

TRENDS IN LAST MILE DELIVERY

— PANDEMIC-DRIVEN GROWTH IN E-COMMERCE MARKET REVEALS THE FUTURE LANDSCAPE OF THE DELIVERY BUSINESS —

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SUMMARY

- Rapid growth in the e-commerce market driven by the COVID19 pandemic has created supply and demand pressures for last mile delivery, where brick-and-mortar retailers using stores as distribution sites have rapidly expanded their e-commerce business. Others have adapted through a high prevalence of MFCs (micro-fulfillment centers: small-scale distribution facilities) and by working with tech companies on labor-saving and efficiency improvement.
- These developments are revealing how efforts by retailers will take shape over the medium to long term, particularly in the expansion of last mile delivery through in-house operation, outsourcing, collaboration, and the proper division of distribution between MFCs and large distribution centers.
- These efforts should meet the growing demand for last mile delivery while upgrading the quality of distribution services by lowering cost and increasing delivery speed, accuracy, and security.

The worldwide rise of the e-commerce (online shopping) market has overwhelmed delivery capacity, creating problems for last mile delivery—the final process needed to put the product into the hands of the consumer. These problems have taken different forms in different countries. For example, Japan has been grappling with more redeliveries for recipients not at home. The US has been suffering from a growing shortage of truck drivers. Retailers have been working to address these problems since before the pandemic by providing drop delivery services, home delivery lockers, and other measures. Spurred by the pandemic, the rapid growth in e-commerce demand has greatly sped up the adoption of these measures, clearly demonstrating their efficiency and effectiveness. This article provides an overview of how last mile delivery will take shape in the future, looking at what the pandemic responses in the US and elsewhere have revealed.

1. DEVELOPMENTS ARISING FROM PANDEMIC

As described below, retailers are responding to five developments that have arisen from the COVID19 pandemic.

1-1. Rapid growth of e-commerce market

Worldwide fears of viral transmission led to rapid growth of the e-commerce market throughout the world once store lockdowns and self-quarantines began. E-commerce as a percentage of total retail sales rose from 2019 to 2020 among the countries with the largest e-commerce markets (the US, China, Japan, the UK, France, and Germany) (Figure 1). Nearly all these countries also had 2020 e-commerce market growth rates that exceeded their average annual growth rate for the preceding four years (2015 to 2019). The lone exception was China, which has had notably high growth rates in recent years.

Figure 1 E-commerce share of total retail sales and market growth rate in major nations

	EC ratio (%)		EC market growth rate (%)	
	2019	2020	Average annual growth rate from 2015 to 2019	2020
US	15	20	15.4	36.4
UK	18	24	11.0	29.9
Germany	12	14	10.4	14.9
France	8	10	11.6	16.7
Japan	9	10	8.1	10.1
China	22	27	28.6	20.4

Source: Created by MGSSI based on Euromonitor data

1-2. Rapid growth of e-commerce among brick-and-mortar retailers

The rapid growth of e-commerce during the pandemic was due in large part to rapid e-commerce growth among brick-and-mortar retailers alongside growth among e-commerce-only retailers. In-store sales of daily necessities grew, but e-commerce also attracted interest as a way of avoiding crowds when shopping. The growth of e-commerce among brick-and-mortar retailers was also driven by factors such as its growing popularity among consumers with little to no e-commerce experience, and for purchases of fresh food and other previously uncommon product areas. These circumstances have resulted in retailers taking new approaches to last mile problems.

For example, many brick-and-mortar retailers in the US have started giving consumers the option of BOPIS (buy online, pick up in-store), letting them retrieve their e-commerce product orders in-store. It is provided as an additional option to the same home delivery service as offered by e-commerce providers. Brick-and-mortar retailers have been working rapidly to accommodate BOPIS pickup. In this way, retailers have discovered that there are ways of putting last mile delivery directly into the hands of consumers instead of outsourcing it to delivery companies like conventional e-commerce providers. During the pandemic's initial phase, some stores were forced to shut down to prevent viral transmission by employees. US retailers Whole Foods Market and Kroger used their closed branches as "dark stores" for fulfilling online product orders only. With consumers arriving at these stores for in-store pickup, this new shopping pattern has received widespread recognition.

Another development has been a significant amount of M&A activity among retailers looking to acquire last mile expertise. Among US companies, Target has acquired home delivery startup Shipt. Similarly, US-based Walmart has acquired US startup JoyRun and Indian e-commerce giant Flipkart.

