitalcommerce360.com.
[2] *Retail speaks: Seven imperatives for the industry*, a joint report from the Retail Industry Leaders Association and McKinsey, March 2021, McKinsey.com.
[3] Tim Ecker, Malte Hans, Florian Neuhaus, and Julia Spielvogel, "Same-day delivery: Ready for takeoff," January 31, 2020, McKinsey.com.
[4] *Retail speaks: Seven imperatives*, March 2021, McKinsey.com.

As customers expect faster delivery speeds, retailers can create greater impact from a segmented approach in shaping their delivery-speed promise.

— **SKU complexity.** When the online assortment includes channel exclusives, endless aisles, and even third-party products, minimizing margin-eroding split shipments across the network becomes challenging.

— **Demand signal.** Positioning inventory across distribution centers, various store types, and market fulfillment centers remains a struggle for most players; in fact, of all the levers to solve for speed to consumer, accurate demand forecasting and distributed-inventory placement may have the greatest impact outside of network changes.

— **Picking costs.** While there are exceptions, for a majority of retailers the cost of in-store picking is much higher—typically 1.5 to 2 times higher on a cost-per-pick basis—than picking at distribution and fulfillment centers.

— **Execution quality.** Stores weren't designed with fulfillment in mind, nor are they necessarily staffed or equipped with the technology to do so at scale. Particularly during peak times, it's hard for most stores to manage exceptions, ensure accurate picks, and tightly control cycle times to customers—all of which are important to a great consumer-delivery experience.

So what's the next move for retailers? How do they overcome these challenges and provide faster fulfillment and better overall consumer experience? Answers will vary, and it's important to remember that beyond speed, other omnichannel conveniences such as curbside, returns, and buy online, pickup in store all play a significant role in differentiating the omnichannel fulfillment value proposition.

Solving the speed dilemma

Despite the many challenges of providing ever-faster omnichannel order fulfillment, we see four key characteristics that define fast and efficient fulfillment models.

Understand where speed matters

As customers expect faster delivery speeds, retailers can create greater impact from a segmented approach in shaping their delivery-speed promise. Retailers' fulfillment engines can deliver to different segments at different speeds.

In our research, we have found same-day delivery does not create value uniformly across the country. For instance, in working with one specialty retailer, we found roughly 20 US cities have densities that would typically justify the investments to enable

same-day or next-day fulfillment. Consumers living in major cities such as Chicago, Los Angeles, New York, and San Francisco are likely to expect faster delivery than consumers in a smaller market. Indeed, consumers' age, location, and economic disposition affect their expectations and willingness to pay for convenience and speed. And consumer expectations can further vary by retail segment:

— food and grocery—less than one day

— beauty—less than one day

— apparel—less than two days

— home décor—less than two days

— electronics—less than two days

— general merchandise—two days or less

Grocery and convenience retailers, for example, are solving for different consumer needs than most other segments. In the next three to five years, we believe table-stakes delivery times will generally be fewer than two days across all major categories—and it would be hard to go back.

For retailers still navigating segmented speed capabilities, A/B testing is one way to glean these insights. For instance, one large US home-goods retailer took a two-pronged approach to solving the targeted speed problem. First, it set out to determine which items customers most wanted to receive quickly so it could deploy that inventory in advance closer to customers. Second, the retailer knew speed mattered but didn't want costs to balloon from offering superfast shipping to customers who didn't demand or expect it. Next, the retailer ran speed tests similar to an A/B test in that it showed different delivery-speed promises made to customers on the same product pages. It then tracked conversion as well as consumer satisfaction, loyalty scores, and repurchase behavior. Over the course of about three months the retailer ran these tests and made two key changes: it started optimizing inventory placement across the network to enable faster delivery for specific products, and it started offering different, targeted speed promises for the same item to different consumer groups based on geography, past behavior, and demographics. By adopting these changes, the retailer was able to achieve a nearly 10 percent improvement in its online conversion rate.

Invest selectively in network expansion

We estimate that retailers can provide two-day delivery to 80 percent of the US population by using approximately three distribution centers across their network. However, offering next-day delivery to 80 percent of the United States would require more than eight distribution centers—even more if retailers want to solve for lower parcel expense and density. Indeed, next- or same-day parcel delivery can cost retailers more than $15 per package, which is not tenable for the majority of retailers. At the same time, opening at-scale distribution centers—which often requires more than $100 million in capital for each distribution center—is likewise not feasible for many retailers. And for most retailers that are interested in growth, keeping up with the scale of Amazon and Walmart distribution networks is likely not the most prudent way to allocate resources. Indeed, if Amazon's logistics unit were a separate company, we estimate it would be the fifth-largest third-party logistics company in the world; few, if any, retailers have the resources to compete at that scale.

Urban- or market-fulfillment-center strategies, such as dark stores and dedicated fulfillment locations, have emerged across retail networks. These are typically smaller-format operations—often less than 50,000 square feet, but sometimes smaller than 10,000 square feet. The capital costs are generally $5 million to $15 million, a fraction of the cost of standing up a new distribution center. Despite higher rent and labor costs for these locations, these costs are often offset by reduced costs of last-mile delivery, which can be substantial at up to 20 percent. Such approaches are already being explored across segments including grocery, home improvement, apparel, and consumer electronics. Faster and lower-cost shipments aren't the only

ways retailers can create value—in our experience, providing rapid in-market replenishment for nearby stores has allowed reductions in inventory of up to 20 percent by consolidating the forward supply of stock spread across stores.

Increase productivity with analytics and automation

Inventory analytics (to better position inventory in key omnichannel markets) and robotics and automation in the supply chain are two key levers to reducing time and cost to consumer.

Refining inventory analytics. Retailers are expanding their fulfillment networks to include more complex distribution nodes, such as large multimarket distribution centers, urban fulfillment centers, stores, and dark stores. As they expand their networks, the choices and tradeoffs around distributed inventory—for example, balancing the forward weeks of inventory in a store versus allocating inventory to a local market fulfillment center—have become more complex. Traditional systems for allocating and replenishing inventory fall short in identifying the tradeoffs between breadth and depth of inventory across a cluster of in-market nodes. Indeed, many retailers see the shortfall of their current systems as a technical liability. Bespoke analytics and tools can help solve these issues as retailers test, learn, and adapt more sophisticated omnichannel inventory strategies. This is a critical area of focus for retailers pushing the boundaries of fast and profitable delivery to customers.

Adopting automation technology and robotics. Robotics and automated systems in distribution centers and stores can improve the speed and accuracy of omnichannel order fulfillment processes.[5] The rapid growth of sophisticated solution integrators and "co-botic" solutions (robots that collaborate with humans) continues to accelerate, with numerous at-scale implementations emerging in the market. Moreover, many robotic and fulfillment solution providers have innovated different economic models, such as robotics as a service (RaaS), that reduce the upfront capital burden and allow more scalable, variable cost models to grow with the business. This can be equally attractive for companies with limited automation budgets and larger enterprises needing solutions that seasonally scale.

Solve last-mile challenges

Even the fastest fulfillment operation is still at the mercy of the speed and quality of final-mile delivery. For most, this means national parcel carriers remain critical partners in enabling advantages around speed. But the parcel market continues to pose headwinds, such as escalating surcharges (which are likely to remain standard practice) and strict, enforced capacity agreements. These pressures have created headlines and headaches for retailers of all sizes. In response, retailers must develop strategies that allow them to meet peak demand but do so at a reasonable cost. There are viable alternatives to traditional, national contracts:

- **Regional carriers.** Including regional carriers is becoming an imperative to a fast, resilient, and cost-effective last mile. It takes real effort for retailers to find, set up, and work day to day with a set of regional carriers to consistently meet high quality standards and transparency for customers; however, the recent market conditions have created opportunity for selectively "fragmenting" the parcel carrier base that serves across a retailer's network.

- **New delivery services.** Using gig and platform services allows quick and scalable last-mile delivery options for retailers without taking on the burden of navigating new processes and fixed costs. The costs for these options can be high, though the benefits of greater conversion can offset the incremental expense. For example, Sephora and Best Buy have partnered with Instacart (traditionally viewed as a grocery-first business) to enable same-day fulfillment. Likewise, American Eagle Outfitters has used its partnership with ShopRunner to offer its customers free same-day fulfillment.

[5] For more on retail logistics automation,see Ashutosh Dekhne, Greg Hastings, John Murnane, and Florian Neuhaus, "Automation in logistics: Big opportunity, bigger uncertainty," April 24, 2019, McKinsey.com.

While autonomous vehicles and drones are the center of media attention, and do have long-term potential in select segments of the value chain, we see the maturity and capability of these solutions as longer term and therefore less relevant for most retailers' last mile in the near future.

How operations can support a consumer value proposition beyond speed

For most retail supply chain leaders, creating a faster fulfillment network is rightfully top of mind. A recent McKinsey survey of consumers shows that five of the top nine factors driving consumer value in omnichannel retail are related to logistics (Exhibit 1). But it is important to remember fulfillment-network improvement is but one among several capabilities a retailer must build to remain competitive in omnichannel retail. Indeed, the North Star of a great omnichannel strategy is removing friction from the parts of the fulfillment process that matter most to customers. Below are a few of the avenues retailers can explore with operations support.

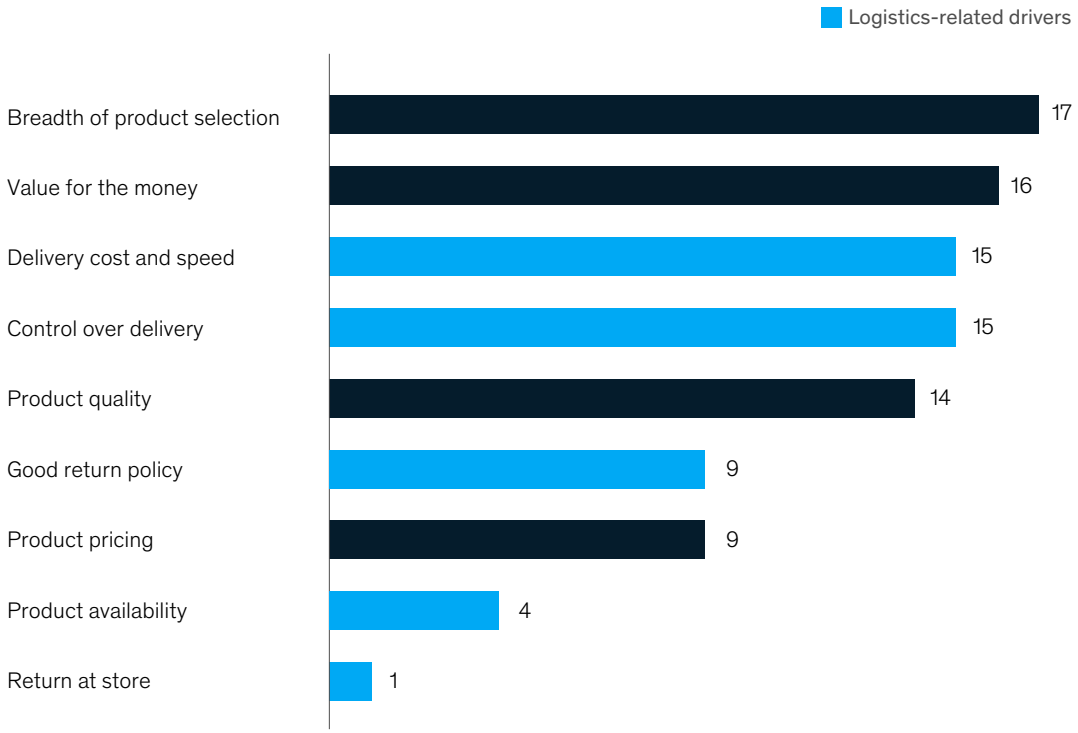
Ease of returns

Return rates continue to increase in omnichannel, with an average online return rate of 20 to 30 percent in the United States. Returns have become an important part of the omnichannel journey for customers. A majority of customers will not buy online if they don't find the return policy satisfactory—that is, free returns with adequate time to evaluate their purchase, typically

Exhibit 1

Omnichannel customers care about logistics excellence.

What US customers value in omnichannel retail, % of survey respondents



Source: McKinsey Digital Consumer Survey

The North Star of a great omnichannel strategy is removing friction from the parts of the fulfillment process that matter most to customers.

30 days or longer. But returns are expensive for retailers. In addition to forward and reverse logistics and processing cost, retailers face low net-recovery rates—particularly in fashion or high-damage categories, where older returned products must be marked down and therefore sell for less the second time than their original price. It is important for retailers to consider returns as part of their omnichannel value proposition and optimize cost drivers relative to their consumer value proposition.[6]

Scheduled delivery and consistency
Some categories lend themselves better to scheduled delivery than speed. For example, customers may prefer to select a specific window to receive bulky products such as furniture, appliances, large electronics, and certain home-improvement products rather than to receive them as quickly as possible. High-value products and fresh items in grocery that aren't necessarily bulky may also lend themselves to these capabilities. Clear communication, predictability, and narrow delivery windows are essential to get this right. Retailers can also consider dedicating themselves to ensuring deliveries are made within the promised time period—regardless of the speed of the delivery. While occasional disruptions are inevitable, some retailers are beginning to test and correlate the impact of a delivery-consistency promise on conversion, and the impact of a missed delivery window on net promoter scores and repeat purchases.

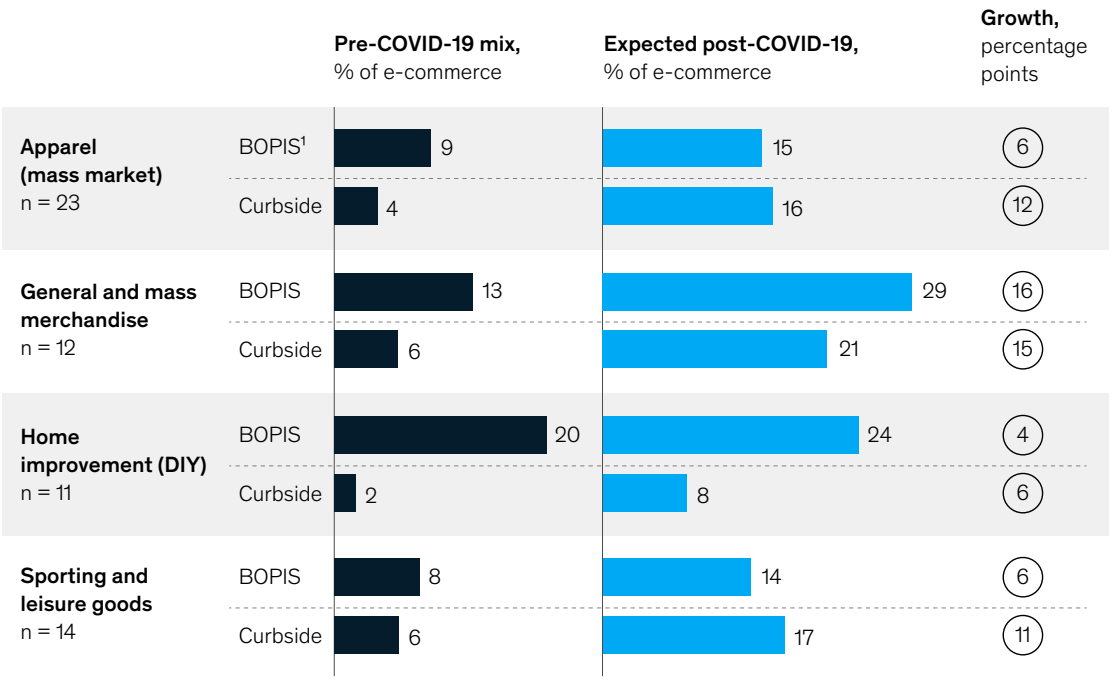
Buy online, pick up in store and curbside pickup
Store-based pickup options have experienced tremendous tailwinds and innovations throughout the pandemic (Exhibit 2). A July 2020 poll of 50 retail executives indicates that store-based pickup offerings grew about threefold from mid-2019 to mid-2020. Some retailers report year-over-year growth of more than 200 percent in their own store-based pickup offerings. Moreover, McKinsey's consumer insight research shows that about 60 percent of consumers plan to continue to use this option after the pandemic.[7] These relatively high adoption rates are in part due to the convenient, free, and fast offering on this capability, as best-in-class retailers have orders ready for pickup in under two hours. This can be a compelling alternative to fast ship-to-home delivery.

Lockers and pickup and drop-off points
Lockers and pickup and drop-off points have somewhat limited penetration at less than 5 percent, but momentum is growing thanks to retailers such as Amazon and Walmart and parcel companies such as FedEx and UPS. Generally, this is a convenience that will likely be concentrated in food and grocery, and in urban areas where people lack a convenient or safe place to leave a package.

[6] For more on improving returns management, see Jacob Ader, Praveen Adhi, Joyce Chai, Marc Singer, Sarah Touse, and Hannah Yankelevich, "Returning to order: Improving returns management for apparel companies," May 25, 2021, McKinsey.com.
[7] Tamara Charm, Janette Hwang, Andrea Leon, Nancy Lu, Anirvan Maiti, Jonathan Medalsy, Jason Rico Saavedra, Kelsey Robinson, Daniela Sancho Mazzara, and Tom Skiles, "US consumer sentiment and behaviors during the coronavirus crisis," August 11, 2021, McKinsey.com.

Exhibit 2

Consumers' adoption of flexible omnichannel fulfillment choices is expected to increase after the pandemic.



[1]Buy online, pick up in store.
Q: What were the average sales ($) (annual sales across peak and low seasons) for buy online, pick up in store (BOPIS) as a share of e-commerce sales ($) at the retailers with which you are familiar pre-COVID-19?
Q: What do you expect the average sales ($) (annual sales across peak and low seasons) for buy online, pick up in store (BOPIS) as a share of e-commerce sales ($) at the retailers with which you are familiar pre-COVID-19? Please consider consumer demand for the BOPIS offering, independent of retailers' actions to drive customers to BOPIS.
Source: Retail Professionals Survey, July 2020, n = 50

Lockers have further benefits in that they reduce redelivery rates, which frees up already constrained capacity in parcel-delivery networks.

While these capabilities are not yet mainstream, US retailers can learn from higher-penetrated markets such as Europe, where a variety of nongrocers are using them. For instance, a farm-supply store uses lockers to provide 24/7 availability of critical parts outside of stores.

Sustainability

More and more, customers expect their retailers to share their values and be committed to improving the planet. Retailers can appeal to such customers in a number of ways. For instance, many retailers are going public with their sustainability commitments through 2050, often with the aim to be carbon neutral. Retailers can engage customers in these goals through fulfillment strategies such as allowing customers to opt in on the sustainable choice—whether it be choosing fewer packages or slower

shipping. And retailers can provide incentives for doing so—for instance, by offering discounts on those orders or future purchase incentives.

The evidence is clear: customers expect faster delivery, and there's limited willingness to pay for it. While there are real costs associated with enabling faster delivery, the cost curve can be shifted with a combination of strategies involving network expansion, technological capabilities, and partnerships. And a host of options beyond merely quick fulfillment can further help meet consumer expectations. (For information on meeting consumer expectations during the upcoming holiday season, see sidebar, "Navigating the upcoming holiday season.")

Pursuing such strategies will require both a mindset and operating-model shift among retailers. But by making these changes, and making them well, retailers can profitably provide customers the assortment, availability, and convenience they crave.

Navigating the upcoming holiday season

Here are five things retailers can do now:

1. Streamline and simplify processes for buy online, pick up in store to reliably promise order pickups within two hours of ordering. This includes clear signage and dedicated locations in the store, process monitoring and reporting, and incentives for store associates who support these processes over the holiday season. Complement process improvement in the store with messaging on website and incentives to improve customer adoption.

