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THE DISTRIBUTION EXPERTS™
Fortna Thought Leadership Series

Six Things to Consider Before Implementing Micro-Fulfillment Solutions

Accelerated eCom growth and supply chain disruptions caused by the pandemic are creating a shift in network strategy from large centralized distribution centers toward hub and spoke networks with smaller, more flexible nodes located closer to the customer. More people live in urban and suburban areas than ever before, where there is limited warehouse space availability, and for which real estate costs are at a premium. Retailers, especially retail grocery, driven by customer expectations for both convenience (buy online, pick-up in-store and home delivery) and speed (next-day, same-day delivery), are deploying micro-fulfillment solutions, both with and without automation. Urban eCom fulfillment often includes home delivery while suburban eCom skews toward store pick-up and some limited home delivery.

Either way, when factoring in the pre-pandemic challenges of labor availability, minimum wage increases, and post-COVID need for physical distancing of workers for health and safety, the ROI for a growing number of automated micro-fulfillment solutions is justified. Cost savings and customer service levels are not the only considerations. With an uncertain future ahead, the flexibility of any micro-fulfillment solution will be critical to business continuity and success. Before moving forward with a micro-fulfillment strategy, let's look at the concept and six things to consider before implementation.

"These smaller fulfillment nodes are designed to be ramped up quickly and efficiently to profitably deliver products without impacting the in-store experience for shoppers."

MICRO-FULFILLMENT GAINS TRACTION

Gartner predicts that by 2025, 10% of click and collect orders will be fulfilled by micro-fulfillment centers.[1] Micro-fulfillment centers (MFCs) are typically small footprint facilities, capable of enabling fast, local pick-up or delivery. By their nature, MFCs need the flexibility to handle a wide array of SKUs in a dense storage configuration (due to small footprint) and must be extremely reliable. Seventy-three percent (73%) of retailers consider it a challenge to implement an in-store accept, pick, and pack process for online orders, according to a 2020 survey of retailers by Forrester.[2]

[1] Garter (C. Klappich), 2020, "Hyperlocal Fulfillment: Winning by Getting Real Close to Your Customers"
[2] https://www.supplychaindive.com/news/retailers-in-store-pick-and-pack-omnichannel-survey/584443/

Source: Matt Leonard / Supply Chain Dive, data from Forrester

THE BENEFITS OF MICRO-FULFILLMENT

Micro-fulfillment solutions enable shorter order to delivery cycles, decreased transportation cost and the potential for hyper-localized product offering, all in the name of reduced labor costs, greater customer satisfaction and loyalty. Target reports that despite year-over-year doubling of 2020 Q2 digital sales, they were able to fulfill more than 75% of those sales through their stores, leading to a 30% reduction in the average unit cost for digital fulfillment.[3] While picking orders from store shelves makes sense on one level, it can interfere with the in-store shopping experience, requires different skill sets than those of store workers, and is less efficient than more traditional warehouse picking methods.

With micro-fulfillment solutions, it's possible to leverage existing assets (backrooms or dark stores), vacant retail space made newly available by recent store closures, and small footprint, highly automated industrial real estate located just outside of an urban center to deliver on the promise of same-day or next-day delivery – a significant CapEx savings over large-scale centralized distribution centers. These smaller fulfillment nodes are designed to be ramped up quickly and efficiently to profitably deliver products without impacting the in-store experience for shoppers.

SIX THINGS TO CONSIDER BEFORE IMPLEMENTING MICRO-FULFILLMENT SOLUTIONS

The benefits outlined above often outweigh some of the offsetting challenges, such as increased inventory requirements and need for greater inventory visibility.

"Automation is key to achieving the level of accuracy and efficiency of more traditional DC operations. It can help balance higher labor cost and safe physical distancing needed for workers today with greater productivity and better service for customers."

[3] https://www.supplychaindive.com/news/target-earnings-store-fulfillment-omnichannel-pandemic/583772/

Automation is key to achieving the level of accuracy and efficiency of more traditional distribution center operations. It can help balance higher labor cost and safe physical distancing needed for workers today with greater productivity and better service for customers.

> **"When moving to micro-fulfillment, you will need to consider the implications to inventory. Having more inventory in forward network nodes like MFCs comes not only with the additional cost of that inventory, but also the burden of making sure it is properly placed within the network."**

Inventory: When moving to micro-fulfillment, you will need to consider the implications to inventory. Having more inventory in forward network nodes like MFCs comes not only with the additional cost of that inventory, but also the burden of making sure it is properly placed within the network. You must ensure the MFCs can be quickly replenished to avoid out of stocks and that inventory doesn't languish in certain parts of the network while other nodes are starved. This can impact upstream DCs that need to replenish MFCs and stores more frequently. Changes to order profiles in those DCs can affect operations and costs. Will those DCs be required and have the means to prioritize replenishment orders to micro-fulfillment nodes? How do you determine the right balance of inventory in the MFC, the store and the central DC? Keep in mind, split shipments can add significantly to costs if you must ship items from more than one location to complete the order. Do your systems support this level of decision-making?