Also significant has been the rise of Instacart, a US retailer providing proxy shopping services and home delivery. Instacart is an e-commerce marketplace (online supermarket complex) that hosts multiple supermarkets and provides store picking, packing, and home delivery for orders placed by consumers on the Instacart app. Instacart serves as an enabler for small and medium-sized supermarkets that would have difficulty starting their own e-commerce businesses. It provides a venue to open stores and handles product delivery to consumers. Instacart user numbers have grown rapidly from the pandemic. The company is viewed as one of the drivers behind the rise in e-commerce among US food retailers.

1-3. Rise of MFCs

Many brick-and-mortar retailers in the US and elsewhere are installing micro-fulfillment centers (MFCs) to handle the growing e-commerce market. MFCs are small-scale distribution facilities that provide labor-saving and cost-cutting benefits by using robots and other equipment to efficiently handle fulfillment work such as in-store product picking and packing. The small size of these facilities allows them to be added to stores during remodeling, enabling faster and cheaper installation than large-scale distribution facilities. Fulfilling e-commerce orders near the consumer's place of residence reduces the delivery or pickup distance, leading to fast responses and better convenience. These features have attracted interest in MFCs, as e-commerce for food and other products requiring same-day delivery has grown from the pandemic. MFCs are being adopted by major supermarkets such as Walmart, Albertsons (which has the second largest sales share among US supermarkets), and Stop & Shop (a brand owned by Dutch retailer Ahold Delhaize). MFCs are often installed alongside stores (Figure 2). MFCs used as last mile distribution sites are also attracting interest, with Albertsons announcing plans to install standalone MFCs separate from its stores.

Figure 2 MFC installed at Safeway supermarket (subsidiary of Albertsons)

Source: Website of *Progressive Grocer*, the US grocery industry magazine (<https://progressivegrocer.com/digital-first-grocery-look-inside-micro-fulfillment-albertsons>) accessed on May 10, 2021

In-store e-commerce fulfillment work has previously been done simply by repetitive human labor—many store workers' picking up the products from the shelves and packaging them within the store. However, concerns over sharply rising labor costs and hiring difficulties have helped spur the adoption of MFCs.

E-commerce providers have recognized the benefits of MFCs and started adopting them. The pandemic-induced demand spike overwhelmed the fulfillment capacity of even the world's largest e-commerce provider, Amazon. The company had significant delays not only in shipments of regular deliveries but also in deliveries to Amazon Prime members. In September 2020, these issues led Amazon to announce plans to install MFCs at 1,000 locations near where consumers live. The MFCs will serve as distribution nodes in addition to the conventional large fulfillment centers located just outside cities.

1-4. Food delivery boom

Business restrictions have led restaurants (dining establishments) to transition from in-store consumption to delivery and takeout. Food delivery services from individual stores and pizza chains have existed for some time. These services are now being joined by restaurant home delivery platforms that are becoming increasingly popular in the Western nations, Japan, China, Southeast Asia, and many other countries worldwide. These platforms have become an increasingly prominent form of last mile delivery for food products.

DoorDash is the largest food delivery provider in the US. In June 2020, the company partnered with drugstore chain CVS Pharmacy to start e-commerce fulfillment by providing home delivery of products such as daily necessities and OTC drugs ordered from stores. DoorDash has also entered the retail sector with the launch of DashMart, an online-only convenience store. DashMart does business entirely through home delivery, with no in-store sales. The convenience store's operations center around receiving orders and delivering the products. Uber Eats, the second largest food delivery provider in the US, is looking to expand its product lineup and increase sales by acquiring Drizly, a US e-commerce platform for alcohol delivery. The Japanese subsidiary of Uber Eats has partnered with Japanese convenience store chain Lawson to provide home delivery of convenience store products ordered online. DoorDash went public in December 2020, followed by UK food delivery provider Deliveroo in March 2021. Both of these food delivery providers, tech companies without tangible assets, have gained high market caps, which reflects high expectations for the delivery sector's growth and potential.

Uber provides both ride-sharing and food delivery. As the pandemic has reduced demand for ride-sharing, a greater share of its sales has come from its food delivery business. Seeking to also benefit from the food delivery boom, US ride-sharing provider Lyft is taking steps to enter the food delivery market. Southeast Asia has multiple competing food delivery service providers, and the market is competitive. The region's standout names include GrabFood from Singaporean tech multinational Grab Holdings, and GoFood from Indonesian technology group Gojek. Japan is another competitive market. The top two names here are Demae-can and Uber Eats, alongside other competitors. However, even with the top names growing their sales in the US and around the world, food delivery is not necessarily profitable.