2. Smooth out promotional activity over the holiday season to ease the effect of peak demand on the supply chain. Consider offering incentives for customers who are willing to accept longer delivery times combined with a guaranteed delivery date. Develop a communication plan for consumer redress in case of unexpected delays.

3. Ensure that fulfillment logic and systems are updated with the latest freight surcharges to ensure cost-effective decisions for parcel routing.

4. Work with traditional carriers to align capacity and pickup times. Consider using regional carriers and hiring temporary staff to manage demand that exceeds traditional carrier capacity or to manage late pickups. For high-demand fulfillment locations, consider multiple pickup times per day.

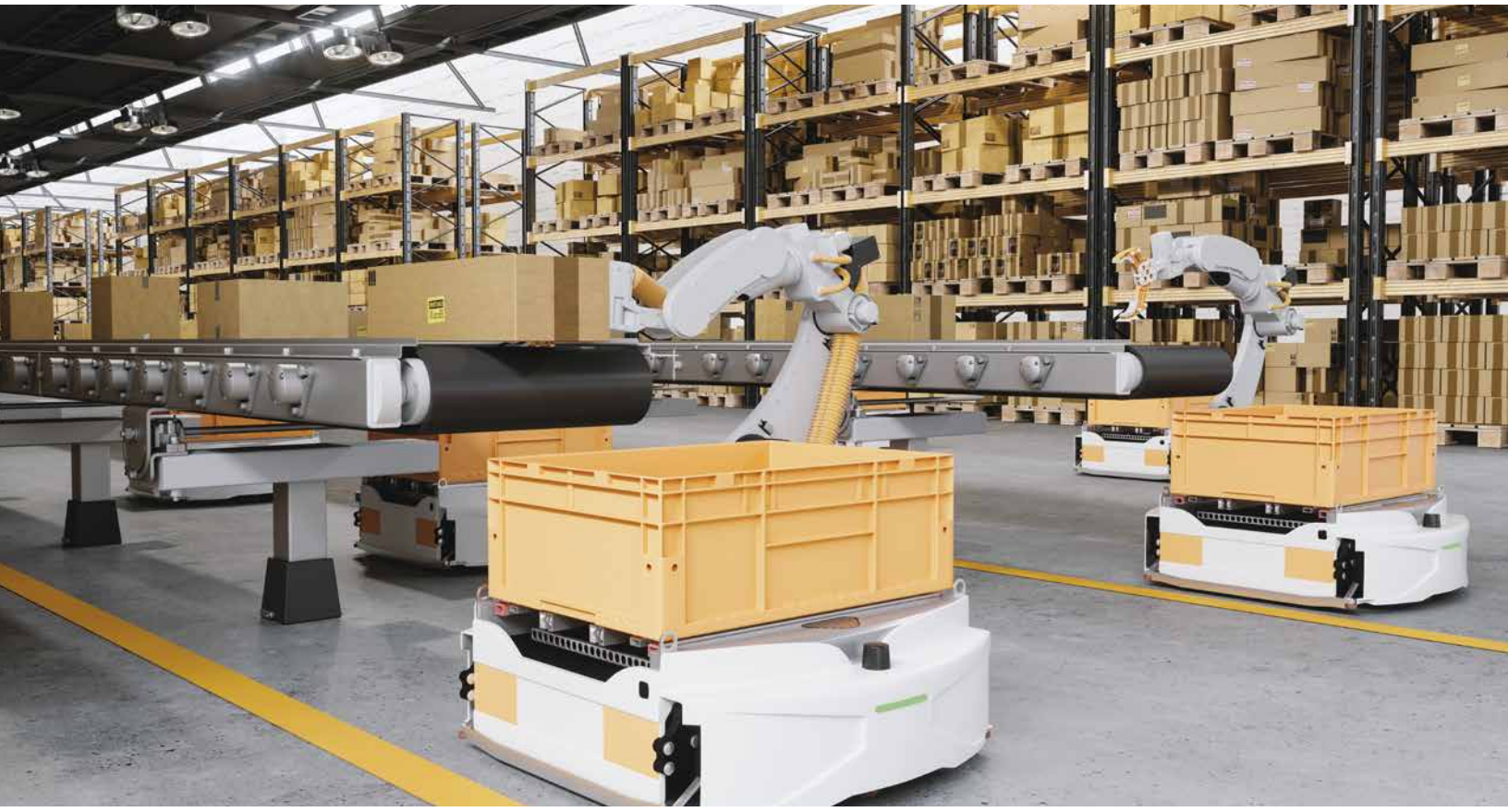
5. Use inventory analytics to stage inventory in select, strategic fulfillment nodes to cover the necessary ground, geographically, while optimizing inventory and fulfillment infrastructure costs. For example, retailers can enable ship-from-store capabilities and place inventory in select stores based on the historical demand trends for those specific stores rather than enabling ship-from-store capabilities across all stores.

John Barbee is a partner in McKinsey's Atlanta office; **Jai Jayakumar** is an associate partner in the Chicago office, where **Kumar Venkataraman** is a partner; **Tim Lange** is a partner in the Cologne office; **Sarah Touse** is an associate partner in the Boston office; and **Andreas Seyfert** is a senior expert in the Berlin office.

Automation has reached its tipping point for omnichannel warehouses

Automation offers a range of benefits for warehouses, from increasing productivity to reducing risk related to labor. To harness its full potential, retailers must develop an end-to-end strategy.

This article is a collaborative effort by John Barbee, Alan Davies, Raoul Dubeauclard, Tim Lange, and Christoph Lennartz, representing views from McKinsey's Consumer & Retail Practice.



Never before has the competition for warehouse and fulfillment labor been so fierce, strongly driven by sustained growth in B2C channels. In the United States, for example, employment levels across distribution centers are at all-time highs and wages have risen to well above $18 an hour, yet attracting and retaining warehouse employees remains elusive. In the short term, strategies such as bonuses, accelerated pay raises, and tuition reimbursement are helping. But the long-term implications of a high reliance on labor are clear: automation in warehousing is no longer just nice to have but an imperative for sustainable growth.

Fueled by venture capital over the past five years, the automation industry has seen increased availability of new warehouse-automation innovations, supply chain as a service (SCaaS) models, and technology that integrates multiple solutions to help retailers address some of these challenges.

For instance, the adoption of autonomous mobile robots (AMRs), technology that eliminates significant nonproductive walking time in warehouses, has progressed from early-stage pilots about four years ago to multiple at-scale deployments today. For example, DHL rolled out 1,000 Locus Robotics AMRs and will deploy up to 2,000 robots by 2022.[1] These technologies aren't just for larger companies. German toy retailer Rofu Kinderland built a new warehouse that includes 57 robots retrieving 3,500 different products from more than 28,000 bins, increasing efficiency and delivery speeds.[2] Innovators are gaining momentum as well. For example, Alert Innovation developed a microfulfillment-center technology platform for Walmart to handle the demands of grocery e-commerce. The proof-of-concept pilot system is now in full operation.

Automation capabilities will play an influential role in the future size and scale of omnichannel networks. To successfully navigate the many choices for automation, retailers must have an informed perspective on where automation can create value, reduce risk, and improve reliability across an increasingly complex network of fulfillment nodes. Retailers should then use a three-step process—strategy, design, and implementation—to translate their vision into an optimal automated warehouse.

The changing face of the warehouse-automation industry

Investments from retailers in automation are poised to fuel significant industry growth: the warehouse-automation market is forecast to reach $51 billion by 2030, a CAGR of 23 percent.[3] The wave of innovation in warehousing has been fueled disproportionately by venture-capital funding for new start-ups, whose solutions increasingly influence the future of the omnichannel warehouse. In addition, private equity has provided a significant tailwind for key companies. For example, SoftBank invested $2.8 billion in AutoStore, an automation provider geared to the e-commerce and grocery industries.[4] Many of these technologies—for example, automated guided vehicles (AGVs) or the next level of automation AMRs as unmanned transport next to warehouse employees—have proved their effectiveness at scale in addressing the challenges of traditional e-commerce warehouses, such as labor shortages, SKU-complexity growth, and increasing service expectations.

Increased M&A and investment

Marketplaces and platform players have long recognized the importance of automation and have been rapidly acquiring robotics companies. Several at-scale investments have grabbed headlines. In 2019, the online marketplace Shopify spent $450 million to acquire automation provider 6 River Systems, with the goal of extending its AI-enabled fulfillment network.[5] Amazon is developing proprietary automation solutions via Amazon

[1] Steven Crowe, "Locus Robotics scaling AMR deployments with DHL supply chain," *The Robot Report*, June 2, 2021, therobotreport.com.
[2] Melanie Wack, "E-Commerce: AutoStore für Spiel-, Schreibwaren und Dekorationsartikel," *Logistik Heute*, November 12, 2020, logistik-heute.de.
[3] David Edwards, "Revenues from robotics in warehouses to exceed $51 billion by 2030," *Robotics and Automation News*, August 19, 2021, roboticsandautomationnews.com.
[4] Sam Shead, "SoftBank invests $2.8 billion in Norwegian robotics firm AutoStore," CNBC, April 6, 2021, cnbc.com.

Robotics to improve warehouse productivity and lessen the labor burden. Zalando has partnered with multiple automation partners to accelerate consumer-delivery times and improve operating efficiencies.

Several retailers have publicly committed significant capital toward their automation strategies. For instance, Walmart plans to allocate nearly $14 billion for warehouse automation and other business areas,[6] and ASOS announced $100 million in spending to expand the capacity and productivity of its warehouses.[7] These moves are indicative of an industry-wide focus on automation, now even further accelerated as a response to changing market conditions brought about by the COVID-19 pandemic.[8]

Larger players in the warehouse-automation industry have sought to create distinctive and integrated capabilities through acquisition. For instance, Toyota Material Handling has acquired integrators including Vanderlande and Bastian Solutions, Kion Group has acquired Dematic and software company Digital Applications International, and Honeywell has acquired Intelligrated and Transnorm. Acquirers are seeking to develop more end-to-end solution sets rather than point technologies as they seek to unlock greater value through integrated solutions. The automation market remains concentrated, with the top five automation and material-handling players still accounting for more than 50 percent of current market share.[9] Beyond the top ten in each region, players mostly are specialty and niche automation providers.

Automation in action

Leading retailers are aiming to make warehouses responsive, resilient, and reliable to accommodate the ever-growing e-commerce market and incorporate lessons from the global pandemic. Along with improving existing warehouse capabilities and enabling new nodes of fulfillment (such as urban fulfillment centers), they view warehouse automation as an important part of the solution. In a recent McKinsey survey of 50 retailers across apparel, grocery, and other key sectors, more than 80 percent of respondents indicated they intend to increase automation investments over the next two to three years.[10]

And it's worth it: some retailers have cracked the code and have begun rolling out ambitious upgrades. As part of a €500 million initiative, Edeka invested €93 million to expand its existing warehouse in Berbersdorf, increasing the total number of SKUs from 2,900 to 12,700 while adding a 300,000-square-foot, partially automated picking-and-storage area.[11]

Leading retailers are aiming to make warehouses responsive, resilient, and reliable to accommodate the ever-growing e-commerce market.

[5] Emil Protalinski, "Shopify acquires 6 River Systems for $450 million to expand its AI-powered fulfillment network," VentureBeat, September 9, 2019, venturebeat.com.
[6] Tonya Garcia, "Walmart to invest nearly $14 billion in automation and other business areas in fiscal 2022," MarketWatch, February 22, 2021, marketwatch.com.
[7] "Retailer ASOS to spend $100M to automate Georgia warehouse," U.S. News, July 12, 2021, usnews.com.
[8] "Warehouse automation investment up due to COVID-19," Material Handling and Logistics, July 13, 2020, mhlnews.com; Mark Dunaway, "Why are so many companies investing in warehouse automation?," Modern Materials Handling, January 10, 2020, mmh.com.
[9] "Warehouse automation market," LogisticsIQ, 2021, thelogisticsiq.com.
[10] For more, see "Retail speaks: Seven imperatives for the retail industry" on McKinsey.com.
[11] Stefanie Schmitt, "EDEKA Nordbayern-Sachsen-Thüringen erweitert Logistikzentrum in Berbersdorf für rund 93 Mio. €," EDEKA, March 12, 2021, verbund.edeka.

Navigating automation choices

Multiple technological advancements have pushed the boundaries of what is possible in warehouse automation. As part of an overarching automation strategy, retailers that develop an end-to-end vision for the warehouse of the future have to identify the specific use cases and unlock value (Exhibit 1). Navigating the choices has become more complex, with new providers entering the market and larger conglomerates and venture-capital funds pursuing consolidation in an effort to build an integrated portfolio of solutions for clients. Acquisitions within the automation-provider landscape will continue, significantly increasing the pressure on automation companies to offer warehouses end-to-end solutions.

We envision three warehouse archetypes that will inform the design of automation systems: dedicated, shared, and integrated omnichannel (Exhibit 2). These archetypes can help retailers narrow down the set of use cases and solution sets and better understand the complex choices among automation providers, integrators, and start-ups.

Dedicated warehouses

This archetype consists of warehouses specifically designed for a given channel (such as e-commerce), product flow (for example, consolidation), or product type (apparel versus hard goods). Generally, dedicated warehouses solve for scale and cost efficiency in the network. Distribution formats can range from large-scale facilities that cover national distribution needs (more than one million square feet) to smaller, urban-based fulfillment centers (less than 20,000 square feet) that balance same-day and next-day speed with cost efficiency.

Given the specific focus of these distribution formats, integrated and specialized end-to-end automation concepts generally work best. These warehouses benefit from improved space efficiency, greater labor productivity, faster four-wall cycle time,[12] and downstream efficiencies (such as store-friendly pallets). Examples of dedicated warehouses include retail fulfillment (Amazon Go stores), national e-commerce fulfillment (Zara), store replenishment (such as Albertsons and Carrefour), delivery centers for small parcels (Post), and category-specific facilities (such as Reckitt Benckiser and Zalando).

Shared warehouses

Warehouses serving multiple channels or product segments, which may include wholesale and direct-to-consumer (DTC) channels or ambient and perishable-product segments, make up this archetype. While these warehouses exist under the same roof, the operations and inventories are independently managed by channel. This archetype offers greater flexibility than a dedicated warehouse in that multiple channels and categories may be served under one roof or in a campus setting. The multipurpose structure has several benefits: more efficient use of distribution space, cost savings from consolidated labor and overhead, and external advantages such as inbound consolidation. The systems technology and automation may need to support specific flows, handling requirements, and order profiles of each channel. As a result, individual warehouses still operate mostly independently. Automation solutions can still be integrated, but they may combine various fit-for-purpose technologies to address unique channel needs—for example, a retail-store warehouse could be on the side of the building (with automated pallet and case storage where store replenishment orders are prepared), while the e-commerce warehouse could be on mezzanines where individual units are picked with a multishuttle or autostore.

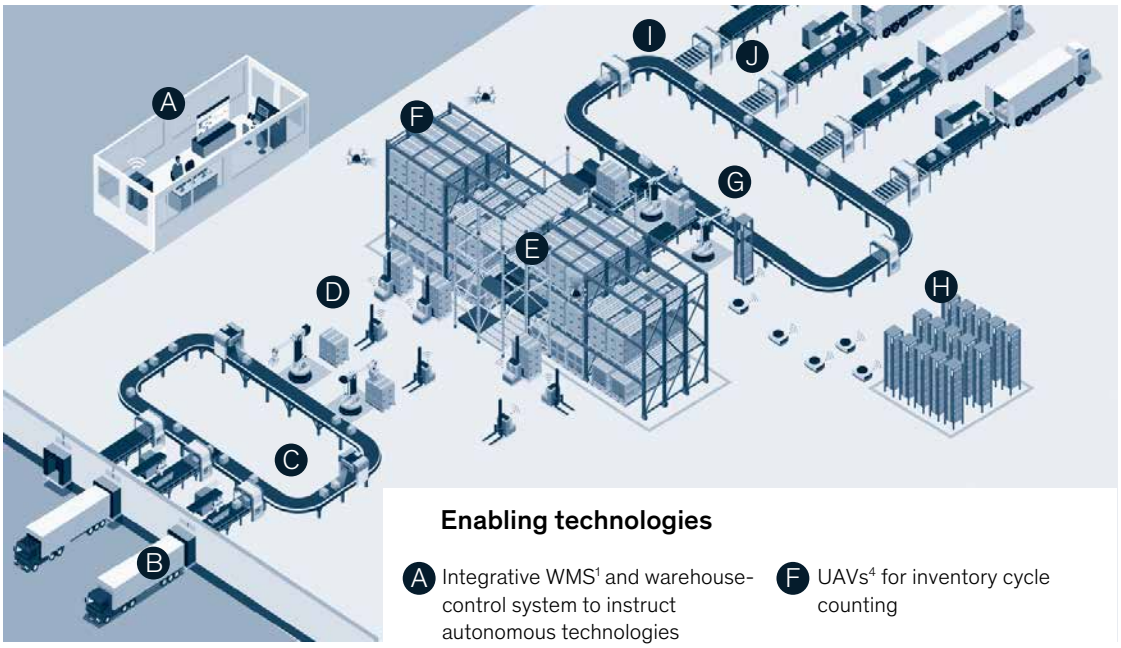
Integrated omnichannel warehouses

Omnichannel warehouses seamlessly serve all channels in the network and generally have the technology and systems to handle inventory across a mostly common stock pool (for example, the same picking locations or an automated storage system). These facilities offer the greatest flexibility in the network and reduce systemwide inventory-carrying costs, but retailers may have to make trade-offs on cycle time, dedicated capacity, and

[12] Cycle time from entering until exiting the warehouse.

Exhibit 1

The end-state vision is lights-out warehousing that operates autonomously.



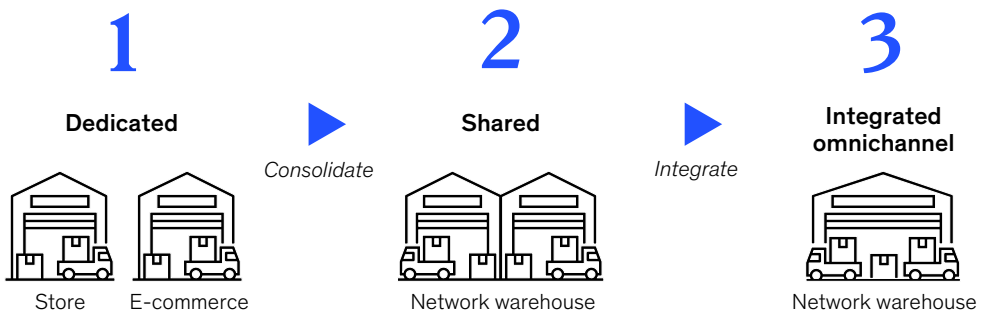
Enabling technologies

- **A** Integrative WMS[1] and warehouse-control system to instruct autonomous technologies
- **B** Automatic unloaders to remove cases and pallets from inbound trucks
- **C** Product-identification scanners to document inbound receipt and determine storage bin
- **D** Palletizers and AGVs[2] to facilitate put-away from dock to bin
- **E** ASRS[3] system for case storage; full pallet slots for bulk storage
- **F** UAVs[4] for inventory cycle counting
- **G** Item-picking robots for full-case picks and loose-unit picks from storage shelves
- **H** AGVs[2] to transport loose unit shelves for picking and replenishment
- **I** Sortation scanner to determine loading-dock destination for each product
- **J** Scanners and loading robots to confirm outbound delivery

[1] Warehouse-management system.
[2] Automated guided vehicle.
[3] Automated storage and retrieval system.
[4] Unmanned aerial vehicle.

