

Efficient and sustainable last-mile logistics: Lessons from Japan

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Delivery droids may be the solution to keep costs and environmental impact low, if stakeholders collaborate to pave the way.

Most people know what it feels like to wait for an online delivery. After making a purchase, there is a tendency to incessantly refresh the tracking page, virtually following the item from the warehouse to the sorting center to the doorstep. The anticipation linked to watching a package make its last-mile trek is an itch only an unboxing can scratch.

The surge in e-commerce volumes has put huge pressure on the last-mile delivery system, the process by which products are transported from distribution centers to final consumers. E-commerce sales worldwide grew sixfold in a decade, from \$572 billion in 2010 to some \$3.5 trillion at the end of 2019.

The COVID-19 pandemic has only accelerated this trend, as more people demand contactless forms of shopping. Take e-commerce penetration in the United States as an example: ten years' worth of growth took place within three months when the pandemic broke out.

As people continue to expect ever-swifter delivery times, last-mile delivery systems are becoming a bottleneck. Logistics providers are struggling to deal with increasing volumes of goods, resulting in slower delivery times, less flexibility in delivery time slots, and higher delivery costs for customers. Furthermore, as delivery traffic steadily rises, the negative effects on the environment will likely grow unless actions are taken to mitigate them.

In response, the World Economic Forum (WEF) and McKinsey have been researching ways to reform last-mile delivery for efficiency and sustainability, using Japan as a country to model simulated projections. Japan was chosen because the country is at the forefront of having to grapple with societal challenges such as labor shortages resulting from population decline and a hyperaging society—something many developed countries will face in the future—exacerbating pressure on last-mile deliveries.

Better technologies and efficiency levers are needed to operate last-mile deliveries in Japan's collage of regions with different population densities. Understanding these issues—including at the policy and structural levels—and how they differ in urban and nonurban regions could

be instructive for other countries.

This article projects the implications resulting from the continuing rise of last-mile deliveries in urban and suburban areas. By studying the effectiveness of various interventions currently employed to mitigate the negative consequences of rising costs and carbon dioxide emissions, the study finds that delivery robots—small, personal delivery devices that can transport packages weighing 100 kilograms or less at a maximum speed of five kilometers per hour or less —may be the best bet to reduce carbon emissions and costs, while coping with issues like labor shortages.

But more needs to be done to pave the way for delivery robots. They could feature more prominently in last-mile deliveries, with three stages that could serve as entry points for logistics companies to scale smart interventions to optimize last-mile deliveries: joint delivery systems, including networking sorting centers, at the regional level; parking-space management at the neighborhood level; and the governance of robot operations on pedestrian walkways as the goods move from truck to door.

See the full article in the attachment.

Source: McKinsey

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