1-5. Rise of tech companies

The pandemic has also seen the rise of tech companies involved with last mile issues. UK online supermarket system developer Ocado is one such example. The company is partnering with major brick-and-mortar retailers to create distribution sites as a way to construct an online supermarket system made up of large centers. The system has been doing business since 2020 in partnership with French mass-market retail group Groupe Casino and Canadian food retailer Sobeys. A large center began operation in the US in February 2021 in partnership with supermarket giant Kroger.

Tech companies that work with e-commerce distribution have also been partnering and teaming with retailers on a number of demonstration testing projects in areas such as delivery robots, self-driving home delivery vehicles, drone-based home delivery, and unmanned mobile stores. One example is a project from Nuro, a US robotics company specializing in automated delivery that is now working with Kroger and CVS Pharmacy to test delivery by unmanned vehicles. Nuro's efforts to perfect unmanned delivery paid off in December 2020 when the company announced it had been granted the first permit for unmanned operation on public roads in California. The project has attracted growing interest as a way to solve last mile delivery problems such as reducing shortages of home delivery drivers.

2. LAST MILE TRENDS

The developments that have arisen from the pandemic are revealing how work on last mile delivery will take shape over the medium to long term.

2-1. In-house operation, outsourcing, and collaboration

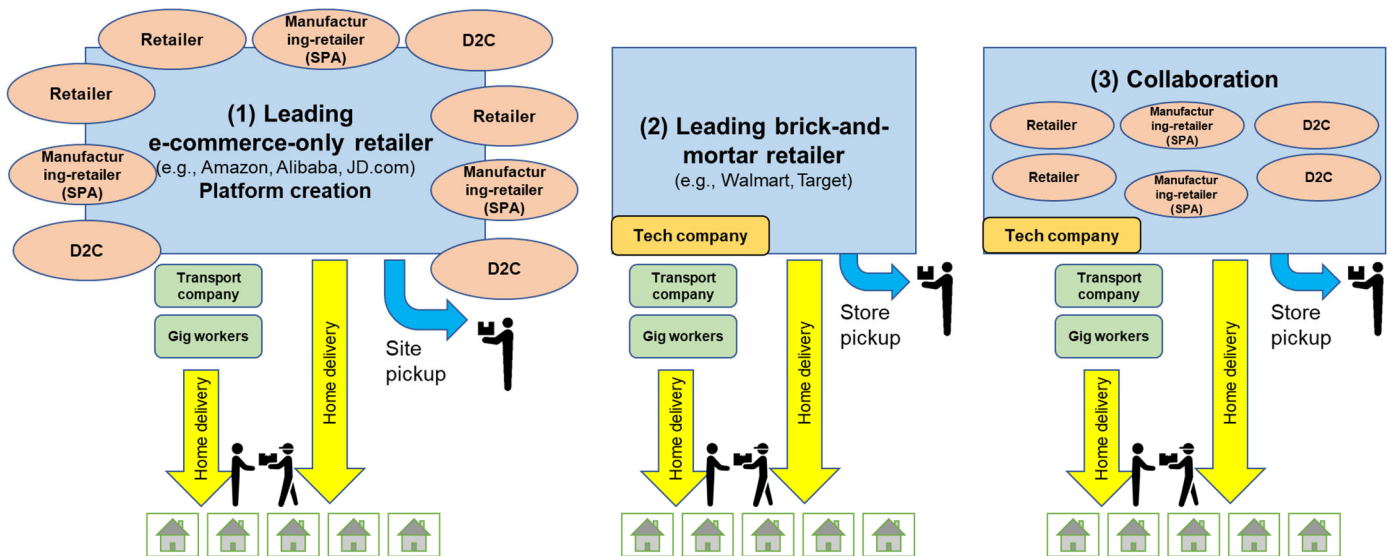
E-commerce giants such as Amazon and the leading brick-and-mortar retailers do e-commerce business in high volumes and have significant economies of scale. These features make it highly advantageous for these companies to conduct and manage last mile delivery functions in-house. Primary examples are inventory management, as well as systems and operations for product delivery at stores or by home delivery services.

Many e-commerce-only retailers have been constructing and managing systems and operations in-house since before the pandemic, despite outsourcing home delivery to sole proprietors (gig workers) or home delivery SMEs through partnerships or contracting. Some companies have used their in-house systems to generate earnings by providing services to other companies requiring last mile delivery. To the companies using these services, they are a form of infrastructure that can be used in whatever manner needed (Figure 3-(1)).