Exhibit 2

Retailers can choose from three warehouse archetypes to help inform the design of automation systems.



productivity. The set of automation solutions, which may be a hybrid of the capability or shared archetypes, could allow convergence in upstream warehouse processes such as inbound and storage. Distribution operations may have different requirements for fulfillment-execution processes to meet the needs of individual order profiles and channels. For example, online consumers might order small quantities and request a lead time of less than 24 hours, while stores might accept 48-hour or longer lead times with larger volumes being picked and shipped. Hence, the requirements in warehouse operations need to be matched along the steps across channels, balancing the trade-offs of solution benefits.

This archetype, which is best suited for stores that order in eaches[13] (an approach many apparel and electronics retailers take), can support a shared picking location between stores and online. It provides two benefits: First, it allows inventory pooling and the more efficient use of space. Second, it enables increased scale for automation and the better use of system capacity, with the ability to handle stores and online channels with different seasonality and peaks.

Because each type has its own advantages, identifying and implementing the optimal solution requires an informed decision-making process.

Selecting the right automation solutions

In response to a rapidly changing marketplace, many retailers are moving away from a single solution or turnkey provider and building a portfolio of solutions to fit their network. Traditionally, partnering with a turnkey provider offered advantages, such as integration across multiple solutions and pricing transparency. While this still holds true, the pace of innovation in solutions continues to accelerate, and innovations in technology and operating models provide compelling reasons to explore a multipartner strategy.

For instance, along with technological innovation, many new robotics and automation providers have innovated as-a-service models (XaaS), such as robotics as a service (RaaS) and fulfillment as a service (FaaS). These solutions alleviate the traditional hurdles of up-front capital risk (RaaS helps retailers overcome ROI hurdles such as a payback of two to three years) and offer retailers a variable cost structure better aligned to testing and learning across new technologies and concepts. Because of lower investment levels, retailers are now able to test and learn with selected partners, building up their automation capabilities. Companies can excel in innovation by replacing their tried-and-true approaches to warehouse automation with in-house capabilities to

[13] A unit of measure where each individual piece is tracked by the computer system.

explore earlier-stage implementation. For example, companies can conduct a pilot with AMRs that assist picking operations alongside employees on site. The benefits of this experimentation can be significant—for example, progressing from proof of concept to large-scale implementations.

The range of design and implementation choices varies considerably depending on strategy. An AMR project may require six to eight weeks to pilot, whereas case multishuttles can take 12 months or more to accommodate infrastructure procurement and build-out. In our experience, a three-step process can help retailers determine the right approach to warehouse automation:

Strategy

Traditionally, retailers might take a site-by-site view of their automation strategy. This exercise includes both establishing criteria for prioritizing automation opportunities and defining business cases to evaluate fit-for-purpose use cases and potential partners for a new or existing operation. We find the more innovative retailers are taking an end-to-end view of their network, developing scenarios for both productivity and short- and longer-term labor risks. A balanced approach to use cases may open up a variety of solutions, while the site-to-site approach focuses solely on payback for individual locations.

Design

In this step—segmented into preconceptual, conceptual, and detailed design—retailers conduct a financial evaluation, create optimized warehouse designs, and select providers by stress testing simulations. The design workshops include retailers, joined by their chosen automation suppliers; beyond them, an objective, informed, third-party perspective—for example, via consultancy—is essential to reach the optimal design. The design process goes beyond the selection of automation to encompass warehouse analytics, strategic network effects, and much more.

Implementation

Where necessary, retailers can identify and select a warehouse-automation system integrator or can orchestrate across a set of partners to build the case-specific automated warehouse. Some companies may also select a logistics service provider to operate the new warehouses and orchestrate the warehouse launch, based on a case-by-case evaluation.

This process has repeatedly captured substantial value because even small decisions (for example, initial product-segment growth assumptions that, in the end, significantly influence automation-picking capacities) have a major impact on projects of this scale. By following this holistic approach, retailers can create a compelling business case for automation and gain buy-in for investments.

The rise of e-commerce in omnichannel has elevated the demand for warehouse automation across industries. Retailers that innovate in this space can keep pace with high consumer expectations for service and personalization. A structured approach helps to pinpoint their current status, identify available and suitable options, and implement warehouse automation and utilization—including harnessing analytics enabled by warehouse automation. With these insights, companies can select the optimal automation for their warehouses.

John Barbee is a partner in McKinsey's Atlanta office, **Alan Davies** is a senior expert in the Miami office, **Raoul Dubeauclard** is a senior expert in the Lyon office, **Tim Lange** is a partner in the Cologne office, and **Cristoph Lennartz** is a consultant in the Düsseldorf office.

The authors wish to thank Lucas Clement, Katharina Hauck, and Michael Kalt for their contributions to this article.

Automation in contract logistics: Big opportunity, bigger uncertainty

As e-commerce volumes soar, many logistics and parcel companies hope that automation is the answer. But things are not so simple.

This article is a collaborative effort by Tom Bartman, Malte Hans, Scott McConnell, John Murnane, and Florian Neuhaus, representing views from McKinsey's Consumer & Retail Practice.

The history of logistics is also a history of automation, from the steam engine to the forklift to today's robotic pickers and packers. So today's fevered interest in new machinery, after a lull of several years, has plenty of precedent. Many trends are thrusting automation toward the top of the logistics CEO's agenda, not least these three: a growing shortage of labor, an explosion in demand from online retailers, and some intriguing technical advances. Put it all together, and McKinsey Global Institute estimates that the transportation-and-warehousing industry has the third-highest automation potential of any sector.[1] Contract logistics and parcel companies (which, for sake of convenience, we will call simply "logistics companies") particularly stand to benefit. (Automation is also on the table at other transport companies, such as trucking companies and port operators. See sidebar "Automating freight flows: Changes for every sector".)

Yet for all the excitement, most logistics companies have not yet taken the plunge. For every force pushing companies to automate, countervailing factors suggest they should go slowly. We see five reasons companies are hesitating: the unusual competitive dynamics of e-commerce, a lack of clarity about which technologies will triumph, problems obtaining the new gizmos, uncertainties arising from shippers' new omnichannel-distribution schemes, and an asymmetry between the length of contracts with shippers and the much-longer lifetimes of automation equipment and distribution centers.

Three cheers for automation

At first blush, more automation seems like the answer to three problems facing contract logistics companies.

Start with a shortage of workers. It's no secret that, at least in the United States, labor markets have tightened. Unemployment rates are at a 50-year low, and wages are increasing. Some of the largest e-commerce facilities currently require 2,000 to 3,000 full-time equivalents, an order of magnitude more than traditional distribution centers employ, and need to add even more workers during the holiday peak season, when labor is most scarce.

While many of the jobs that might be automated are currently difficult to fill, that's not to say that automation will have no effect on the workforce: it will, and companies must reckon with the significant costs to their employees and communities. In 2017, the US Bureau of Labor Statistics estimated that nearly four million Americans work in warehouses as supervisors, material handlers, or packers. That's almost 3 percent of the total labor force; collectively, they earn more than $100 billion in annual wages. Automation won't make all these workers redundant, of course, and many can be reassigned to new jobs that involve collaborating with and maintaining the new machines. But if even a portion of these jobs are lost, it will still represent significant upheaval.

E-commerce, the second trend, is remaking the entire logistics industry. The inexorable rise of online sales is well documented. In the United States, for example, growth has averaged 15 percent annually over the past decade, and the range of goods has expanded dramatically. That's been good for logistics companies. We estimate that, out of every $100 in e-commerce sales, these companies (or e-tailers' in-house logistics units) are collecting $12 to $20, a massive increase from the $3 to $5 spent on logistics in a typical brick-and-mortar-retail operation. (It's important to note that, in our estimate, e-tailers are saving $12 to $16 out of every $100 of sales versus their brick-and-mortar competitors, which explains why their economics work so well.)

But even as logistics companies have benefited from burgeoning volume, the business is not without its challenges. Many B2B networks are struggling to adapt to B2B2C. Many large logistics companies fulfill e-commerce orders by carving out a corner

[1] Michael Chui, James Manyika, and Mehdi Miremadi, "Where machines could replace humans—and where they can't (yet)," *McKinsey Quarterly*, July 2016, McKinsey.com.

of warehouses designed for B2B operations. And some logistics companies have at times been willing to use e-commerce as a loss leader to add business to their transport divisions. But as volume expands, all such arrangements are coming under immense strain. Here, too, automation seems to be an answer.

There's a third reason for heightened interest: automation technology has come a long way. Ocado Retail's new fully automated warehouse has demonstrated the potential of several new technologies—as seen by a big YouTube audience. Other companies, such as CommonSense Robotics (CommonSense), GreyOrange, and XPO Logistics, are rolling out intriguing new offerings.

These three trends make it seem like more investment in automation is a layup. Indeed, many

Automating freight flows: Changes for every sector

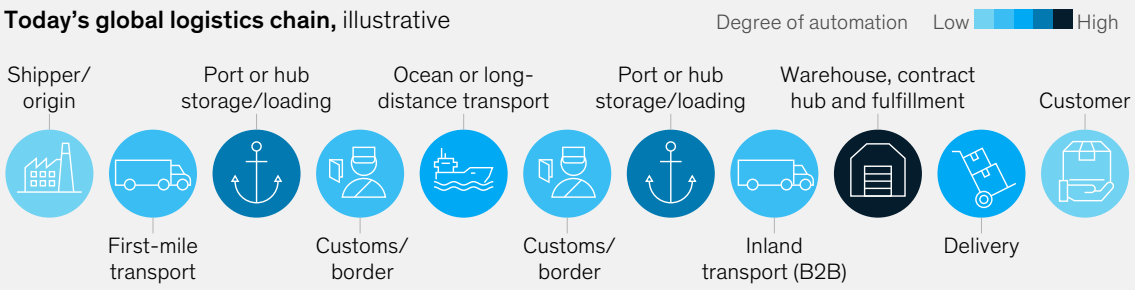
Automation will affect the supply chain far beyond the walls of the warehouse and sorting center; it will change the way goods flow across all modes (exhibit). In the first article in this series, we addressed the impact of autonomous trucking, a critical automation technology, on roads, rails, and ports. And our colleagues recently produced a detailed look at other forms of port automation. They find that while ports are accelerating their adoption of automation, they are not yet recouping their costs. Moreover, while operating expenses are falling as expected (by 15 to 35 percent), throughput is falling as well (by 7 to 15 percent). Port operators can take several steps to get the most out of automation. Among other moves, they can build automation-ready capabilities rather than simply automating old processes. And they can apply better project discipline to ensure that automation investments account for all attributes of port operations.

Of the remaining transport modes, automation in ocean and air freight is quite possible but will probably not move the productivity needle much. In rail, automation will likely begin in terminals, which offer controlled environments and repeatable processes. Intermodal terminals will likely see increased use of autonomous hostlers to move containers to and from trains. Autonomous cranes are also likely to emerge in the near term. While the physics of trains makes automation on the main line a longer-term prospect, rail operators and governments are investing in technologies that lay the foundation. Positive train control (PTC) is a long-desired step toward an automated future: its data links allow for real-time automated control of sets of trains. Several European and US railroads have PTC schemes in the works, and a few have fully implemented them.

Over time, railroads will continue to search for opportunities to automate the main line, but some limits will persist for the foreseeable future. For example, trains traveling heavily populated routes or hauling hazardous materials will likely continue to need human oversight.

Exhibit

Automation is emerging to varying degrees across the global logistics chain.



are finding success with it. Some companies' new automated pallet-handling systems cut shipment-processing time by 50 percent. And DHL International (DHL) has built almost 100 automated parcel-delivery bases across Germany to reduce manual handling and sorting by delivery personnel.

In fact, if you squint hard enough, an entirely new logistics paradigm is coming into view (Exhibit 1). Many operations could be automated by 2030, as artificial intelligence takes over the many repetitive activities that logistics companies perform. We expect to see fully automated high-rack warehouses, with autonomous vehicles navigating the aisles. Managers with augmented-reality goggles will be able to "see" the entire operation, helping them coordinate both people and robots. Warehouse-management systems will keep track of inventory in real time, ensuring it is matched to the ordering system. 3-D printers will crank out spare parts made to order (see sidebar "Automation technologies to watch").

Five reasons for hesitation

Logistics companies are intrigued by the potential of automation but wary of the risks. Accordingly, they are investing conservatively. McKinsey research estimates investment in warehouse automation will grow the slowest in logistics, at about 3 to 5 percent per year to 2025. That's about half the rate of logistics companies' customers, such as retail and automotive (6 to 8 percent) and pharmaceuticals (8 to 10 percent).

Five issues are holding the sector back. Two are the flip sides of the forces (e-commerce and technological advance) that are motivating the renewed interest in automation. Also clouding the outlook are purchasing problems, the potential for change in the omnichannel supply chain, and the risks associated with short-term contracts.

'Frenemies' and 'coopetition'

To capture the large e-commerce-growth opportunity, any logistics company must meet two fundamental requirements: speed and variety. Think same-day delivery of any of a million SKUs. To deal with that, more automation in picking, packing, and sorting seems like an easy investment call. But the unusual dynamics between logistics companies and e-commerce customers hold many logistics companies back. The risk manifests in a few ways. One is that e-commerce companies have a lot of buying power; if they do not like a logistics company's offer, they can easily shift their business to competitors. That tends to keep prices low and may keep logistics companies from making an adequate return on a big investment in automation.

Another wrinkle is that most large e-commerce companies, such as Amazon and JD.com, have built their own logistics capabilities. Indeed, we estimate that if Amazon's logistics unit were a separate company, it would be the fifth-largest third-party-logistics company in the world. To be sure, working with these companies can present challenges for shippers. The online giants, with their superior data and extraordinary scale, can readily offer white-label products that undercut their shipping customers' offerings.[2] But many thousands of shippers find the benefits outweigh the risks. The online giants deploy their in-house logistics first in the most lucrative niches, such as parcel delivery in dense urban areas, while slowly expanding into other areas. As that happens, they threaten to shunt logistics companies toward low-margin services, which may not justify an investment in automation. The moves by big e-commerce companies to build more warehouses in the last mile, and offer same-day as well as instant delivery, are a potent step in that direction, and logistics companies will have to carefully monitor the pace of change.

A particular challenge of serving e-commerce companies is that demand is very spiky, easily doubling around Christmas or Singles' Day. On Singles' Day 2017, Cainiao, Alibaba's logistics arm, processed 812 million orders, eight times more than on a typical day. If logistics companies are to fulfill consumer expectations during peaks, they will have significant spare capacity for three-quarters of the

[2] Rick Braddock, "To compete with Amazon, big-name consumer brands have to become more like it," *Harvard Business Review*, June 14, 2018, hbr.org.

Exhibit 1

A new logistics paradigm is emerging.

10 prominent technologies that could remake warehouse operations

Multishuttle system

Typically used with an automated storage and retrieval system (AS/RS) that moves goods (mostly on pallets) in 3 dimensions to store and retrieve items without human intervention.

Analytics tools

Algorithms that help operators analyze performance, identify trends, and make predictions that inform operating decisions, often using machine learning to improve over time.

Optical recognition

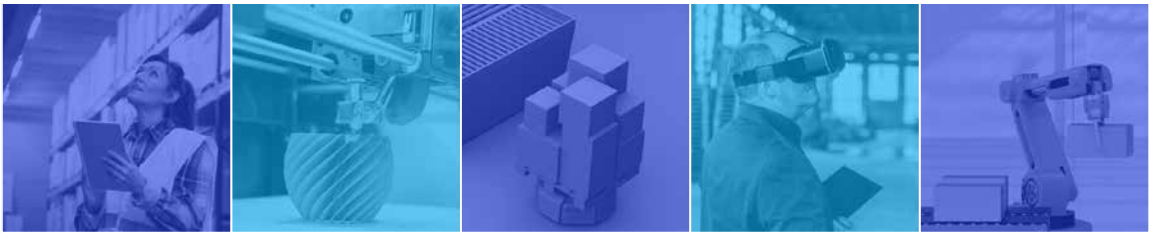
Sensors that scan items (often on 6 axes) to apply sortation and other logics. Examples include a conveyor's diverts, laser-guided vehicles, and camera-based movement of drones.

Conveyor connection

A connection between 2 disparate conveyor systems that often uses decision logic to affect the flow of items. Typically, connections integrate different systems of flow, for example push and pull flows.

Management system

Analytic and digital systems that integrate analytics, performance reporting, and forecasting tools, allowing managers to easily control a full system such as a warehouse.



Smart storage

Storage solutions that use advanced analytics and digital tools to place and retrieve items in the most efficient way, adjusting storage media based on the product, picking, and order characteristics.

3-D printing

Also called additive manufacturing, this process creates parts by adding layers of a material (metal or plastic, typically) to create a desired shape.

Swarm AGV[1] robots

Autonomous guided vehicles that operate freely or on digital tracks to bring items (often from a storage rack) to a picking station based on instructions from the order-flow software.

Smart glasses

Glasses that augment and assist reality of wearers—for example, by displaying directions to storage locations for picking—reducing inefficiencies of searching.

Picking robot

Systems with robotic arms that mimic human picking motion. Picking robots can be fixed (with goods brought to them) or mobile (traveling to storage to pick items).

[1] Autonomous guided vehicle.

Source: McKinsey analysis

year. And if they do not build sufficient capacity for peaks, e-commerce giants have further incentive to build their own capabilities, as Amazon did after the 2013 Christmas season.

Technology racing ahead

We combed the industry and found more than 50 technologies that could further automate some part of the supply chain, including many in logistics (Exhibit 2). All are much more than a twinkle in some technologist's eye, but none are yet in widespread use. The question that confronts logistics companies (and warehouse companies) is simple enough: Which ones will take off to yield the greatest return on investment?

Finding answers is much more difficult, of course (see sidebar "Automation technologies to watch" for our thoughts on the first few horses out of the gate). No one wants to buy technology that becomes obsolete shortly after acquisition. Not only would that leave a company less efficient than competitors that made better choices, it would also leave it worse off than those competitors that made no investment at all. The cost of removing and replacing equipment, much of it not fully depreciated, would put unlucky investors in a deep hole.

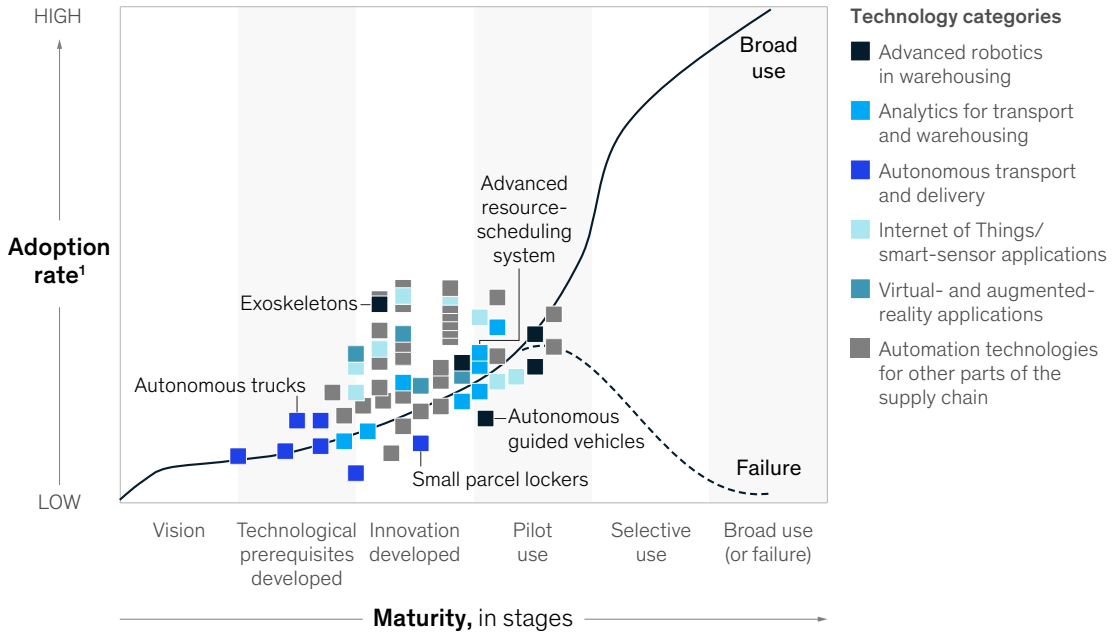
Purchasing woes

Even if a logistics company makes a great choice about the automation equipment to buy, it can

Exhibit 2

Dozens of logistics technologies are under development.

