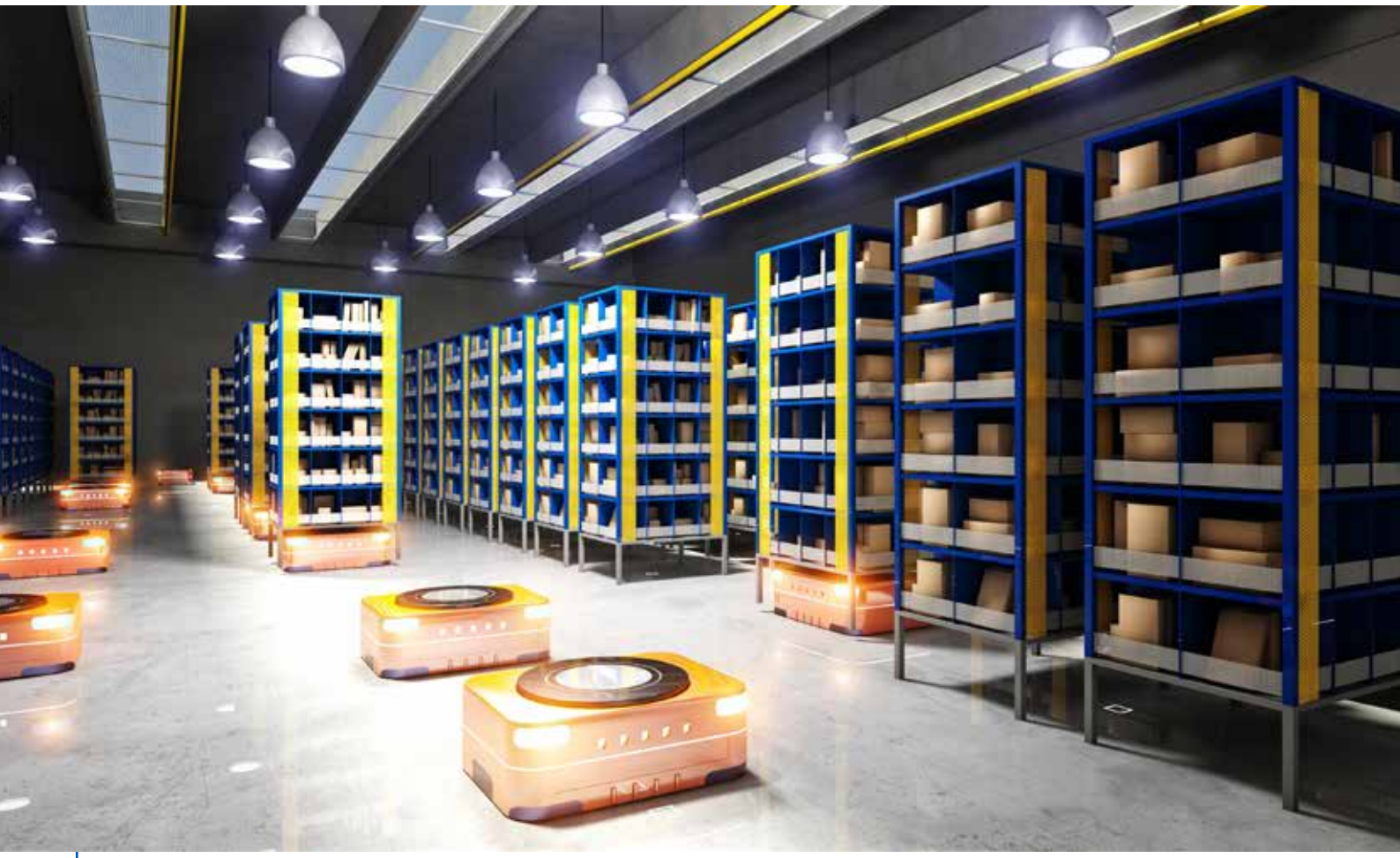


Micro-Fulfillment Centers are Shaping Up the Future of E-Grocery Deliveries

This white paper covers:

- Overview - The rise of micro-fulfillment centers in the e-grocery supply chain
- Micro-fulfillment Centers — Explained
- How does micro-fulfillment work in e-grocery?
- The Opportunities and Obstacles of Introducing Micro-Fulfillment Centers
- Optimizing last-mile logistics with Artificial Intelligence: Locus in the e-grocery supply chain

Overview - The rise of micro-fulfillment centers in the e-grocery supply chain

From bizarre panic buying, overcrowding at supermarkets, essential goods flying off the shelves, to gradually nil in-store traffic, sudden spikes in online grocery sales, and dynamic consumer demands for delivery options, grocery retailers have seen it all in 2020.