The pandemic has highlighted the e-commerce services provided by brick-and-mortar retailers. These services use stores, which are unique to each retailer, as the last mile starting point, making it difficult to have operations done by third parties and inevitably requiring in-house operation. Retailers have been working on M&A activities to acquire the expertise and technology needed for these operations as noted. Some are also partially outsourcing them by contracting Ocado and other tech companies for tasks such as stock management, fulfillment, or construction of warehouse systems and other equipment (Figure 3-(2)).

As mentioned, stores are the starting point for the last mile delivery functions provided by brick-and-mortar retailers, which may make it difficult for them to provide infrastructure-like services to third parties. However, collaboration among multiple retailers to make joint use of systems could become more common (Figure 3-(3)). Working together to jointly store, sort, pack, load, unload, or transport products could enable cost-cutting among companies in the same industry or different industries. While division of costs and other issues will remain, retailers can be expected to increasingly collaborate on distribution while competing in other areas (such as product development) as a way to reduce soaring distribution costs arising from labor shortages and demands for workplace improvements.

Figure 3 Last mile delivery structures



Source: Created by MGSSI

2-2. Exploring ways of using MFCs and large distribution centers

As described in Section 1-3, MFCs offer the advantages of faster and cheaper installation than large distribution centers, along with rapid delivery made possible by their proximity to consumers.

“Middle mile” distribution is a prerequisite for adopting MFCs. Middle mile distribution refers to transportation from distribution centers to stores. It means the distance between long-haul distribution (upstream long-distance, large-scale distribution) and last mile distribution (home delivery to consumers). Dividing distribution from distribution centers to consumers into middle mile distribution and last mile distribution with the stores as nodes ensures rapidity from order through delivery. As long as they are sites with stock that can handle fulfillment functions, the relay points do not need to be stores. Middle mile distribution lets the retailer set the schedules and routes at its convenience. And even if labor-saving technologies such as self-driving or unmanned vehicles are adopted, the fixed routes used by middle mile distribution give it the benefit of being easier than last mile delivery (which services large unspecified numbers of consumers). Walmart has been testing self-driving vehicles using middle mile distribution.

In contrast, Ocado focuses on home delivery from large distribution centers, and has constructed and launched an online supermarket system in the UK. Ocado systems have begun operating in France, Canada, and the US. In Japan, Aeon is making steady progress on building large distribution centers and adopting systems. Large distribution centers enable the benefits of labor-saving through large material handling equipment installation, and cost reductions through economies of scale and increased efficiency.

Last mile delivery for e-commerce is currently being tried using either MFCs or large distribution centers as the starting points, and it is unclear which of these two methods is better. Both methods could also be used simultaneously. In addition to its existing large distribution centers just outside cities, Amazon is installing MFCs in cities and near residential areas. Another approach might be to determine whether MFCs or large distribution centers are more suitable distribution starting points on the basis of the individual e-commerce product, the purchasing frequency, or for subscriptions or other periodic purchases. The results could be viewed as model cases when considering the future of upstream-to-downstream e-commerce distribution and last mile distribution.

3. CONCLUSION AND FUTURE OUTLOOK

As described in this article, pandemic-induced demand growth has resulted in the start of various trial measures such as outsourcing and collaboration of last mile delivery functions and combination of MFCs and large distribution centers. When working on outsourcing and collaboration, obstacles result from complexity in areas such as pricing and systems or interfaces for elements such as incoming or outgoing order forms. Therefore, standardization of operations and systems can be expected in the future among last mile delivery and other distribution processes.

Standardizing systems will result in company-to-company generalization of required worker skills and facilities such as distribution centers. This generalization will make it easy to share facilities and workers, and to use outside resources and less equipment separate from in-house resources. We can expect to see owned distribution facilities being sold off to REITs and the use of REIT-owned facilities becoming increasingly common. This development should reduce the risk of warehouse vacancies. Workers will also be able to do operations at multiple companies, enabling job flexibility.

Last mile delivery should be able to meet the growing demand by bringing these standardization and equipment reduction together with the trends described above in the areas of in-house operation or outsourcing, collaboration, and the proper division of distribution between MFCs and large distribution centers. These developments should help upgrade the quality of distribution services by lowering cost and increasing delivery speed, accuracy, and security.

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