Logistics-technology development



[1]Speed of innovation adoption based on maturity.
Source: McKinsey Supply Chain 4.0 Innovation Survey

run into another problem. The global warehouse automation market grew by 10.3 percent each year from 2015 to 2019 with the market expected to double by 2026. Our conversations with many would-be buyers, especially at parcel companies, suggest that manufacturers operating at full capacity cannot even provide them with quotes.

Part of the problem is that the manufacturers are not yet at scale. Many companies, including the market leaders, are focused on a narrow range of technologies and solutions. That may change: the industry is in turmoil, with significant M&A activity underway. Notably, large technology conglomerates are investing in automation start-ups. For example, in 2015, Siemens took a 50 percent stake in Magazino, a start-up that builds automated picking robots. Once the dust has settled, some larger companies that are better able to meet demand may emerge. Then again, such companies will also have stronger pricing power.

A related issue is some confusion at logistics companies about which advanced equipment they truly need. Often the equipment on the purchase order is "overspec'd," or more expensive than it might have been. We have seen purchase prices for the same equipment vary by as much as 50 percent.

Rapid change in shippers' distribution networks

Brick-and-mortar retailers are reacting to the e-commerce onslaught in part by evolving their distribution networks into omnichannel systems in which consumers can purchase and receive items through any channel. They might purchase online and take deliveries at home, the classic e-commerce model. Increasingly, they can order online and pick up in stores. Or they might purchase in-store and receive shipments at home, an option that menswear company Bonobos and other companies offer. And of course, they can still go to the store and walk out with their purchases. On top of that, consumers demand ever faster delivery, which requires more

Automation technologies to watch

Warehouse automation technologies can be broadly categorized into devices that assist the *movement* of goods and those that improve their *handling*. In the first group, we've already seen automated guided vehicles (AGVs) that move cases and pallets. New twists are the equipment and software needed to retrofit standard forklifts and make them autonomous. The new gear can be switched on whenever needed—peak seasonal shifts, say—and the forklift can remain manual when demand is slower. Other recent technologies include swarm robots (most famously, Amazon's Kiva robots) that move shelves with goods to picking stations and advanced conveyors that can move goods in any direction. Advanced automated storage/retrieval systems (AS/RSs) store goods in large racks, with robotic shuttles moving in three dimensions on rails attached to the structure.

New handling devices automate the picking, sorting, and palletizing of goods. Picking systems typically include a robotic arm with sensors that can determine the shape and structure of an object, then grasp it. Some devices remain fixed and have goods brought to them (often by AGVs). Others travel to the goods and retrieve and move them at once. Magazino's new TORU cube is an example of the latter.

With the e-commerce boom, efficient sorting has become increasingly important, particularly in parcel operations. Advanced conveyor systems use scanners that can pick up bar codes on any side of a package to determine the appropriate action. Autonomous palletizers use robotic arms to build pallets from individual units and cases, often using advanced analytics to determine the optimal placement for each box.

Beyond the machines that mimic human hands and arms, other innovations will improve the productivity of people in warehouses. Drones are already in use in the warehouse for inventory management and outside the four walls for yard management. We expect to see much greater adoption of drones for these uses. Exoskeletons augment human motion with mechanical power through gloves or additional support for legs. The systems feature electric motors that augment the person's own strength to allow them to move more goods (for example, heavier items) or move goods more easily and safely.

local storage capacity, further driving complexity. Building a supply chain to support an omnichannel system is highly complex (Exhibit 3).

With all this complexity comes a lot of uncertainty: Where should new fulfillment centers be built? What share of B2C orders should they accommodate? And perhaps the biggest question: How much and what kind of automation are ideal? Shippers are asking the same sorts of questions (see sidebar "The shipper's perspective").

Too-short contracts

Most logistics contracts run for about three years, sometimes longer. That's much shorter than in the past. Shippers have tried to cut costs by more frequent tendering and have sought greater flexibility to respond to rapid changes in consumer demand. The trend has exerted significant pressure on logistics companies. Because they typically develop sites with a particular customer in mind, they need to calculate carefully the investment required to add a new consumer. With a significant initial investment required, logistics contracts are often not profitable for two years. That leaves only a year or so of profit before renegotiations begin. Big investments in automation would push the break-even point back further, leaving logistics companies at even greater risk that a customer would change providers, which would leave the facility empty and automation equipment unutilized while the third-party-logistics company searches for a new customer.

In the future, contract planning might get even more difficult. E-commerce requires dense networks, especially in urban areas. But no single customer has the scale to support a full-scale network. Logistics companies must therefore build fulfillment centers and purchase automation technology before demand is known, let alone contracted.

The shipper's perspective

Shippers—the consumer products companies and retailers that hire logistics providers to move their goods—will also grapple with automation in coming years. As new technologies come online and omnichannel delivery becomes more common, most will need to revisit their long-standing in-house and outsource decisions. Shippers interested in automation must first determine whether they have the capital and know-how to invest effectively in automation or whether it is more economical and easier to outsource increasingly complex warehouse operations to a logistics company. The same uncertainties about omnichannel that hold back logistics companies' investments in automation can also constrain shippers. However, our analysis indicates that shippers are investing more in automation than logistics companies are (see section "Five reasons for hesitation" in article), in large part because they cannot find logistics companies that will invest enough in automation to meet their needs.

Beyond the level of investment, shippers and their logistics partners must also contend with the complexity of omnichannel. Take one example: to operate efficiently, an omnichannel retailer must either open the full inventory system to the logistics company so that it can route orders between stores and fulfillment centers or add steps to the order-routing process to determine whether the order remains in-house or is sent to the logistics company.

Supply chain managers should also expect changes in their negotiations with logistics partners. As contract logistics players add more fixed costs in the form of automation, their strategic flexibility will decrease. Shippers should expect their partners to seek contracts in line with the life cycle of automation investments. Put another way, logistics companies will seek to share some of the technology upside—and some of the risk—with customers.

Shippers cannot outsource completely the intricacies of automation and the best practices of automated warehouses. To be a smart customer requires enough knowledge of automation to evaluate bids intelligently. Contract logistics companies we speak with often see automation listed prominently, yet typically with sparse detail, in requests for proposals. Shippers frequently know they want automation but don't know what kind they need. Getting a fair shake from logistics companies will require shippers to stay aware of technology trends and understand well how these might meet their needs.

Strategy under uncertainty

In these murky waters, what should contract logistics companies do? As the previous discussion illustrates, there is no single automation strategy that guarantees a company will thrive. In the following sections, we offer some guidance that we hope can start the thinking process.

Contract logistics

The big changes we've discussed—the simultaneous rise of e-commerce, omnichannel supply chains, and new automation technologies—present contract logistics with a great opportunity to sharpen its value proposition, which has historically relied on one of two factors:

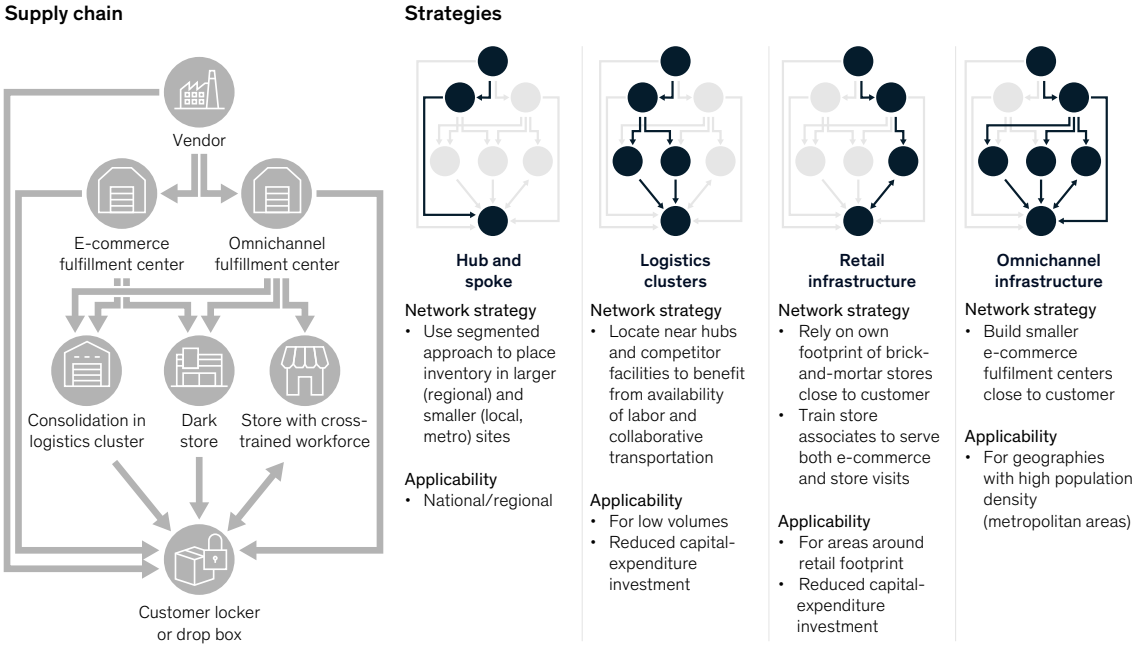
— **Superior services.** To meet the needs of small shippers, which typically lack the capabilities or scale to set up and manage complex fulfillment, contract logistics companies offer heavily customized services, such as differentiated packing, effective returns management, and high-speed fulfillment.

— **Efficiency through scale.** By serving multiple customers, contract logistics companies build the scale and expertise needed for warehouse efficiency—for example, shift planning during peak hours and seasons. For many shippers, large and small, these capabilities were the key reason they outsourced their warehousing.

In our view, automation is not (yet) very helpful in delivering value-added services, which are often quite complex. Consider what happens when a worker checks whether a returned pair of sneakers is ready to be reshipped. Reliably unpacking the shipment (customers often use whatever they can

Exhibit 3

To fulfull omnichannel orders, shippers are redesigning their supply chain.



get their hands on, such as supermarket plastic bags), recognizing the condition of the returned item, and then selecting the correct next processing step is not a job easily performed by a robot.

However, a lot of automation equipment is well suited to drive efficiency, the first factor, in three ways. Start with the jobs of putting away and picking, especially of high-velocity items. Automation can reduce the dependency on an ever-tightening labor market. Second, automation can enable higher throughput in a smaller space. Given the tight market for warehousing real estate, especially near city centers, the business case for automation is improving significantly. Large manufacturers and start-ups such as CommonSense have identified this advantage of automation as a core value driver. And of course, automation can help during peak times. Business cases for automation often rely on average throughput, or the base load. Even on those terms, automation can succeed, but it means that a lot of equipment sits idle much of the year, as it is only used for one or two shifts a day. During peak times, this idle capacity can easily be unlocked through a third shift without adding large numbers of part-time warehouse employees—who are harder to find during Christmas season, for example. From an efficiency standpoint, automation has a lot going for it right now.

So how can contract logistics players make the most of this opportunity? With specialized equipment proliferating—more than 20 logistics activities could soon see mechanized help—almost every logistics customer now needs guidance in picking the optimal equipment for its purposes, procuring it, fitting it into the warehouse layout, training workers on it, and maintaining it. With contract logistics companies' scale and experience, they can meet the need and become true partners to their customers,

offering expertise, better rates of procurement, and deep operating knowledge. But to get there, logistics companies must do two things:

— Be at the forefront of understanding and deploying automation (for example, by partnering with automation providers to test new equipment). Scale will help with this requirement, especially in segments that use specific types of equipment (for example, to handle small items or returns).

— Get sharp on the marketing strategy, including a definition of the market segments they can serve well, discipline in targeting clients in these segments, and clear communication of the value proposition to them. With the rise of equipment comes a greater need for companies to specialize in activities common to a given industry, as most machinery is not as versatile as human labor. It will become tougher to serve every client out of the same warehouse setup. Contract logistics players need to shape and communicate a clear benefit for each customer industry.

Delivering the best service at the lowest cost in a given market segment will create a strong value proposition. The expertise gained by doing this well may also help to mitigate some of the contract issues: the deep relationships formed by becoming a true partner and adviser will likely also lead to stable contracts that can accommodate longer payoff periods. Some customers will still leave, of course, but when they do, the logistics company's expertise and market-leading role should attract replacements, lowering the risk of equipment obsolescence. Therefore, logistics companies should avoid equipment that is specific to only one customer if that customer is not willing to help shoulder the burden.

Yet superior expertise and support may not be enough to make all contracts profitable over their duration. Contract logistics companies should also get smart about pricing. The power of incentives, such as adding attractive terms to extend contracts or penalties if contracts are terminated before customized equipment is paid off, is not to be underestimated.

Parcels

For parcel companies, the strategic considerations are a little simpler. Increasing demand is a given, as are rising requirements for speed and reliability. Considered that way, there can be little question that parcel companies need to automate. And in fact, many already have. DHL invested about €750 million in its German parcel network, and United Parcel Service (UPS) has announced a long-term plan to invest even more.

But within that imperative, parcel companies face some subtler questions:

— **What kind of equipment should be installed?** Parcel companies around the world have two choices. One is to install large equipment that can handle the vast majority of parcels, say those up to 120 by 60 by 60 centimeters. This approach puts a high value on flexibility to accommodate a wide mix of parcels. Other companies have focused on equipment designed for smaller items, as e-commerce fulfillment features lightweight (less than 5 kilograms) items that are typically smaller than a shoebox. This kind of equipment is less flexible, as it cannot handle the large items, but it is significantly cheaper to install and often even to operate.

  To decide, companies must review two pieces of data: the historical mix of parcel sizes and the growth rate of each size. If the data do not yield a definitive answer, it may make sense to create a flexible base capacity of large equipment and then add smaller sorters to accommodate e-commerce peaks.

— **Which process steps should be automated?** The most obvious candidate is sorting in the hub. The labor-cost savings, especially in the developed world, make this a relatively clear case. Unloading and loading in the hubs are

more complicated. Over the past five years, more equipment for these activities has been developed. Some providers say their gear can increase the productivity of one employee to more than 3,000 items unloaded per hour, from the previous 700 to 1,000 items per hour. In our experience, however, this equipment often struggles with the different shapes and especially the packaging of today's e-commerce parcels. Plastic bags are the worst nightmare of many parcel-hub engineers.

When it comes to automation of loading, large parcels are the villain. Just imagine a 50-pound sack of dog food landing on a small, delicate box of LEGO toys. The child who receives the latter will not be happy with its condition. For smaller items, automation has been in place for years, but reviews are mixed. Parcel companies are well advised to ask manufacturers to showcase their solution with the company's parcel mix.

Apart from hubs, some parcel companies, such as DHL, have started to automate delivery bases. Key advantages of this model are more sorting "depth"—that is, less manual sorting—and easier same-day deliveries that are fulfilled close to a city and then just sorted to the route in the delivery base. Automating in this way allows a company to outcompete some low-cost services offered by rivals.

— **How much capacity should be installed?** E-commerce growth, and the volatility of its volumes, make this a vexed question. Many companies seem to have chosen not to overinvest in growth. The US operations of FedEx and UPS, and Japan's Yamato Holdings, are only slowly expanding capacity. There are two reasons, which we raised previously, for being cautious and not rushing to capture all the growth: e-commerce players such as Alibaba and Amazon are investing in their own delivery systems, and e-commerce volumes tend to be low margin. Instead of focusing on investing in growth, many players are trying to get more out of their existing automation equipment—for instance, by introducing new products with different speeds that allow for sorting through the entire day. This will initially postpone the question of installing new capacity, but ultimately, all parcel companies need to find the right balance between yield and growth.

Despite the uncertainty, logistics companies can make informed decisions. We hope this article offers clarity on a complex situation, and together with the series of papers of which this is a part, provides logistics executives with a useful perspective on how their industry is changing—and how they can change ahead of it.

Tom Bartman is an associate partner in McKinsey's Miami office, **Malte Hans** is an associate partner in the Cologne office, **Scott McConnell** is a partner in the Chicago office, **John Murnane** is a partner in the Atlanta office, and **Florian Neuhaus** is a partner in the Boston office.

The authors wish to thank Knut Alicke, Mark Staples, and Adrian Viellechner for their contributions to this article.

Returning to order: Improving returns management for apparel companies

High levels of returns are not inevitable. Better management can reduce the cost and improve consumer loyalty at the same time.

This article is a collaborative effort by Jacob Ader, Praveen Adhi, Joyce Chai, Marc Singer, Sarah Touse, and Hannah Yankelevich, representing views from McKinsey's Consumer & Retail Practice.

In the apparel industry, changes in the ways consumers interact with retailers and direct-to-consumer brands and make purchasing decisions are leading to an increase in the volume of products returned to the seller. The growth of online channels and lenient return practices have reinforced consumers' treatment of purchases more as risk-free discoveries for size and style than as end-of-shopping journeys. Companies report that this is especially true for select categories such as women's shoes and dresses—particularly for online purchases.

The phenomenon isn't limited to apparel. All told, American consumers returned a whopping $428 billion of goods in 2020, a return rate of 10.6 percent, with e-commerce returns accounting for nearly a quarter of returns volume.[1] But apparel players see the worst of it. A McKinsey Returns Management Survey[2] conducted just prior to the COVID-19 pandemic noted a 25 percent return rate for apparel on e-commerce channels, compared to 20 percent overall. And with the sector's e-commerce growing about 35 percent in 2020, its returns are at an all-time high.

Managing those returns, however, continues to be a relatively neglected issue. Many retailers and direct-to-consumer brands see high levels of returns as a necessary evil and believe they need a generous returns policy to grow their share of wallet. According to our research, managing returns is not among the top five priorities for a third of retailers—and a quarter of the retailers surveyed don't do so efficiently and effectively. More important, retailers tend to think more about shipping and logistics costs than about optimizing the profitability of returns. In a fashion-based business, any lag time in returns can lead to significant markdowns for merchandise being resold. Brands that sell via wholesale and direct-to-consumer (DTC) channels have an added challenge: returns from wholesalers often arrive all at once at the end of a season. Marking down prices on the brand's own DTC site can lead to price matching and value erosion from competing retailers. And with an estimated 10 percent of all returns ending in a landfill, the environmental impact is not trivial.

Managing returns does come with a complex set of operational challenges, including consumer expectations, reverse logistics, process ownership, and data limitations. But apparel companies are not powerless. Basic hygiene for returns management now includes a range of capabilities, and more advanced initiatives can help retailers manage the impact of returns in a consumer-friendly way, as well as the key operating model and structural changes that will enable them.

Managing returns comes with a complex set of operational challenges, including consumer expectations, reverse logistics, process ownership, and data limitations.

[1] National Retail Federation and Appriss 2020 Retail Returns Report, January 2021.

[2] The insights in this article are drawn from multiple sources. In late 2019, McKinsey launched its inaugural Returns Management Survey, which aimed to provide transparency on the impact of returns and to help apparel retailers prioritize their efforts in managing the problem. Questionnaires asking about returns economics; capabilities across finance, operations, and e-commerce; and future priorities were completed by more than 20 representatives and C-suite members across 14 top North American apparel retailers, including department stores and vertically integrated brands. In late 2020, a portion of this survey was refreshed and supplemented by more than 15 interviews in 2020 and 2021 with brands, retailers, and third-party returns-technology providers.