COVID-19 brought about a transformation in the grocery supply chain, causing sudden and permanent shifts in shopping patterns, and pushing consumer goods retailers to fulfill customer expectations despite the dynamism and volatile market challenges.

Grocery is an absolutely essential commodity, especially when you're stuck at home for almost a year, and eating outside is not the safest option. And with retail outlets shutting down, buying groceries online just like other essentials became the new normal. Amid the pandemic, more than 40% of Americans who ordered groceries online tried it for the very first time in 2020. It is only fair to say that the convenience of buying groceries online is something the customers would love to enjoy, even after the pandemic. Online grocery sales are expected to make up 20% of all grocery sales, becoming a $100b market by 2022.

Having said that, the competition in the e-grocery space is fierce. While big-scale retailers have introduced specialized grocery delivery segments, a number of grocery delivery startups such as Instacart and FreshDirect have made it big in the business. Supermarkets and mom-and-pop retail stores with a limited online presence have also embraced brick-meets-click models, listing their businesses on grocery delivery platforms, and introducing home delivery options to keep up with the trends.

In an effort to more cost-effectively fulfill online grocery orders for its customers, Amazon has adopted "dark store" fulfillment, by converting available store spaces in urban areas into Amazon fulfillment centers.

Walmart plans to expand its use of high-tech systems that quickly pick and pack online grocery orders as it anticipates shoppers' demand for pickup and delivery will outlast the pandemic. Dozens of Walmart's stores will become fulfillment centers, with a portion of those stores turned into small, automated warehouses, the company told CNBC.

America's Grocery retail giant, Kroger too is building automated warehouses in partnership with tech provider Ocado and has committed to building 20 automated warehouse facilities, with its first already operational in Monroe, Ohio, a suburb near the company's headquarters.

As consumer demands keep evolving, and market competition becomes more cut-throat, grocery businesses are being pushed to find smarter, more efficient, and cost-effective ways to fulfill customer demands. A number of innovative last-mile fulfillment models have come to the surface in recent times. Apart from doorstep contactless deliveries, Buy Online, Pick-up In-Store (BOPIS), curbside deliveries, click-and-collect, and grab-and-go options have become very popular.

There is also growing adoption of other innovative distribution methods in e-grocery last-mile fulfillment such as the conversion of retail outlets into dark stores, hub and spoke distribution models, and the use of micro-fulfillment centers for last-mile deliveries.

In this white paper, we aim to dig deeper into the concept of micro-fulfillment, throw light on the various pros and cons of this delivery model and understand the role of logistics tech in optimizing the e-grocery supply chain.

Micro-fulfillment Centers — Explained

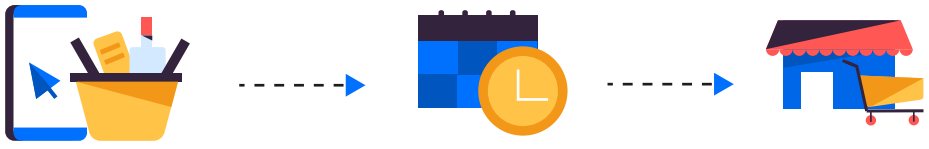
Micro-fulfillment centers (MFC) are distribution warehouses strategically planned to fulfill customers in high-density order areas. These are automated warehouses that are compact enough to occupy lesser space compared to a conventional warehouse and can be placed hyper-locally close to highly-populated customer locations, facilitating faster and more efficient last-mile distribution.

While a traditional warehouse may occupy an area of about a million square feet to 300,000 million square feet, a micro fulfillment center just typically occupies a much compact 2,000 to 50,000 square feet. The compact design of e-grocery micro fulfillment allows FMCG retailers to accommodate a distribution unit in any small available space, say at the back of a supermarket, a garage, or a basement, and store fast-moving and in-demand consumer goods for quick fulfillment. The modular nature of the automation technologies enables MFCs to have high storage density by utilizing cubic volume of space.

Micro-fulfillment centers leverage advanced automation technologies such as mobile robots, pallets and shuttles for extremely fast and accurate order picking, thereby achieving on and in full deliveries. Warehouse automation software and execution systems connect the network of these micro-fulfillment centers to one another to enable real-time order management, as per delivery location and customer preferences. AI-powered software ensures smooth flow of operations right from inventory management to order fulfillment and order sequencing as per delivery schedules.

Micro-fulfillment centres can deliver up to 5000 orders per day, and handle up to 10,000 SKUs, resulting in optimal space utilization and huge cost savings for online grocers. Customers in any mega city can be delivered grocery with lightning speed with only 5 to 10 MFCs spread across the city.