Why managing returns is so difficult

Managing apparel returns comes with challenges that are not necessarily unique to apparel. Retailers and direct-to-consumer brands across the board—from home goods to consumer electronics and personal care to food and beverage—face similar challenges in returns management. While this may vary across companies, segments, or even geographies, the following four key challenges are common.

Consumer-friendly retailers feel obliged to accept high levels of returns

Returns journeys present numerous opportunities to disappoint consumers and limited potential to strengthen relationships. As a result, 86 percent of survey respondents agree that a lenient returns policy is critical to increasing revenue and share of wallet, and 75 percent agree returns are a necessary evil.

A particular constraint for department stores is that often the consumers with the highest returns rates are among the most valuable: loyal consumers become used to the returns processes over time, and therefore apparel retailers increasingly feel the need to pay for return shipping. This can have a notably negative impact on fulfillment costs as a share of revenue, given that an apparel retailer often pays round-trip shipping while generating no revenue. The degradation of fulfillment costs as a percent of revenue is particularly acute for retailers with low gross margins per unit. This is not necessarily the case for integrated brands, through which consumers can better refine their size preferences.

Reverse logistics process efficiencies are difficult to achieve

Despite the growth in volumes, most reverse logistics operations remain fragmented and subscale. According to our survey results, the fragmentation of the reverse-logistics operations leads to an increasingly higher complexity in the path for a return to become available to sell, ranging from 10 percent for the most straightforward in-store path to 42 percent for returns that are returned by mail, processed centrally, and restocked in the store or online. As a result, it is difficult to justify the investment in the processes and technology needed to increase efficiency. Complicating matters further, retailers have little control over the timing and volumes of returns, which often come back in nonstandard packaging.

Ownership is difficult to define given the cross-functional nature of returns

While efficient returns processing is naturally the responsibility of operations teams, preventing returns and maximizing their resale value may require the coordination of merchandising, marketing, e-commerce, and finance teams, to name but a few. Perhaps because of this cross-functional effort, 58 percent of survey respondents say that lack of accountability for returns management within any single department or business unit is a pain point within the organization.

Furthermore, the absence of aligned incentives across relevant teams hinders coordination and reduces impact. Without an owner, structure, processes, or comprehensive metrics, it is no surprise that companies have struggled to prioritize returns management.

Data limitations restrict companies' ability to understand and address root causes

Most retailers do not understand the full unit economics of returns, including markdown liability, how return rates and causes vary by product category, and what an expected level of returns may be for a given product line. Two-thirds of survey respondents say their company has a strategy to improve the economics of returns, while 83 percent of them strongly agree that returns are a concern for profitability. Many retailers find it less expensive and logistically easier to dispose of damaged returned goods in a landfill than identify a separate disposition channel, further eroding the economics of the return. Without this visibility, decisions are being made on an ad hoc basis, and the root causes cannot be addressed.

Initiatives to improve returns management

Tackling these challenges requires both concrete initiatives to manage the impact of returns and

meaningful changes to the operating model. Simply put, how can retailers and direct-to-consumer brands reduce the number of returns in a consumer-friendly way—while improving the economics of the returns that can't be avoided?

Most retailers have tried some strategies on return mitigation. For example, basic shopping tools such as consumer reviews and high-resolution images are typically associated with conversion improvement but have a side benefit of reducing return rates by helping the consumer select the right product. Even retailers with stricter returns policies prior to the COVID-19 pandemic have often loosened their restrictions during the pandemic to protect their top-line sales. Up to 70 percent of survey respondents now offer free return shipping on some or all items.

Overall, relatively few retailers have adopted sophisticated strategies to tackle returns.

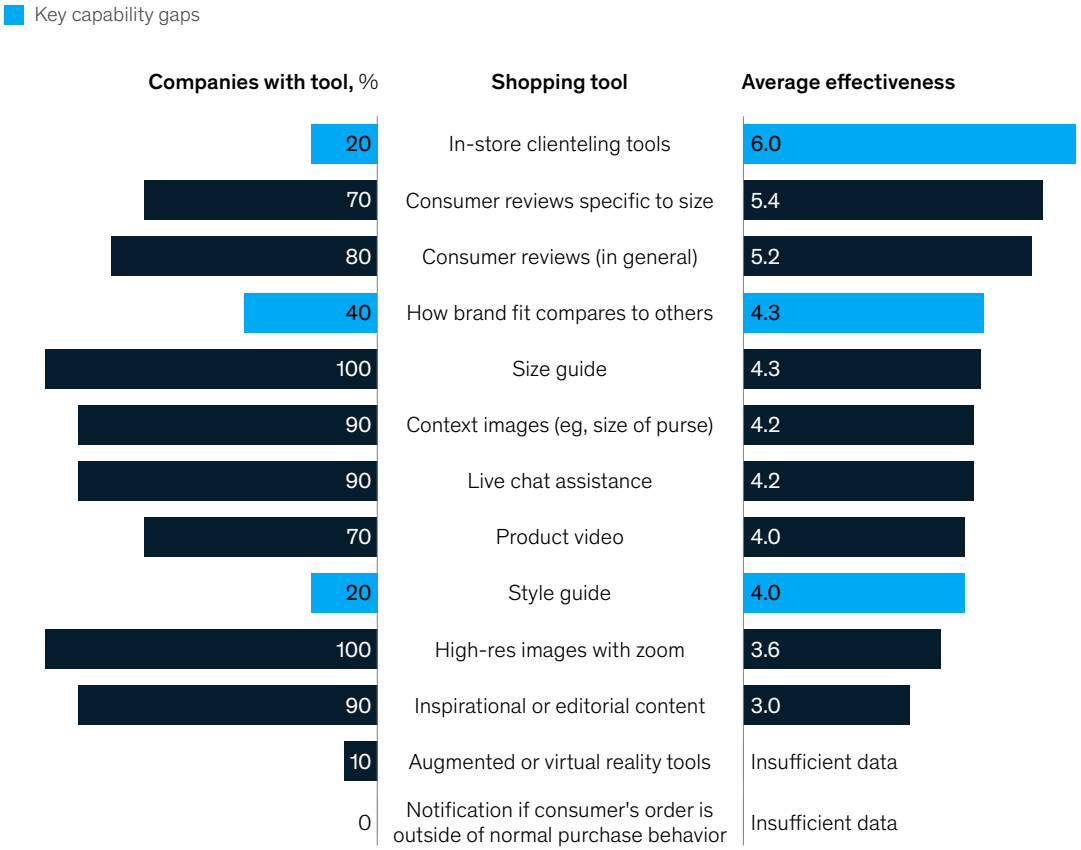
Advanced shopping tools

Based on the experience of our survey respondents, 70 percent of returns were caused by poor fit or style, suggesting that shopping tools are a key lever for preventing returns and improving consumer experience. However, because retailers frequently prioritize and assess these based on improvements in conversion rates, tools that could benefit return rates are sometimes neglected (Exhibit 1).

Exhibit 1

Companies can better serve consumers by focusing on a few key capability gaps.

Question: Which of the following shopping tools does your company use? Please assess the following in level of impact on reducing returns. 1: not effective, 6: very effective



Source: McKinsey Returns Management Survey 2019

Many retailers will need to train associates and improve their online return processes to collect more specific data on the reasons for returns, going well beyond "it doesn't fit."

Most companies we surveyed use basic tools such as consumer reviews, size guides, and high-res images, and some are now experimenting with nudges designed to discourage returns directly. These include, for example, online pop-up messaging when a consumer adds multiple sizes of the same item to the cart.

Some retailers have begun showing product photos or videos with models of different skin tones and body types to give shoppers a more realistic idea of how a product will fit them. Moreover, few are fully applying previous and real-time consumer experiences to inform the shopping and merchandising experience. For example, while there is excitement around in-store clienteling tools—tools that support store associates to better recommend products based on the consumer profile—and the potential to leverage consumer size data across channels, few have tried it at scale. Only one in four retailers in our survey pool use consumer clienteling tools in stores or advise on how brand fits compare to each other. Leading examples of this capability include Stitch Fix, for which consumer feedback on fit and style goes beyond too big or small and is used to improve personalized product recommendations. Looking further ahead, several companies are investing in augmented-reality shopping tools. For example, Nike launched a digitally focused store in China that offers an augmented-reality, foot-scanning technology to determine their best-fit size for different sneakers and styles. Tools such as Sephora's Virtual Artist allow consumers to "try on" makeup products through the app or on in-store screens.

While these are exciting developments in consumer experience, the impact on return rates is not yet proven. In addition, although makeup and shoes may be well-suited to this technology, it is not yet clear how effective it will be on the product categories with more complicated fit parameters that have the highest return rates (women's dresses and men's suits, for example). From a returns perspective, retailers should focus on the best-practice tools that are possible with existing technology instead of waiting for this as-yet-unproven technology.

Using returns data

Few retailers are driving initiatives to merchandise products with low return rates (Exhibit 2). More broadly, many are missing the opportunity to close the feedback loop by incorporating returns data into the whole product development life cycle. Only 6 percent of retailers we surveyed give merchandising any responsibility for returns, and product-development teams are absent almost entirely. Returns data could, in fact, be considered throughout the go-to-market process.

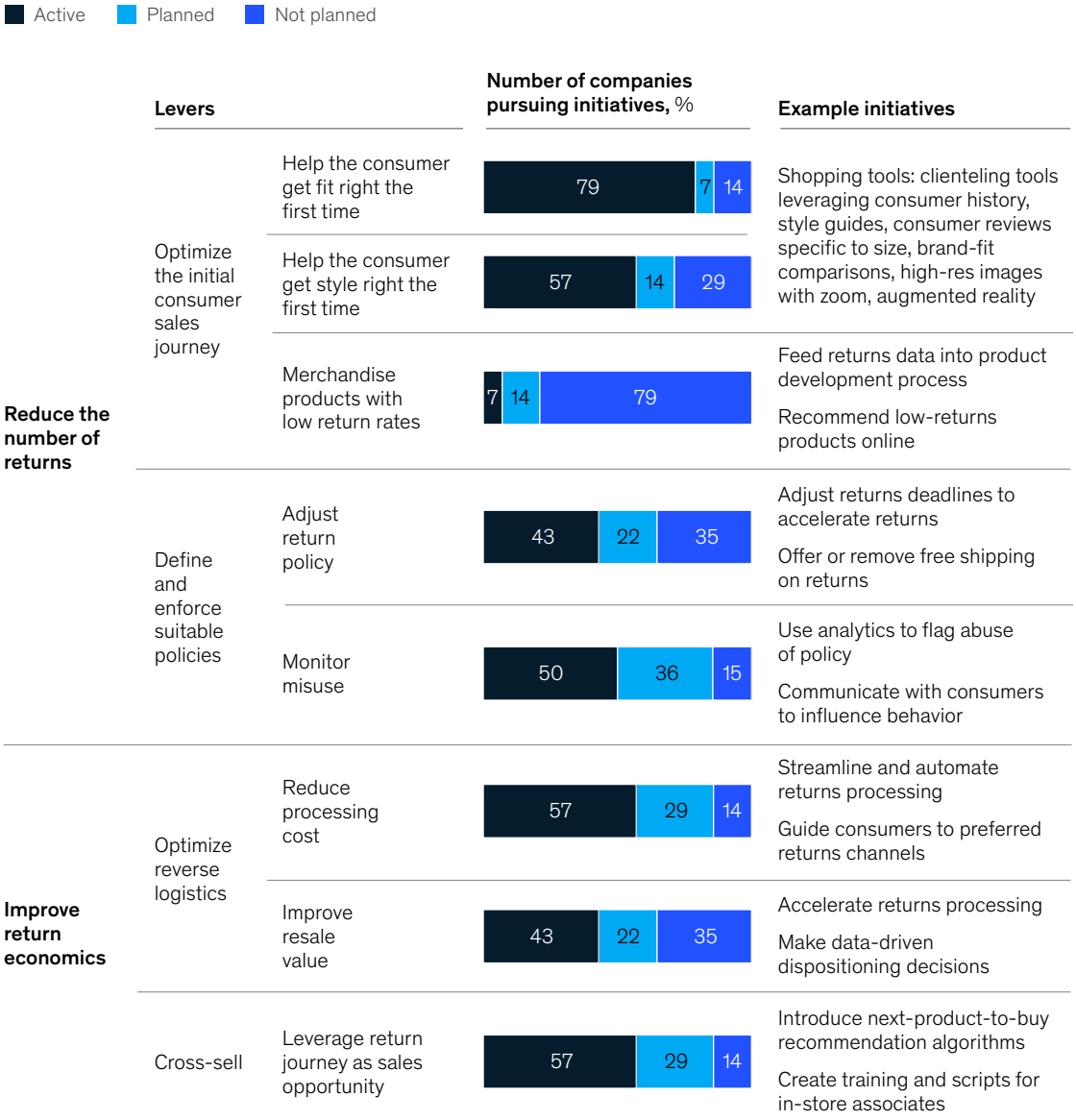
- **Planning**: Returns data from previous seasons can be used to inform line architecture, for example, by assessing category performance with the full unit economics, including returns processing costs.

- **Design and development:** The product line can be optimized to address specific reasons for returns. For example, "these sweaters were often returned because of pilling, so let's adjust the blend." To achieve this, many retailers will need to train associates and improve their online return processes to collect more specific data on the reasons for returns, going well beyond "it doesn't fit."

— **Assortment:** Given the significant impact of returns on the overall profitability of an item, it makes sense to factor returns rates into decisions on which products to recommend and merchandise more broadly. Online, return rates could be an important input into the algorithmic and manual assortment of products on the home page and on carousels. In stores, businesses can systematically share data with associates to help them avoid recommending products with very high return rates. As discussed above, clienteling tools can also be used to recommend products most suited to consumers' size and style preferences, based on their purchase history.

Exhibit 2

Retailers are pursuing a range of levers to manage returns.



Note: Figures may not sum to 100%, because of rounding.
Source: McKinsey Returns Management Survey 2019

Faster, more accurate returns

A key determinant for both the cost and speed of processing returns is the channel that consumers use to return their items (in the store, through the mail, or at third-party drop-offs). Of the retailers we surveyed, the difference in processing cost between the most and least expensive channels is $5 to $6 on average, while processing returns in stores can save up to 18 days of processing time, improving the chances that the item can be resold at full price.

However, most retailers are not yet actively guiding consumers to their preferred channel, other than the about 30 percent of survey respondents who charge return shipping fees. In addition, most retailers are taking a rudimentary approach to dispositioning returned merchandise, leading to suboptimal allocations of returned items and reduced resale prices. However, "Retailers can incentivize consumers to return through specific channels while optimizing for SKU profitability, reverse logistics costs, or labor-capacity data models behind the scenes. We have seen clearly that consumers return faster when retailers provide a network of convenient locations for returns drop-offs, as an example using a QR code instead of printing a label, or provide packaging at the point of return," said Amit Sharma, CEO of Narvar.

In the future, retailers have several ways to improve returns economics. They can do the following:

— **Nudge consumers toward in-store returns:** Based on our survey, in-store returns that are restocked in the store take, on average, 12 to 16 days fewer to process as compared to slower paths, such as returning by mail and restocking in the store. This directly translates to a higher likelihood of full-price sell-through and, for an apparel retailer, a longer time frame that a product will be available to sell in-season. Consumers could be nudged toward in-store returns with messaging during the online return journey or in transactional emails after their purchase, incentives toward a preferred channel, or by leveraging in-store associates at the time of the original sale.

— **Create and promote third-party drop-off locations:** Some companies are using lockers at transit stations (for example, ASOS in London), grouping together to create returns centers at malls, executing home pickups for returns in areas of high population density, or striking agreements with other retailers. Rent the Runway, for example, has opened multiple drop-off locations leveraging Nordstrom locations, owned Rent the Runway locations, and a mobile pop-up truck in select cities. Amazon orders can now be returned at Kohl's stores or Whole Foods locations. However, sufficient scale is required to reap the benefit of batching these packages and reducing shipping costs, and so these options may not be available to all apparel retailers.

— **Make it easier to return by mail:** Companies can, for example, provide everything needed for a return by mail inside the original shipment (preprinted shipping labels and self-sealing packaging) for items that cannot generally be processed and resold in stores. Here, it is important to understand the trade-off in providing a frictionless consumer experience versus the cost of providing free labels and increased probability of returns.

— **Use heuristics or algorithms to direct product for resale:** Many retailers have rudimentary policies on how to handle products that are returned to a distribution center or a store, either keeping them in the store or redirecting them to a warehouse. Ideally, returns-channel guidance would be created dynamically for each order, developed from granular data around the product, consumer segment, and store, and accounting for the processing costs and sell-through rates of the relevant SKUs in local stores. With this, retailers can drive better returns economics if merchandise can be dispositioned at the time of return and directed to where demand is greatest, therefore generating a higher resell price.

An opportunity to encourage repurchase, exchange, or loyalty building

Even if retailers employ all the best practice levers above, some level of returns will be unavoidable. In these cases, it is critical for retailers to use this opportunity to encourage either a repurchase or

exchange, thereby preserving some of the original order value, or provide a seamless and convenient returns experience that encourages stronger loyalty.

According to a 2020 report on returns from Narvar,[3] the level of convenience and transparency in the returns experience is critical to consumer retention. Seventy-six percent of first-time consumers who had an "easy" or "very easy" returns experience would shop at a retailer again; however, 33 percent of repeat consumers would choose to abandon a retailer if they had a "difficult" returns experience. For retailers, this underscores the importance of providing optionality in returns channels (for example, third-party drop-off locations) and clear, consistent communication on the returns process and status.

Structural changes for successful returns management

In support of these initiatives, retailers also need to think through structural changes that need to be in place to support and sustain returns management. Data and analytics is one foundational factor that is critical to understanding the returns economics, as well as highlighting insights that can inform how retailers want to structure and focus the advanced initiatives. Changing the ownership and accountability structure within the organization is another factor that ensures returns management is a strategic priority across the business. With this in mind, the most successful retailers focus on three structural changes to embed successful returns management.

Data and analytics

While some retailers have made progress even without data transparency and analytics capabilities by, for example, adjusting policy and improving process efficiency, rigor and granularity around data and analytics can unlock the full value of returns management.

Tobin Moore, CEO of Optoro, told us, "Data has the power to transform retail returns and modernize a process that for many retailers remains a pen-and-paper business. With the right information combined with the use of predictive analytics and machine learning, retailers can quickly find the most profitable disposition channel for a return, avoid unnecessary shipping and redundant touches by optimizing the best path from the initiation of the return. The right analytical approach to returns from the outset helps to fend off depreciation, reduces the number of items that end up in landfills, and even boosts revenue by driving repurchases of goods."

Increased rigor around data collection and analytics can also enable broader business impact, including identifying consumer fraud, executing effective cross-selling opportunities for in-store returns, and understanding the total earnings before

33%

Of repeat consumers would choose to abandon a retailer if they had a "difficult" returns experience

[3] "State of returns: New expectations," Narvar, 2020, see.narvar.com.

interest and taxes (EBIT) impact of returns rather than just the cost. For example, transparency on the depreciation profile of returns by item and location can help retailers triage and prioritize the processing of returns.

The key challenge for retailers in these use cases will be collecting and integrating a wide range of data types from different areas of the business. For example, dynamically guiding return channels requires both cost data on processing paths by SKU, as well as inventory and sell-through rates for those same SKUs by channel or store. The analytics and data-science tasks will also present challenges to retailers, many of which are still focusing on building out internal analytics organizations for foundational, non-returns-related use cases such as pricing, inventory management, and improved marketing ROI. In these instances, third-party solutions can offer portions of the solution (such as tracking or dispositioning) to immediately unlock the value of returns management.

Ownership

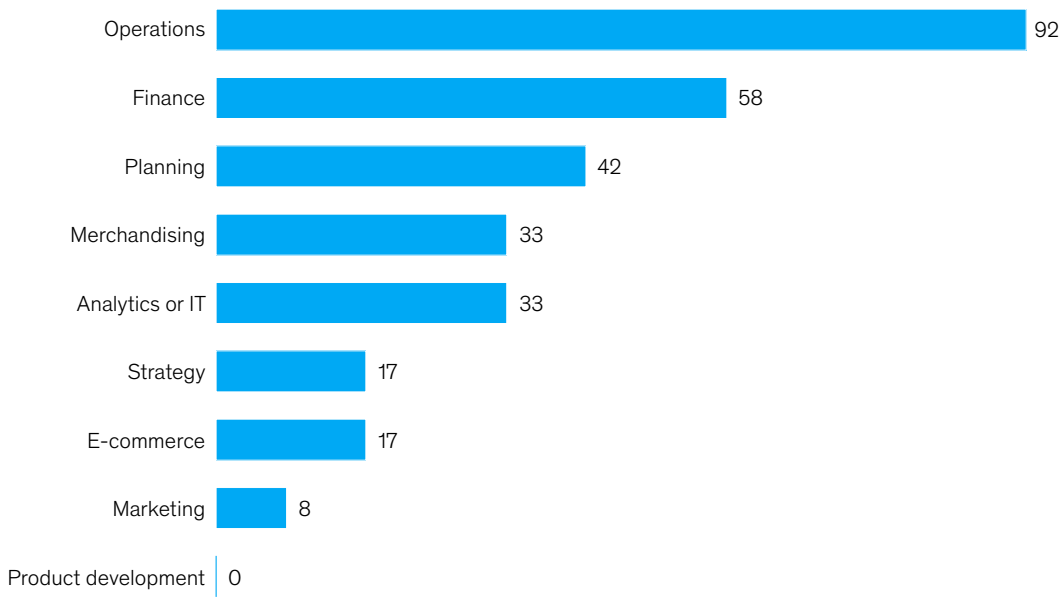
Returns management is inherently a cross-functional problem. While operations teams are responsible for the efficient processing of returns, there is no consensus on who is responsible for reducing the volume of returns. In all, about half of retailers task at least four functions with responsibility for managing some aspect of returns.

As a result, 58 percent of retailers we surveyed do not have a single owner for managing returns holistically, leading to siloed, ad hoc decisions that do not drive impact for the end-to-end business except for a specific function or decision at a specific point in time (Exhibit 3). To increase strategic focus and coordination, we recommend designating a single senior leader with responsibility

Exhibit 3

Many functions are involved in some aspect of managing returns.

Companies surveyed, %



Source: McKinsey Returns Management Survey 2019

for managing the end-to-end impact of returns and coordinating between cross-functional stakeholders to drive progress on returns.

Aligned performance metrics

The obvious challenge for a single leader attempting to manage returns holistically is aligning different functions that they do not directly control. Part of this alignment will depend on the operating cadence and on available resources. However, aligning key performance indicators (KPIs) across the business and translating them into metrics that are relevant for different stakeholders will also be a key enabler. Possible examples include the following:

— giving merchandising and product-development teams some accountability for the return rates of their styles, which builds the economics of returns into productivity metrics

— aligning incentives of in-store associates by including regional e-commerce sales and returns transactions in their targets

— using net sales instead of gross sales as the objective function for online assortment

Before agreeing on aligned KPIs, many retailers have work to do on simply providing visibility on the full cost—explicit and implicit—of the returns as well as the total EBIT impact of returns. Approximately half of retailers surveyed do not have easy access to processing costs or to breakdowns of return rates by product category.

Starting the journey

The experiences of retailers that have made progress on returns management suggest the following critical first steps.

— **Appointing an end-to-end owner:** Although returns management is cross-functional in nature, appointing a single owner with clear KPIs can help ensure accountability and transparency.

— **Understanding the unit economics of returns:** Starting with one returns flow (such as in-store returns), analyze granular returns cost data to understand the true unit economics of returns and where the biggest cost reduction opportunities may exist.

— **Understanding root causes of returns:** Collect detailed reason codes for returns through store-associate training and online return-survey design to create the feedback loop to inform product design and assortment planning.

Only after this journey can retailers prioritize a pipeline of initiatives along the returns journey.

In the accelerated world of omnichannel shopping, the financial impact of returns could become unsustainable for many apparel retailers. However, if retailers can improve their capabilities to manage returns, there are opportunities to add value to their bottom line, improve consumer experiences, and reduce fashion's environmental impact.

Jacob Ader is a consultant in the San Francisco office, where **Joyce Chai** is an associate partner and **Marc Singer** is a senior partner; **Praveen Adhi** is a partner in the Chicago office; **Sarah Touse** is an associate partner in the Boston office; and **Hannah Yankelevich** is a partner in the Minneapolis office.

The authors wish to thank Frances Fu and Heather Laing for their contributions to this article.

Creating a competitive edge in omnichannel grocery fulfillment

The time is now for grocery retailers to optimize their omnichannel grocery operations to take full advantage of market opportunities.

by John Barbee, Raoul Dubeauclard, Kyle Jensen, and Julia Spielvogel

The rise of omnichannel during the pandemic—fueled, in large part, by the meteoric rise of e-commerce—is no passing fad. In the United States, for example, online-grocery sales penetration as of June 2021 was three times above prepandemic levels, rising from low or middle single digits to low double digits.[1] In addition, consumers have elevated expectations: convenience and value were often cited as top reasons for shopping at a new retailer throughout the COVID-19 pandemic.[2]

While omnichannel continues to offer added convenience for consumers, profitability remains a challenge for grocery retailers. Sales, particularly during the lockdowns of the pandemic, went through the roof but were accompanied by spiraling costs. In particular, delivery costs and costs for store picking and other operations can range from 10 to 13 percent and 11 to 14 percent of sales, respectively.[3] With omnichannel here to stay, retailers have no choice but to find a path to profitability across all channels.

Operations hold the key. Focusing on three areas—network, fulfillment, and last-mile transport—offers a range of opportunities to cut costs. In this article, we explore each in detail, as well as the factors grocery executives must consider to develop more cost-effective strategies.

Balancing a differentiated offer with costs

Across the food and grocery landscape, retailers are achieving differentiation with their commercial offering and delivery capabilities. Many are simultaneously emphasizing speed while navigating complexity across expanded assortment and convenience (such as substitutions and scheduled delivery windows). They are also gauging the impact on profitability of density of the consumer base, delivery-service radius, use of third-party partners, and consumer incentives (for example, free-shipping-order minimums).

How should grocers balance these trade-offs? We see several decisions that will lead them to the right answer.

Delivery offering, precision, and speed

Grocers have many choices for consumer delivery, including pickup, curbside, locker, scheduled, and same-day and instant delivery. While these are convenient for consumers, retailers must consider the implications of each on operations. For example, grocers must determine the precision and duration of the delivery window. A narrow window creates little room for error or to flex shipments for the most efficient routes. However, too broad of a window could lead consumers to choose another retailer. Indeed, research on US consumer willingness to pay indicates stronger preferences toward precise windows versus faster delivery.[4]

In addition to precision, many players now offer same-day service for large orders. For example, Asda promises delivery within an hour for a basket of up to 70 items from full assortment.[5] As speed increases, the density of drops declines, typically creating higher delivery costs. The long-term viability of full assortment and instant delivery for all consumers can be challenging. A segmented approach to service offerings and consumers is critical to support a full-service model. While consumers residing outside service boundaries may miss out on instant options (though same-day delivery could still be offered), the benefits of providing more consistent and reliable service to core consumers can outweigh those risks.

[1] Bill Aull, Steven Begley, Vishwa Chandra, and Varun Mathur, "Making online grocery a winning proposition," July 2, 2021, McKinsey.com.
[2] McKinsey COVID-19 US Consumer Pulse Surveys, conducted between October 9–15, 2021, n = 2,095. Q: You mentioned you shopped from a different retailer / store / website since the coronavirus (COVID) situation started. What was the main reason you decided to try this new retailer / store / website?
[3] Adapted from Julia Spielvogel and Madeleine Tjon Pian Gi, "E-commerce is shifting how European grocery retailers seek profitable growth," June 7, 2021, McKinsey.com.
[4] Pedro Amorim and Nicole DeHoratius, "Online shoppers don't always care about faster delivery," *MIT Sloan Management Review*, August 23, 2021, sloanreview.mit.edu.
[5] Ashley Armstrong, "Asda launches one-hour express delivery trial for 70 items," *Times*, June 30, 2021, thetimes.co.uk.

Fee model

Fee structure is a close neighbor to delivery offering, speed, and precision—and it can play a critical role in subsidizing the additional operations required to fulfill an e-commerce order. Delivery fees and associated service levels require trade-offs relative to local competitors and localized consumer preferences. In Europe, for example, "no frills" scheduled-delivery models (such as Picnic) do not include any delivery fees. By contrast, Amazon instituted a standard fee of $9.95 for all Whole Foods grocery deliveries through Amazon Prime in the United States, a bet that consumers would be willing to pay for convenience.[6]

Range of SKUs offered and alignment to store assortment

In fulfillment operations, the number of SKUs and categories creates additional complexity. The assortment size and special requirements (for example, cooling, packaging, and weighting) have process and inventory implications that retailers must balance against consumer needs and expectations. A broader assortment includes trade-offs on available space to store a longer tail, the accuracy of inventory (and subsequent impact on picking efficiency), and the productivity of operations when fulfilling large, complex orders.

Retailers with physical locations also need to determine the degree to which their offline assortment will mirror their online offering. The more these diverge, the greater the fulfillment complexity. In addition, decoupling online and offline promotions is a key lever to profitability, so companies must be prepared to invest the necessary resources to handle these channels separately.

Substitutions

According to IRI's latest CPG Supply Index, 11 percent of edible packaged consumer products will be out of stock in store.[7] In a pick-from-store model, this means 10 to 15 percent of orders will experience stockouts and potentially require substitution during fulfillment. A variety of factors can drive stockouts, such as inventory accuracy and changes in availability between order placement and fulfillment. For these situations, retailers need to decide how they want to interact with consumers regarding substitutions. One-to-one engagement significantly reduces order-picking productivity but provides a premium service. Alternative strategies include prohibiting substitutions, using advanced analytics to determine real-time substitutions during picking, and providing options during the prepurchase shopping journey to preselect choices in the event exceptions occur.

Operations are critical for profitability, but the range of optimization and efficiency gains for online operations requires clear trade-offs with decisions related to consumer value propositions. Once grocers determine the strategy to meet consumer expectations, the focus then turns to execution and operations.

Imperatives for omnichannel grocery operations

We believe grocers need to focus their efforts on operations to increase the efficiency of their omnichannel operations and reduce costs. We see three critical areas:

1. Omnichannel distribution network: A diverse set of operational models based on different constraints across the country

What it is: As grocers rapidly look to capture new markets with different attributes (for example, order density, assortment size, and delivery speed and precision), they will need an ecosystem of order preparation and last-mile operations that takes into account costs, service levels, and product quality.

The optimized ecosystem should be determined based on different options for order preparation, including traditional stores, dark stores, microfulfillment centers (MFCs), and highly

[6] Danielle Wiener-Bronner, "Whole Foods is adding a $10 delivery charge," CNN Business, September 25, 2021, cnn.com.
[7] Derek Saul, "Supply chain may not be impacting consumers as badly as expected," *Forbes*, November 3, 2021, forbes.com.

automated central fulfillment centers (CFCs). These options need to be evaluated in combination with different last-mile models (for example, in-house fleet, outsourced fleet, and crowdsourced services). In addition, the online-grocery network isn't static; it needs to be reevaluated over time as value propositions and demand evolve. Retailers should also devise a robust plan for how to test, learn, pilot, and adapt as new operational models and automation are deployed. Grocers will also need to look beyond a specific end-state model, as a mix of assets and flexibility will continue to be as important as ever.

Examples in practice: A network of dedicated order-preparation assets has been a part of the portfolio of many retailers for some time. Tesco, for example, has used a mix of traditional and dark stores with different automation levels to fulfill grocery orders since opening its original dark store in 2006.[8] However, technological advancements present new options, such as automated MFCs. Several retailers are adapting their models with the launch of automation solutions: Tesco recently announced the launch of ten MFCs per year for the next several years,[9] Ocado has committed to an additional 56 CFCs,[10] and Walmart announced plans to scale MFCs across three technology providers.[11] In many cases, these MFC models play a specific role in high-density areas to augment pick-from-store volume.

What grocers should consider going forward: Grocers will need to assess the full set of order-preparation options (Exhibit 1) together with last-

[8] Ian Quinn, "Are dark stores the future for Tesco? Not necessarily," *Grocer*, December 2013, thegrocer.co.uk.
[9] Giulia Bottaro, "Ocado still most credible online grocer but facing growing challenges, says UBS," Proactive, September 7, 2021, ca.proactiveinvestors.com.
[10] Liza Helps, "Ocado plans to open 56 new fulfilment centres," Logistics Manager, July 7, 2021, logisticsmanager.com.
[11] Tom Ward, "From ground-breaking to breaking ground: Walmart begins to scale market fulfillment centers," Walmart, January 27, 2021, corporate.walmart.com.

Exhibit 1

Players are deploying a spectrum of picking models with different degrees of centralization, capacity, and automation.

Potential picking operating models

Automation used at scale

LOW		**Degree of centralization**			*HIGH*
In-store pick Picking on the shop floor in the store; almost no optimization possible for online picking	**Warehouse in store** Picking fast-moving SKUs in a dedicated area attached to the store; slow movers picked in store	**Robotic microfulfillment center (MFC)** Automated MFCs using pick robotics, stand-alone or attached to physical stores	**Dark store** Stand-alone facility with optimized layout for online picking but not automated	**'Traditional' warehouse** Larger stand-alone facility allowing for larger assortment (different degrees of efficiency and automation possible)	**Highly automated warehouse** Stand-alone large automated fulfillment centers employing automation across several process steps
•High operating cost •Low capacity •Low investment	•Medium operating cost •Low capacity •Low investment	•Low operating cost (due to automation) •Medium capacity •Medium investment	•Medium operating cost •Medium capacity •Low to medium investment	•Medium operating cost •Medium capacity •Medium investment	•Low operating cost (due to automation) •High capacity •High investment

mile options by market. These decisions should be considered against specific market scenarios (for example, the share of orders with same-day delivery versus the share of orders picked up) to guide the range of long-term network options.

2. Omnichannel fulfillment—node operations: Best-in-class order-preparation execution

What it is: As grocers look to adapt their order-preparation network, they have alternatives to increase the efficiency of their in-store and warehouse picking operations. These opportunities span changes to the operating system, such as wearable scanners allowing both hands to be free for picking; the management system—for example, labor scheduling to match picking capacity to demand; and people systems, such as performance structures to encourage sustained employee unit-per-hour performance (Exhibit 2).

Examples in practice: During the pandemic, retailers rapidly added capacity by using their stores to achieve incremental efficiency gains and support additional e-commerce orders. Many are expanding their fulfillment capabilities. For example, Kroger plans to implement a picking and packing software in partnership with Ocado to improve efficiencies within stores.[12] Similarly, Morrisons introduced capped shelving to improve product availability and replenishment times, adapted back-of-house space for online operations, and tested digital shelf labels to improve its online-picking process.[13] Tesco adapted its operating model to increase the flow of orders, including starting picking earlier, extending click-and-collect hours, and adapting picking processes.[14]

[12] Sam Silverstein and Jeff Wells, "Kroger will use Ocado technology to boost pickup fulfillment," Grocery Dive, November 24, 2020, grocerydive.com.
[13] "Preliminary results for the 52 weeks ended 31 January 2021," Morrisons, March 11, 2021, morrisons-corporate.com.
[14] Emma Herrod, "Chris Poad of Tesco on how the supermarket moved to agile decision making to respond to Covid-19 at speed," Internet Retailing, March 30, 2021, internetretailing.net.

Exhibit 2

Grocers need to look at all dimensions of the operating model to optimize end-to-end in-store and warehouse picking operations.

Operating system	**Process optimization and standards** Optimization of replenishment, picking, and sorting and dispatching process	**Store and backroom layout** Optimized layout of shelves for picking circuit	**Improved picking system and tools** Improved warehouse management system to optimize picking process
Management system	**Labor scheduling** Dynamic workload forecasting and linked workforce planning and labor scheduling	**Visual performance management** Visual performance board in the picking areas and leveraged in daily stand-up meeting	**Action plans** Action plans are regularly and clearly set up and followed in stores
People system	**Organizational model** Flexible shift models to adapt for workload or incentive systems	**Training** Improved training of pickers on the job for quick ramp-up	**Employee attrition** Improved span of control and better management practices

What grocers should consider going forward: To establish best-in-class operations, grocers need to look at all aspects of the operating model. Some retailers are already taking the following actions.

— Operating system:

- *Multiorder carts.* Picking carts can optimize both the number of orders and containerization for each order. Pickers can focus on discrete orders or zones of orders (such as produce) to batch their picking efforts and substantially decrease the average travel distance for each order. This type of multiorder picking does require a certain level of order density and enough lead time to ensure orders can be combined.

- *Pick to light with electronic shelf tags.* In an in-store picking environment, the pick path and search efficiency are often only as good as a picker's experience and the clarity of images provided on their handhelds. With the introduction of electronic shelf tags, their illumination can improve search and picking efficiency, much like the pick to light used in warehouse settings. StrongPoint has recently implemented this technology in ICA stores in Sweden, a move that has reduced both picking time by six to nine seconds per pick and errors by 30 percent.

- *Advanced analytics for substitution logic.* For in-store picking processes, differences in available inventory and consumer-requested inventory can create significant process inefficiencies since pickers either have to make direct one-to-one contact with the consumer to select a substitute or pick a substitute on an additional picking run. Accurate inventory can minimize those issues, but most retailers will struggle to have better than 95 percent unit availability with online orders during store picking. Grocers can use new advanced-analytics tools to provide consumers with up-front, like-for-like substitutions while ordering, eliminating the need for pickers to interact with consumers during runs while maintaining satisfaction levels.

— Management system:

- *Dynamic labor scheduling.* Enabled by adaptable work systems and scheduling, dynamic labor scheduling ensures consistent coverage and creates flexibility for store associates to organically accommodate unmet consumer needs and order windows. In many cases, retailers will cap orders for certain delivery windows to distribute volume across the day or week to achieve greater utilization of both labor and any automation asset involved in the picking.

- *Performance-management boards.* Once labor is effectively scheduled, visual indicators within picking areas and picking apps can help significantly increase productivity and performance. Physical productivity boards should be used during stand-up huddles, and in-app picking performance should deploy a simple "green, yellow, red light" logic to tell a picker if they are on pace.

— People system:

- *Retailers are exploring 'pushed,' tailored training for pickers and warehouse employees.* These tutorials are delivered directly to workers' handheld devices based on tenure and job performance across certain areas. Instead of standard time-phased training, this approach provides customized insights to help colleagues continually become more productive. Kroger, for example, has implemented a customized training model that offers employees daily five-minute sessions to support continuous learning.[15]

3. Omnichannel fulfillment transportation: Last-mile transport as part of the end-to-end supply chain network optimization

What it is: While consumers' increasing preference for convenience is fueling online growth, last-mile delivery remains one of the key obstacles for online grocery profitability. Supermarkets, e-commerce players, and online grocers are all piloting new delivery models and need to concentrate on

[15] Sam Silverstein, "Kroger turns to individualized learning platform for associates," Grocery Dive, August 18, 2021, grocerydive.com.

decreasing costs while still offering convenience to consumers.