How does micro-fulfillment work in e-grocery?



Customer orders groceries online

A delivery time-slot is provided

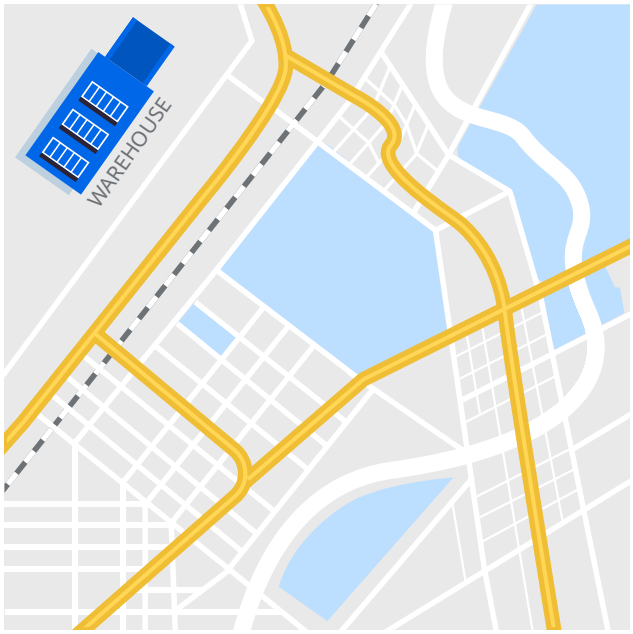
Order details are sent to the nearest micro-fulfillment center

Order is packed and prepared for dispatch using automation tech

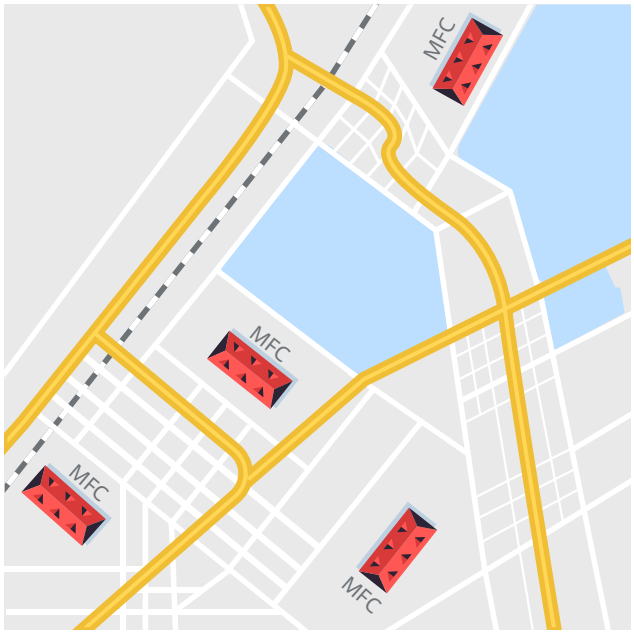
Delivery partner picks the order from the micro-fulfillment center

Items are delivered quickly and efficiently

Conventional Distribution Hubs VS Micro-Fulfillment Hubs



Traditional warehouse located on the outskirts of a city



Micro Fulfillment Centers located within the city

The adoption of micro-fulfillment centers is gaining momentum among grocery players and consumer goods retailers due to its proximity to the end customer and potential to improve efficiencies in the final-mile. Micro-fulfillment centers have some distinguishing features that are ideal for businesses looking for faster last-mile solutions.

Automated Warehouses

Micro-fulfillment centers are either fully or partially automated warehouses with automated inventory execution systems, robots, and AI-enabled machinery to enable fast processing of orders and eliminate manual, repetitive, and time-consuming or difficult tasks in warehouse management. These smart warehouses make use of efficient storage systems to stock up multiple categories of inventories systematically and use robotic automation to load, unload and sort shipments.

Digitized Processes

From storage to order processing, dispatch planning to packaging and shipping, all secondary mile processes in a micro-fulfillment center are digitized and streamlined to enable faster order processing, standardized packaging, labeling, and accurate shipping of goods in the warehouses.

Urban Proximity

Unlike regular fulfillment centers which are located in the outskirts of cities, these micro-fulfillment centers are strategically placed in urban locations, from where reaching customers is possible within a short period of time, say an hour or two. This allows retailers, especially e-grocery businesses to fulfill their customers in the shortest possible timelines.

Limited Space Occupancy

Micro-fulfillment centers occupy significantly lesser space compared to a full-size warehouse, and therefore easier to implement in urban localities without heavy investment in real estate, and function efficiently even from a limited space.