First, as companies decide how delivery speed aligns with their consumer value proposition, they need to understand its impact on operations. Depending on expected shopping-basket size, market density, and target delivery speed, the optimal last-mile solution can differ substantially. Less-prominent alternatives to home delivery—such as drive-throughs and collection points—should also be considered (Exhibit 3). Notably, in less-dense markets, profitable instant delivery is exceptionally difficult to achieve. Last-mile options may need to be differentiated by local market (for example, rural versus urban areas), even within the same brand.

Within the last-mile models, companies should consider a selection of levers to optimize costs. They need to address three key challenges for home delivery:

First, flexibility in delivery time windows allows for more efficient routes by combining several deliveries in a milkman run. However, fixed, narrow time slots lead to suboptimal routing and possible wait times, potentially increasing costs by more than 100 percent. Flexibility in time slots also allows retailers to balance peak demand with nonpeak hours of the day. Since consumers appreciate short windows, features such as text messages to confirm a driver's arrival can help manage trade-offs. A benefit scheme for consumers who accept flexible delivery, for example, could make a difference.

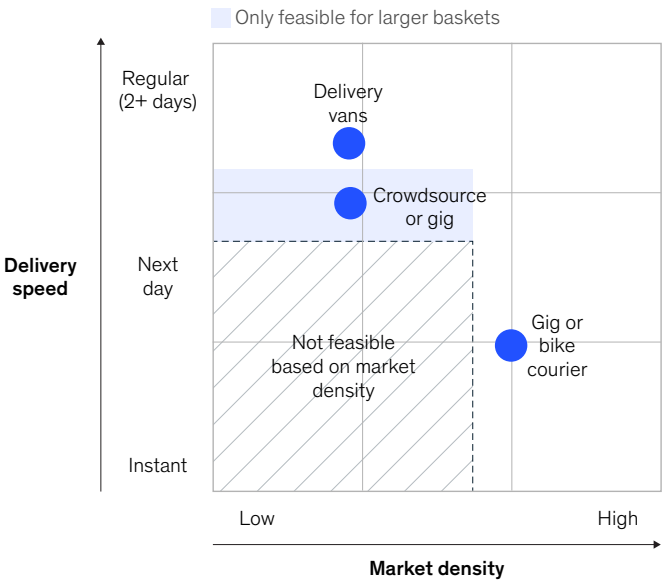
Next, optimization of real-time routing and drop density to balance multiple constraints (for instance, delivery windows, incoming orders, or available drivers and vehicles) is critical to control last-mile costs. Strong integration with commercial incentives (for example, reduced fees for next-day delivery) can help shape consumer demand in ways that allow efficient order execution. Next-generation routing optimization considers the holistic network, including flexible start and stop locations, to avoid travel back to starting depots.

Finally, insourcing—as opposed to an outsourcing or partnership model—assesses whether to own and operate a dedicated fleet, use an outsourced gig-delivery platform, or outsource delivery (on demand or dedicated). These options

Exhibit 3

Delivery requires specific market density, while more profitable avenues for pickup should continue to be considered.

Home delivery



Pickup options

- **Click and collect with manned station or drive-through**
  Consumer orders online and selects collection time; consumers pick up order by driving up to or through a collection point on parking lot in front of store or other convenient location
- **Unmanned collection point**
  Consumer orders online and selects morning, afternoon, or evening slot to collect order from locker or carousel
  At the locker or carousel, consumer signs in with code and takes bags from (refrigerated) compartments

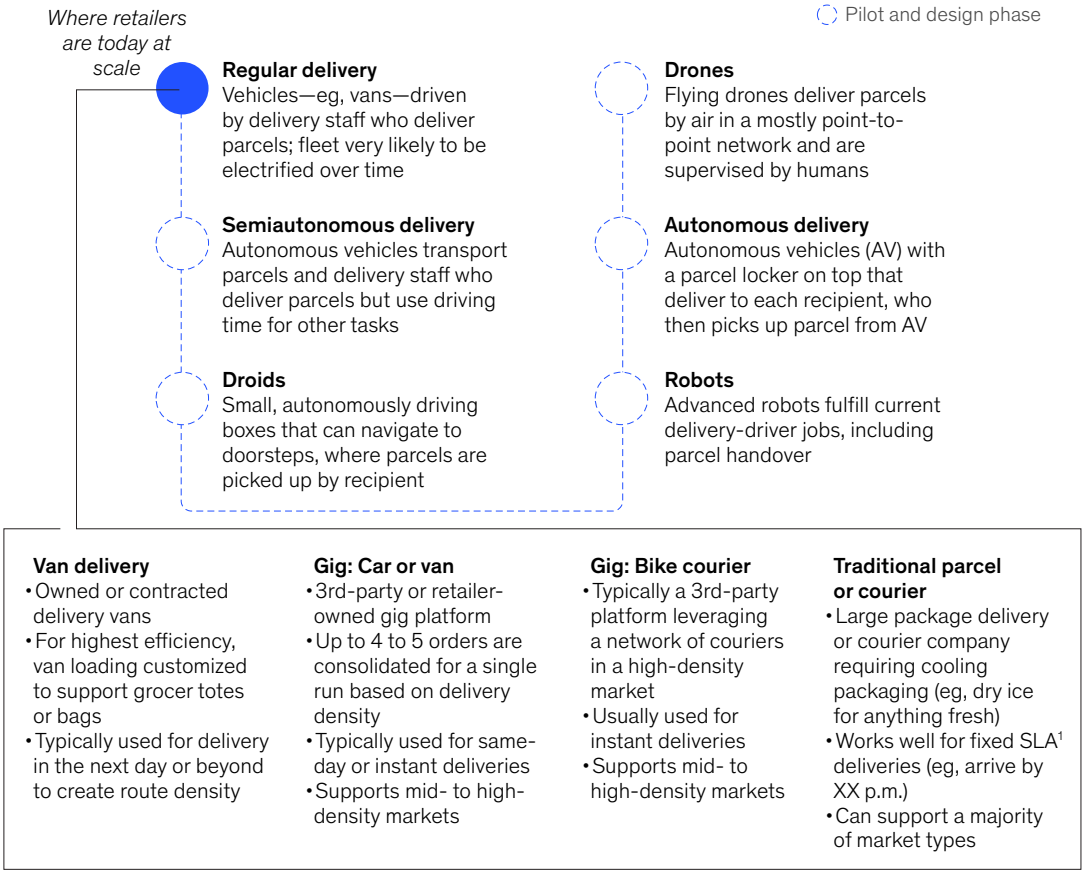
need to be carefully assessed along financial, capacity, control, and capability criteria. Cooling requirements might also have an impact on this decision: using passive cooling can make it possible to ship through existing same-day delivery and courier networks. The pooling of last-mile transport across multiple stores, businesses, and sectors may be explored, as it allows retailers to increase drop density and improve the utilization of the chosen distribution model. All adjacencies and category additions aren't considered equal; for some grocers, the complexity can outweigh delivery efficiencies (for example, freshly prepared food).

Examples in practice: The Dutch no-frills online grocer Picnic provides its consumers with a user-friendly app combined with competitive prices, a low minimum order value, and no delivery fees. The retailer increases efficiency through a targeted assortment and a milkman-run approach, where electric delivery vehicles visit a given area just once or twice a day to increase the density of last-mile deliveries. Next-day delivery is possible if the order is placed before 10 p.m.; consumers can then choose a one-hour delivery time window. For consumer convenience, the window is narrowed to 20 minutes on the morning of the delivery. This allows Picnic to optimize routing plans while limiting service restrictions. With this approach, e-grocers can also provide incentives for consumers to choose delivery windows in which other consumers nearby are already planning to receive a delivery.

What grocers should consider going forward: Depending on advancements in technology, consumer acceptance, and regulatory restrictions, several innovative solutions currently being piloted or in R&D could eventually reduce delivery costs (Exhibit 4). For example, electric or autonomous

Exhibit 4

At scale, delivery models vary based on needed speed and market density, with new technology in the pilot and design phases.



[1]Service-level agreement.

vehicles, automatic drop-off points, or droids may provide new options to serve markets in a cost-efficient manner. These innovations will help to recover last-mile costs while allowing grocers to enter previously less-attractive, low-density markets.

The path forward for omnichannel grocery retailers

Increased consumer expectations on convenience and product offerings are here to stay. As grocers think about profitable operations for online grocery with these raised stakes, they shouldn't look for a silver bullet. Instead, an interconnected series of decisions across the value proposition and their impact on operations—including network design, order preparation, last mile, and best-in-class processes—will be crucial to bend the curve toward profitability. With many decision points across the omnichannel journey, a coordinated and consistent strategy will be critical for success.

John Barbee is a partner in McKinsey's Atlanta office, **Raoul Dubeauclard** is a senior expert in the Lyon office, **Kyle Jensen** is an associate partner in the Toronto office, and **Julia Spielvogel** is a partner in the Vienna office.

Unlocking the omnichannel opportunity in contract logistics

As e-commerce volumes surge, contract-logistics companies face increasing complexity. How can they capture more value in a $600 billion opportunity?

This article is a collaborative effort by Tom Bartman, Kyle Jensen, Scott McConnell, Florian Neuhaus, and Isabell Scheringer, representing views from McKinsey's Consumer & Retail Practice.

More of us are shopping by clicking. E-commerce sales have soared by 160 percent between 2014 and 2019, six to eight times the rate of growth in traditional retail. This global trend has only been accelerated by the pandemic—e-commerce rose from 13 to 17 percent of total retail within a year.[1] And the shift is likely permanent. Our COVID-19 retail- recovery survey finds that online penetration is expected to stay six to 13 percentage points above pre-COVID-19 levels.

This presents a huge opportunity for contract-logistics companies. Consumer goods and retail make up almost half of the logistics market,[2] and the rise of e-commerce has driven up demand for omnichannel distribution, which depends on a single inventory-management system to fulfill orders from both traditional stores and e-commerce. We project that the total value of omnichannel distribution will continue to grow 7 percent every year, from $600 billion in 2019 to $840 billion by 2025.[3] This means a strategic pivot toward e-commerce and omnichannel logistics will likely unlock higher growth for contract-logistics companies, which collectively account for a fifth of omnichannel logistics' total value in revenues today, while the rest is handled by in-house logistics of big brands, e-commerce giants, and tech start-ups (see sidebar, "Who's leading in omnichannel logistics?").

[1] Euromonitor International, accessed November 6, 2020.
[2] *GSCi contract logistics market report*, Transport Intelligence, 2019, ti-insight.com; *2019 annual report*, Deutsche Post DHL Group, March 10, 2020, dpdhl.com.
[3] McKinsey analysis in which we sized the total value pool for omnichannel warehousing by applying warehousing cost shares from a representative set of benchmark companies to global revenues of consumer packaged goods and retail.

Who's leading in omnichannel logistics?

With increasing logistics complexity, omnichannel offers a large opportunity to capture a growing logistics value pool. Our models estimate that contract logistics currently captures just over 20 percent of the omnichannel fulfillment market within the consumer-goods and retail sector.[1] The rest of the space is dominated by three kinds of players: e-commerce giants, start-ups, or in-house logistics by brands.

In the United States, Amazon is estimated to account for 60 percent of the e-commerce third-party logistics market—including the 86 percent of marketplace sellers on Amazon.com that use Fulfillment by Amazon.[2] With 430 warehouses worldwide and an additional 100 or so Amazon Prime Hubs near city centers,[3] Amazon has created the necessary footprint to offer fast fulfillment for both itself and marketplace sellers. Several consumer-goods manufacturers and retailers are also operating insourced warehousing logistics. For their e-commerce businesses, these warehouses are often co-developed with large automation players.[4]

Additionally, we see well-funded start-ups entering omnichannel logistics to operate e-commerce warehouses and offer fulfillment software with strong platform IT and predictive data. Crunchbase reports that ShipBob in the United States, for example, has received over $130 million in funding, and similar start-ups are appearing in Europe.

[1] McKinsey analysis in which we sized the total value pool for omnichannel warehousing by applying warehousing cost shares from a representative set of benchmark companies to global revenues of consumer packaged goods and retail.
[2] "FBA usage among Amazon Marketplace sellers," Marketplace Pulse, February 21, 2021, marketplacepulse.com.
[3] "Amazon global supply chain and fulfillment center network," MWPVL International, mwpvl.com.
[4] McKinsey analysis based on press releases of automation players and brands in the past 12 months.

Since e-commerce fulfillments are significantly more complex, contract logistics can charge around 50 percent more than for traditional store fulfillment. Therefore, those companies that overcome the complexities stand to gain the most. As a result of smaller average order sizes, e-commerce fulfillments typically require more touchpoints than do traditional retail logistics. The packing process also often requires extra steps, such as gift wrapping or promotional inserts. The storage capacity required tends to increase to accommodate a long tail of products typical for e-commerce, and e-commerce goods are frequently stocked in decentralized locations to allow for faster last-mile delivery. Furthermore, omnichannel fulfillment involves more complex processes to efficiently handle the full gamut, from single-unit promotional e-commerce orders to large fill-in orders for stores. This drives up complexity, labor, and inventory costs, and many contract-logistics companies have found it difficult to move toward more agile and diffused operations in a cost-effective way while still catering to their traditional brick-and-mortar customers.

So, how can contract-logistics players address these challenges and carve out a larger slice of the omnichannel pie? Logistics companies that already operate at a certain scale and with the financial means can start by understanding their customers' needs, which have evolved alongside shifts in consumer behavior and the logistics landscape. In this article, we profile four emerging customer types—each with a specific set of logistical needs and requirements—and identify five levers for omnichannel-distribution success that companies can pull to increase their competitiveness while solving for some of the aforementioned complexities. The bar is high and rising, and players should act now to develop their strategy.

Four possible customer profiles

The specific logistics needs of customers will vary, depending on their size, industry, and existing fulfillment competencies. The appeal of omnichannel distribution is an agility that serves retailers and manufacturers across the spectrum of needs. First, a single inventory lowers costs by eliminating inventory duplication in separate online and offline warehouse facilities. Second, stock is flexibly allocated between channels, decreasing planning complexity and write-offs. Finally, omnichannel logistics pools manpower and capacity to cope with the differences in demand peaks more efficiently. For instance, e-commerce tends to spike around Black Friday in November, while store orders are typically shipped out in October for the Christmas season.

We envision four customer types whose needs contract-logistics players should be able to meet:

— *"I do it all."* Logistics are insourced entirely by the customer. The logistics company—at maximum—consults in infrastructure development.

— *"Operate for me."* The logistics company operates the warehouse, while the customer controls transportation, inventory levels, and warehouse and automation investments.

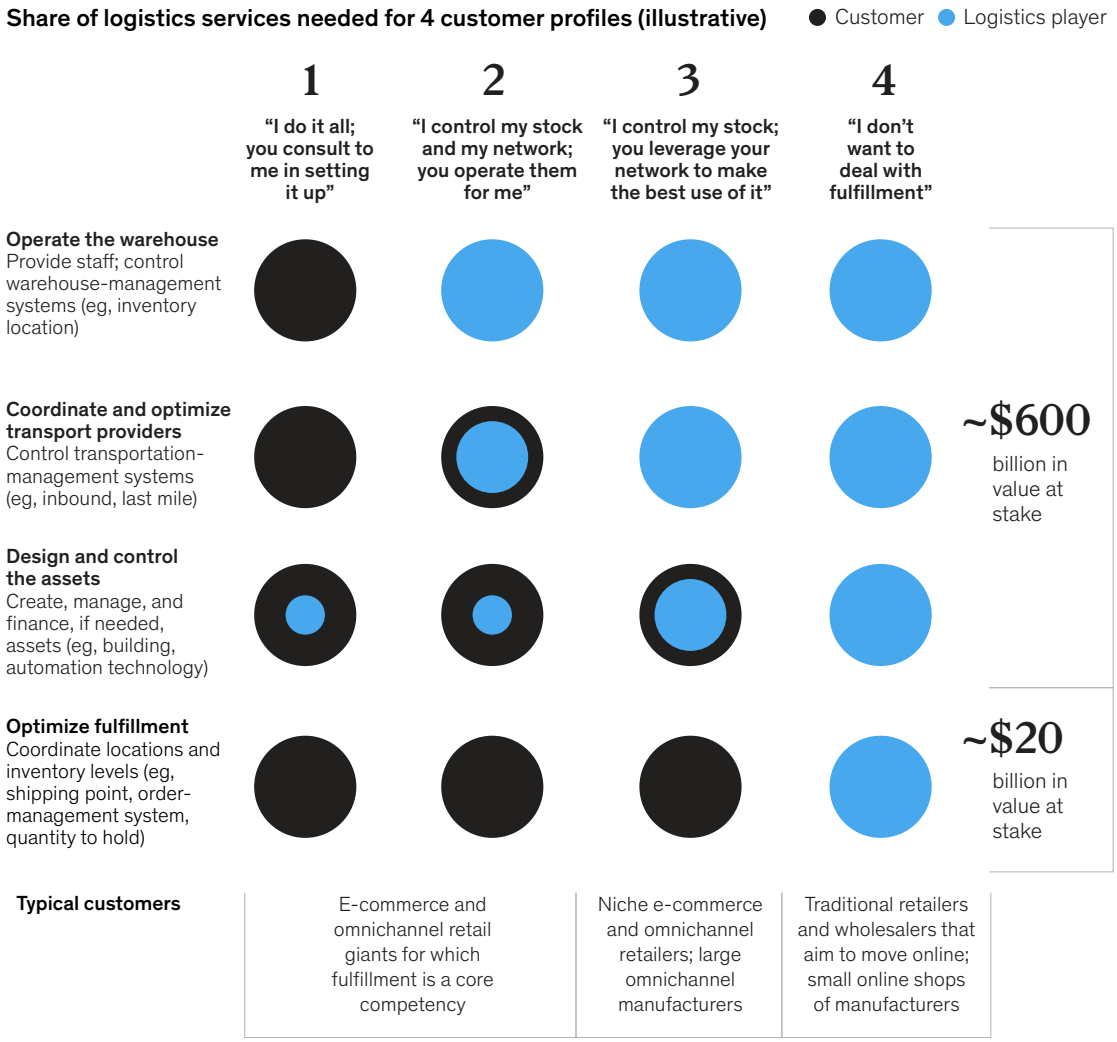
— *"Make best use of my stock via your network."* The logistics company controls the fulfillment of all the stock the customer decides to place in the warehouse. It is responsible for warehouse management as well as inbound and outbound transport.

— *"I don't want to deal with logistics."* The logistics company offers fulfillment as a solution, holistically optimizing inventory and fulfillment across locations.

The smaller and more traditional the customer, the easier it will be for contract-logistics companies to offer more, if not all, of the services in the value chain (exhibit). On the other hand, big e-commerce companies, such as Amazon, see fulfillment as one of their core competencies and will most likely continue to operate their own logistics. If contract-logistics players want to capture a larger share of the opportunity, they should focus on tailoring their services to meet customers where their needs are, from consulting e-commerce giants on best practices to covering the entirety of a traditional

Exhibit

Contract-logistics companies can offer most, if not all, of the services in the value chain to traditional customers moving their business online.



Source: McKinsey analysis

retailer's logistics needs. As it is likely a futile effort to go against e-commerce juggernauts, logistics companies can opt to specialize in niche categories by developing specific technologies to service particular needs. Whatever the case, they will have to strengthen their value proposition by executing each stage of the omnichannel logistics value chain at a high level of efficiency.

Five levers for omnichannel logistics success

In theory, contract-logistics players should be well positioned to capitalize on the growth of omnichannel logistics to meet their customers' different needs. They benefit from specialist knowledge in order fulfillment and strong industrial-engineering teams. They're also better equipped to add scale. And, by deploying optimizing technology and leveraging their networks, they should be able to reap economies of scale and offer better price points than they would if individual merchants were to handle their logistics needs on their own. Yet many have been stumped by the complexities of omnichannel distribution.