The Opportunities and Obstacles of Introducing Micro-Fulfillment Centers

The adoption of micro-fulfillment centers is emerging as a trending new solution to beat the last-mile challenges in e-grocery and retail. But whether or not to implement it in your supply chain is a strategic business decision and must be taken carefully after weighing out the pros and cons of this fulfillment model.

Opportunities offered by micro-fulfillment centers

Faster last-mile fulfillment

Located within close proximity to customers, micro-fulfillment centers enable faster pick-ups and last-mile deliveries to the end customer, within just a couple of hours of the order being placed.

Reduced logistical costs

As orders are picked up from within the city, and not from a remote warehouse, delivery agents have to travel lesser. Automated systems in the micro-fulfillment centers also plan dispatches and delivery routes optimally, thereby reducing the overall spending on fuel and final-mile logistics.

Minimal human intervention

Most activities and processes in a micro-fulfillment center are digitized and automated, and hence there is less requirement of human involvement and also minimal labor spends for the business.

Efficient inventory management

In a micro-fulfillment center, inventory across hundreds of categories of consumer goods is sorted, stacked, and stored using robotic automation solutions, which increases warehousing efficiency and minimizes the chaos of manual sorting and storage.

Improved customer satisfaction

When orders are delivered fast and accurately, it improves the customer experience and builds long-term loyalty with the brand.

The obstacles of implementing micro-fulfillment centers

High cost of implementation

The overall cost of implementing micro-fulfillment center involves an investment in high-quality machinery, automated equipment, and technology which may seem like a huge initial investment for grocery retailers.

Limited storage capacity

Micro-fulfillment centers may provide a solution for space optimization by storing merchandise in a systematic and standard method, but there is no denying the fact that these distribution hubs are smaller than regular warehouses. There is hence a limit to how much inventory can be stored in these hubs at one time.

Issues in managing decentralized inventory

To implement a micro-fulfillment model, retailers must maintain multiple warehouses — macro inventory hubs that store larger quantities of groceries and smaller micro hubs within urban areas that can store smaller quantities for day-to-day distribution. Managing decentralized inventories spread across multiple locations can be a complex task.

Optimizing last-mile logistics with Artificial Intelligence: Locus in the e-grocery supply chain

When implementing a micro-fulfillment center to facilitate faster same-day deliveries, digitization of operations becomes mainstream. Leveraging Artificial Intelligence in logistics operations can help streamline supply chains on strategic, tactical, and operational levels. Logistics tech plays an important role in setting up more efficient warehouse processes, as well as improving on-ground delivery operations.

Locus offers a range of AI-backed logistics optimization solutions to enterprises in the grocery supply chain to optimize warehousing, distribution, and final mile deliveries.

Locus' network optimization solution analyzes the supply chain network using Artificial Intelligence and Machine Learning algorithms and focuses on streamlining secondary distribution from primary warehouses to fulfillment centers. It also helps businesses in identifying the most ideal locations to set up micro-fulfillment centers within cities, and how many of such distribution hubs to operate to achieve profitability.

Manual shipment processing can significantly increase the error rate and processing time.

Logistics planning solutions by Locus allow managers to plan day-to-day order dispatches effectively, and dynamically as and when grocery orders start pouring in. Managers can assign delivery duties to the right agents, depending on factors such as rider skill-sets, availability, location preference, and ensure a fair distribution of workload among all riders.

Locus' advanced geocoding engine converts even the fuzziest delivery addresses into precise latitude and longitude thereby enabling riders to reach customer locations without delays, and improves the first attempt delivery rates. Our route optimization suite helps in planning the shortest, most optimal delivery routes for hundreds of orders within minutes, thereby ensuring speedy deliveries, reducing the miles driven, and saving fuel costs.

Last-mile tracking solutions by Locus bring in end-to-end visibility in the grocery supply chain, allowing logistics managers to track and monitor on-ground delivery operations effectively, and take preventive measures in times of delays or last-minute hiccups. Live tracking details can also be shared with customers, enabling them to track their order status, giving them a sense of control and visibility over their orders.

As more and more businesses realize the importance of online selling and omnichannel fulfillment, innovative and digitized distribution models like micro-fulfillment centers are meant to thrive in the coming days. Although it is a rather new concept in grocery retail, it is a growing trend and is shaping up the future of last-mile deliveries of groceries. Technology in automation and logistics optimization will help grocery retailers streamline last-mile operations and stay ahead of the rising competition.

Optimize your e-grocery logistics with AI-backed technology from Locus.

Get in touch with our experts for a quick tour of our offerings.

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