By having a firm grip on the following five levers, contract-logistics companies should

find themselves in a good position to devise omnichannel-service offerings that best cater to the needs of their customers—both e-commerce and traditional retailers—while having a positive effect on their top and bottom lines.

Warehouse automation

Many logistics players still operate predominantly manual warehouses, even though warehouse automation is essential to cost-efficiently meet increasingly exacting customer expectations around cutoff times. Automation is becoming even more critical, given e-commerce's wide range of SKUs and increased touchpoints. Automation technologies vary and have different cost trade-offs between space efficiency and labor requirements. Naturally, choosing the right technology will depend on the type of product the contract-logistics company is handling—its size, fragility, and storage needs all factor in. Contract-logistics players can consider partnering up with automation providers to develop customized blueprints to allow for flexible automation that can handle a variety of customer needs. Over time, companies will build the necessary experience to plan and tailor their automation technologies according to strategic business decisions on customer segments and locations.

Contracting for high capital expenditures with volatile volumes

It can be tricky for logistics companies to make significant automation investments while facing volatile flows in volume (for instance, the capacity demands for e-commerce in November are often twice or even triple those of nonpeak periods). Many automation investments have longer paybacks than the typical two- to three-year contracts that most customers sign. To meet customer demand, contract-logistics players could offer flexible contract structures that allow customers to adjust their storage capacity. To balance out their risk/return profile, contract-logistics players can consider operating multiuser warehouses for smaller customers, which can then switch to a dedicated warehouse when volumes reach a critical mass over time. Contract-logistics providers can also explore other solutions, such as investment co-sharing with their customers, automation provider, or other investors; process standardization to reduce automation complexity; longer contract periods; or structuring their pricing to allow for a greater share of investment recovery in the initial years.

Multicustomer networks

Same-day or next-day deliveries can only work through distributed networks when the inventory is close to the end consumer. Such nodes are economically feasible only when there is enough volume, and smaller retailers will likely struggle to maintain such a network on their own, particularly in low-population-density regions like parts of North America or the Nordics. In such scenarios, multicustomer facilities can be a potential value proposition for contract-logistics players. However, logistics players may need to first invest in risky nodes without securing initial volume flows. They may also have to develop a flexible-footprint model where the size of the nodes can be adjusted as, and when, new customers join or leave the network. In a nutshell, contract-logistics companies might want to think of their warehouses as a "product offering" on the market. A strategic decision to create a competitive advantage in specific areas or geographies can guide investment priorities; decide whom you want to cater to and think of how to differentiate your product from your competitors'. This would represent a change in both risk profile and marketing—different from simply responding to requests for proposals.

IT integration and advanced data analytics

The challenge of IT integration grows as the number of warehouses and customers in the network becomes larger. At the most basic level, logistics players need to integrate three systems: the warehouse-management system; the transportation-management system; and the order-management system (OMS), which provides an interface for customers. Contract-logistics companies may either develop open APIs on their own platforms or actively integrate their services within external major enterprise-resource-planning (ERP) systems and e-commerce platforms, such as Shopify, Magento, and WooCommerce. Having a modular approach for service offerings helps customers make decisions tailored to their specific needs. While larger customers tend to have a lot of order-routing logic in their own ERP systems and may want to plug in their own OMS, smaller customers often prefer the contract-

logistics company's OMS to provide functionalities such as holding back orders or checking for the best fulfillment location. Logistics players may also consider offering data-analytics products such as inventory and demand analytics to help their customers predict consumer-behavior trends based on the volume flows across the logistics company's network.

Last-mile delivery

Seamless integration with last-mile and inbound transport facilitates high-speed deliveries and smooth inventory flows. The closer the warehouse is located to sortation centers for last-mile deliveries, the later orders can be placed for next-day deliveries. While it may be tempting for contract-logistic companies to partner with last-mile players to place warehouses directly next to sortation hubs and share sorter capacity, many customers prefer choosing their couriers, so it may be more prudent to leave them with multiple carrier options.

If a warehouse enjoys large enough volume flows, providing direct "zone skip" injections to the destination terminal can shave off distribution time.

In some regions, such as India, hyperlocal delivery riders on motorized bikes and small vans can also be an important partner for fast delivery and forward-stocking locations. Additionally, logistics players can advise retailers on how to leverage their logistics networks for fulfillment (with options such as dark stores, micro-fulfillment, and so forth). When it comes to inbound logistics, contract-logistics companies can explore similar optimization options, such as integrating with deconsolidation facilities or breaking shipment containers at the warehouse.

Getting a handle on these five levers is a complex, iterative process that calls for contract-logistics players to collaborate and experiment with customers, investors, and technology providers—often hyperlocally—over a significant period. But the payoff is more than worth it. These levers are not only likely to help contract-logistics companies draw more value from the continued growth of omnichannel logistics but will also defend their market share in a crucial category.

Tom Bartman is an associate partner in McKinsey's Miami office, **Kyle Jensen** is an associate partner in the Toronto office, **Scott McConnell** is a partner in the Chicago office, **Florian Neuhaus** is a partner in the Boston office, and **Isabell Scheringer** is a consultant in the Munich office.

The authors wish to thank Nadeem Ahmad, Ludwig Hausmann, Timm Höfer, Tim Lange, Sandeep Shenoy, Abhinav Singh, and Tim Zimmerman for their contributions to this article.

Solving the paradox of growth and profitability in e-commerce

Global omnichannel players that crack the code will be well positioned for the years ahead. Four imperatives can support their journey.

This article is a collaborative effort by Jiamei Bai, Frances Fu, Rushan Guan, Steve Hoffman, Peeyush Karnani, Mihir Mysore, and Sarah Touse, representing views from McKinsey's Consumer & Retail and Strategy & Corporate Finance Practices.

During the early stages of the COVID-19 pandemic, e-commerce was one of the biggest stories in retail. Lockdowns and public-health concerns for retail workers and consumers alike resulted in a mass migration to online sales. The pandemic essentially squeezed ten years of digital sales penetration into three months. In response, retailers scrambled, innovated, and adapted their distribution and brick-and-mortar operations to keep pace.

Eighteen months later, online sales show few signs of reverting to prepandemic levels. Retailers that may have initially viewed e-commerce as a lifeline now take a slightly more negative view. For the majority, skyrocketing online sales have been accompanied by costs that have risen just as fast. Fulfillment costs, for example, can account for 12 to 20 percent of e-commerce revenues, squeezing margins and making profitability a mirage.

Retailers must now recognize a few truths: all growth is not the same; unprofitable growth destroys value; and healthy, sustainable growth should be the goal. Success will require a concerted, organization-wide effort. The good news: our analysis identified some common trends among leading retailers and highlighted four imperatives that can point organizations down the path to profitability.

The e-commerce catch-22

Even before the COVID-19 pandemic, consumers had begun to embrace the selection and convenience of e-commerce. In 2019, e-commerce represented approximately 25 percent of total retail sales.[1] Since the onset of the pandemic, consumer intent to purchase goods through e-commerce channels has increased by 40 to 60 percent compared with prepandemic levels across categories from everyday essentials to clothing and accessories.

McKinsey research suggests these shifts in consumer behavior will stick over the long term as individuals become more accustomed to purchasing online.[2] More than 50 percent of consumers expect to continue their online shopping habits after the pandemic abates. This pattern will fuel the growth of online sales, which are expected to contribute to 100 percent of the increase in sales of soft goods over the next three years.[3] Forecasts suggest online sales could account for nearly half of all retail revenues by 2024.

Retailers must now recognize a few truths: all growth is not the same; unprofitable growth destroys value; and healthy, sustainable growth should be the goal.

[1] Michelle Evans, "The outlook for retailing in 2021," Euromonitor International, February 2, 2021, euromonitor.com; McKinsey COVID-19 Consumer Pulse Survey, September 2020.
[2] Tamara Charm, Becca Coggins, Kelsey Robinson, and Jamie Wilke, "The great consumer shift: Ten charts that show how US shopping behavior is changing," August 2020, McKinsey.com.
[3] Euromonitor 2020 retail data; Forrester 2020 online US retail forecast.

However, the results are not all positive. Our analysis of total shareholder returns (TSR) for 100 large retailers found digital growth alone does not necessarily lead to positive outcomes (exhibit). In fact, the retailers with the most growth in online sales saw the biggest decline in margin (and thus TSR). In comparison, top performers increased shareholder value more than ten times for every percentage point of digital growth compared with companies in the bottom quartile.

Retailers that overemphasize e-commerce revenues could actually be damaging their prospects. Indeed, digital growth is not enough; only profitable digital growth will create value. Since e-commerce is a significant contributor to growth for most retailers, they must not only have a strategy for how to generate more growth from this channel but also ensure that the strategy creates value for the organization.

What separates the winners

Depending on a company's product categories and business model, it may have inherent advantages when competing in e-commerce. Consider a few examples:

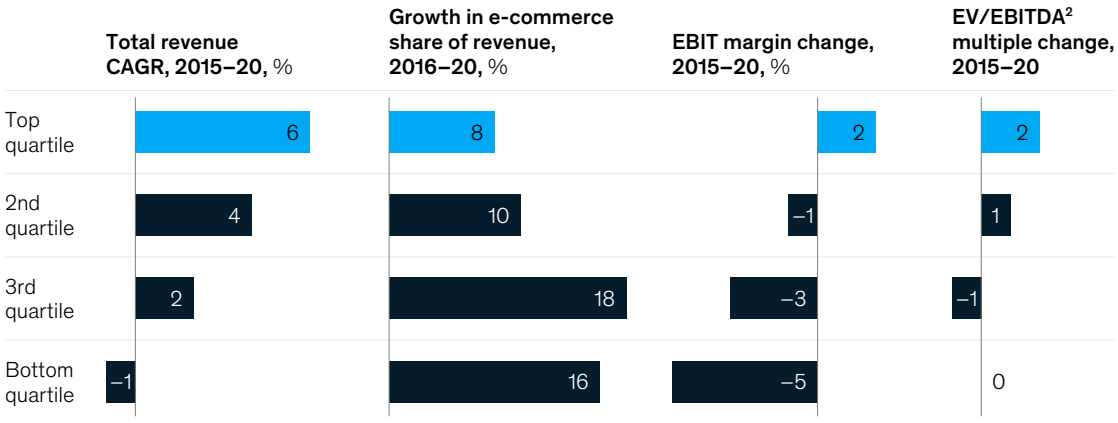
- *Higher item value and basket size in categories such as home, sporting goods, and electronics incur lower shipping costs as a percentage of sales.* In comparison, a fast-fashion retailer with a low free-shipping threshold may need to absorb a large number of negative-margin sales.
- *Retailers that offer a unique or custom product or service are more likely to protect margin.* By contrast, a consumer-electronics retailer may need to aggressively price match to generate sales.
- *Categories with lower return rates, such as furniture, have lower costs related to returns logistics and markdowns.* But a women's apparel player may face a return rate of up to 40 percent on items such as dresses and jeans.

While built-in advantages can increase the odds of achieving profitability, companies can still take actions to improve their performance and reduce costs. Our analysis found that three markers separate top-quartile performers from the pack regardless of their starting point.

Exhibit

Digital growth alone does not necessarily lead to greater earnings.

Retailer performance by TSR[1] quartile



[1]Total shareholder returns.
[2]Enterprise value to earnings before interest, taxes, depreciation, and amortization.
Source: Digital Commerce 360; McKinsey analysis

Category diversification

Retailers in categories with lower price points, higher ability to cross-shop, or high return rates have mitigated these disadvantages by entering into new categories with more favorable intrinsic economics for e-commerce or by launching private-label brands to gain more control over margins. For example, Target has launched 30 private-label brands in the past five years, and more than ten of these brands generate at least $1 billion in annual revenues each. Similarly, Amazon has established more than 100 private-label brands across categories, with penetration as high as about 10 percent in apparel.

Effective EBIT management

Retailers are increasingly faced with a paradox: brick-and-mortar revenues are in decline while a host of fixed costs remain, but the growth of online sales fuels a rise in variable costs (such as fulfillment, delivery, and digital marketing), thus eroding margin. What is the winners' secret? They start with transparency on total cost to serve by identifying key cost drivers and implementing coordinated strategies across end-to-end commercial levers, from pricing and promotion to merchandising and fulfillment. When done well, this approach enables leaders to pinpoint shifts from brick and mortar to e-commerce and determine how those shifts affect markdowns, return processing costs, marketing, and credit-card fees, among other costs.

Levi's "premiumization" strategy demonstrates the effectiveness of this approach. By initiating impactful collaborations and launching hot-spot pop-ups, the company elevated its brand and drove consumer demand, enabling it to strategically reduce its markdowns and increase pricing by about 5 percent in the second quarter of this year across all geographies and channels. These efforts raised gross margins by about one percentage point.[4]

Curate a brand experience to drive loyalty beyond reason

Leading retailers invest in consistent and friction-free experiences, a strategy with a clear link to value across omnichannel. Sephora is a leading example of how to implement consumer-centric strategies that seamlessly blend digital and physical shopping experiences. Ranked number one in Sailthru's third-annual Personalization Index, the retailer creates a personalized consumer experience through the combination of its Sephora app and digitally enabled frontline staff who can access a customer's purchase history to offer real-time recommendations. In addition, Sephora uses augmented-reality tools such as facial scanning so customers can conduct virtual product testing via mobile or in store.

Some of the savviest retailers subtly nudge customers to take certain actions, such as returning products to the store, obtaining a discount rebate, and paying with a debit card to reduce processing fees. The total impact of these efforts can strengthen customer loyalty, increase customers' lifetime value, and improve margins.

Four imperatives to boost e-commerce profitability

Getting to breakeven in e-commerce has proved elusive for most companies because of its tremendous complexity: retailers must connect the dots between growth and cost levers and align incentives across the organization. While a retailer must tailor its strategy to its particular starting point, a successful approach should include four imperatives.

1. **Align on the 'North Star' and set clear objectives for the whole organization, enabled by data visibility**

Achieving profitability in e-commerce requires a move from functional thinking to system thinking, with different parts of the organization working closely together and making conscious, informed trade-offs. Establishing quantifiable objectives and key performance indicators (KPIs), informed by the "North Star," can support the decision-making process required to achieve desired outcomes. This process starts with a clear understanding of total cost to serve. Accounting for previously "hidden" costs of serving customers—for example, the allocation of upstream personnel such as designers and salespeople—can quantify the true cost of doing business by channel as well as customer profitability.

[4] Arthur Friedman, "Levi's wants to 'premiumize' the US market—here's what that means," *Rivet*, February 3, 2020, sourcingjournal.com.

A case in point: promoting two-day shipping may help the commercial team achieve its revenue targets, but this decision will likely have a negative impact on the logistics team's cost-management goals. In many cases, commercial teams lack visibility into operations costs at an item level, which means that they might make unprofitable decisions unknowingly. Retailers may need to invest to build this granular cost visibility to enable aligned incentives and shared KPIs.

2. Generate more value from fixed assets

Retailers can deploy several strategies to improve the margin of each transaction and maximize the value creation from fixed assets.

First, performing profitability analysis at the SKU level can allow retailers to be strategic about which products to offer online and promote on the digital shelf. Targeted communications and offers can result in bigger baskets. For example, retailers can identify opportunities in the purchase journey to engage customers—such as outfit recommendations or in-cart add-ons—to reduce the per-item cost of fulfillment and shipping. In addition, since customers likely won't be thinking about a retailer's expense in delivering their goods, companies have an opportunity to nudge them toward lower-cost options, such as no-rush shipping or ship to store.

Another way in which a retailer can improve transaction profitability is to expand offerings into higher-margin categories where the retailer has the right to play. For example, an apparel retailer may consider entering skin care and cosmetics or soft home, categories that not only have better economics but also are complementary to core apparel offerings, which enables basket building. Alternatively, retailers can consider launching private-label brands, which offer more control over margins through decreased price comparability and promotional intensity.

3. Reduce operating costs while providing an excellent consumer experience

Not all cost-reduction measures have a negative impact on consumer experience and revenue potential. In fact, some tactics, when wielded artfully, can improve margins while boosting sales. Using stores as microfulfillment centers can help retailers meet increasing customer expectations for fast delivery while avoiding skyrocketing costs. With more than 90 percent of consumers believing two- to three-day delivery is standard, retailers with an existing physical footprint have a unique advantage to meet customer demands while controlling costs.[5] Omnichannel services, such as buy online, pick up in store (BOPIS) and ship to store, can help decrease the cost of fulfillment and logistics and bring additional foot traffic to stores, resulting in incremental sales.

To take a step further, retailers such as Amazon are leveraging self-serve lockers to further reduce operating cost while increasing efficiency in simple in-store transactions such as pickup and returns. Taking a multicarrier approach can also present an opportunity. Although the approach is complex, when retailers invest in the right tools and supplier development, a larger stable of carriers can enable retailers to actively manage fulfillment costs and maintain customer service-level agreements (SLAs).

Returns have remained a vexing challenge—and one that can eat away at margins. Simple tactics such as encouraging consumers to return merchandise to stores can cut processing time by up to 18 days and improve the chances an item can be resold at full price. Since e-commerce return rates can reach 25 percent, even small improvements can have a significant impact on the bottom line.

4. Accelerate the speed at which the company organizes and operates

The increasingly complex matrix of omnichannel engagement creates friction points that can cloud decision making. Long-standing questions such as "What should be integrated versus stand-alone?" and "What should be owned by the digital versus functional areas?" continue to challenge leaders. One thing is certain: the pace of change and operating rhythm is only accelerating. Retailers are no longer in the world of weekly review. The cadence has shrunk to by-the-minute sales operations.

[5] John Barbee, Jai Jayakumar, Sarah Touse, and Kumar Venkataraman, "Retail's need for speed: Unlocking value in omnichannel delivery," September 8, 2021, McKinsey.com.

Two priorities can help organizations increase their pace. The first order of business for retailers should be to establish an agile operating model that can enable a rapid test-and-learn culture and streamline decision making. Since e-commerce functions such as merchandising are commonly shared with stores, retailers must establish clear ownership and metrics to ensure accountability.

Forming agile squads with a cross-functional team can enable retailers to run rapid A/B tests to evaluate different profitability strategies and use the results to shape large-scale rollouts. This approach helps reduce the risk of new strategies or practices while allowing teams to be innovative.

Second, retailers that have traditionally focused on brick-and-mortar operations likely have workers who lack the necessary digital knowledge. As e-commerce and digital technologies become larger parts of the business, developing this knowledge will be critical to foster effective collaboration—not only in digital and e-commerce teams but also across the organization. A baseline of digital fluency will enable retailers to achieve true cross-channel coordination.

The spike in e-commerce over the past 18 months has led retailers to focus on capturing growth, with mixed results on profitability. To win in the years ahead, retailers must scale their digital channels while maintaining a relentless focus on costs. Addressing several questions can help guide the way:

— How well aligned is the organization on digital growth and profitability objectives?

— Does the organization currently have clear visibility into the full set of cost drivers on the digital and omnichannel business?

— Which types of initiatives and services can nudge consumers toward low-cost channels and help the organization notch quick wins?

Prioritizing transparency, selecting and measuring the right KPIs, promoting cross-functional collaboration, and accelerating the operational speed of an organization represent important first steps.

Jiamei Bai is an associate partner in McKinsey's Vancouver office; **Frances Fu** is a consultant in the San Francisco office; **Rushan Guan** is an associate partner in the New York office, where **Peeyush Karnani** is a senior expert; **Steve Hoffman** is a partner in the Chicago office; **Mihir Mysore** is a partner in the Houston office; and **Sarah Touse** is a partner in the Boston office.

December 2021

McKinsey.com