Software/Systems: Systems integration is a critical but often overlooked component to ensure successful deployment of a micro-fulfillment solution. The solution will integrate with a Warehouse Management System (WMS) or ERP and possibly the Order Management System (OMS) or Point-of-Sale (POS) systems. The ease or difficulty of systems integration depends on the number of customizations to those systems and the involvement of the IT team early in the process. What happens when an order is cancelled, or pick-up time changed? Can the system re-sequence orders and facilitate changes?

Variable Temperature and Fresh Goods: Fulfillment of fresh and temperature control products can be especially tricky with grocery, pharma, and certain consumer goods. What percentage of your SKUs require cold vs. frozen vs. ambient temp storage? Are you equipped to maintain appropriate temperatures for orders as they are picked and awaiting pickup? There are several automation solutions that work well across a range of temperatures, but most are not designed to handle fresh items efficiently and with the care it requires to prevent damage. Often these types of operations take a hybrid approach with dry goods stored and picked via automation and fresh items picked manually. Have you considered the additional space requirements for such a hybrid operation?

Labor: Skill sets and costs of store pickers and DC associates are very different. The productivity and accuracy of a warehouse worker in the DC will always be higher than that of an associate picking from the backroom or store shelf. Transportation savings associated with click and collect orders and shorter delivery distance help offset some of the higher fulfillment cost per unit. The accelerating growth of eCom orders, labor availability constraints and costs, coupled with physical distancing required to keep workers safe favors automation solutions which can further increase productivity and accuracy, as well as drive down cost per unit calculations.

Questions to ask before implementing micro-fulfillment strategies:

- Which store locations make sense to enable as micro-fulfillment centers?
- Will you share inventory across channels or keep it separate?
- How frequently will you need to replenish micro-fulfillment centers?
- How will enabling micro-fulfillment change order profiles in the upstream DC(s)?
- Which channel should receive credit for the sale and how do you allocate cost?
- Do your systems allow you to track all of your inventory across the network and match it to real-time demand?
- How will you deal with orders that require inventory from more than one location? Do you allow split-shipments? And if so, at what cost?
- How do you handle communication with customers concerning expected delivery times and order exceptions?

Home Delivery: If your offering includes home delivery, you will need to consider the added cost of building your own last mile transportation network or hiring someone with those capabilities. Some companies have turned to outsourcing via Instacart-type services to do the picking and the delivery where they lack the infrastructure to handle operations in-house. This may be a good short-term solution, but even if you outsource order picking to a third party, you will need

to consider how picking from store shelves can impact the in-store inventory availability and shopping experience (i.e., congestion) for your customers.

Site Selection: Backroom space or an underperforming store can sometimes be repurposed for fulfillment operations, though not every property is ideal for this type of deployment. Much has been written about converting stores and mall space to fulfillment centers, but in some cases that requires a rezoning of the property, which can add time and cost to the project. You will need to consider whether existing loading docks are adequate, as well as proximity and routes to highways for truck traffic. If automation is being considered, there may be additional site preparation or insurance requirements that must be addressed.

FLEXIBLE AUTOMATION SOLUTIONS FOR MICRO-FULFILLMENT

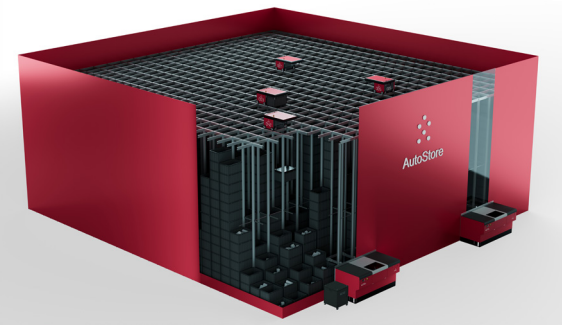
Several flexible automation technologies, including automated picking and order storage and delivery sequence buffering, are proving their worth as part of micro-fulfillment solutions. Let's look at a few of the more common technologies deployed in these types of solutions.

Co-bots: Autonomous Mobile Robots (AMRs) are collaborative bots designed to reduce foot travel associated with picking. These highly flexible bots differ from AGVs of the past in that they use sensors and cameras to navigate

surroundings and avoid people and objects in their path rather than follow pre-defined tracks or routes for increased efficiency and speed. They are flexible and can be quickly scaled and configured to handle a variety of products and processing methods. A growing number of them are offering Robots as a Service (RaaS) models to reduce up-front CapEx. Many 3PLs leverage this technology for clients who need a quick ramp up and implementation timeline.

Shuttle (AS/RS) and Goods-to-Person (GTP): AS/RS (Automated Storage and Retrieval) technologies shuttle and buffer goods in totes from dense multi-level aisles to GTP or goods-to-robot (GTR) picking stations. Orders can be consolidated at those stations or further down the line. These systems are capable of handling upwards of 15,000 totes per aisle in double-deep storage and can sustain processing up to 400 to 600 lines per hour at each station. They are modular and scalable to flex with business need.

High-density storage: High-density storage systems are building-block type structures with bots that run on rails at the top of the structure to dig totes from a stack and deliver them to picking stations along the outer perimeter of the unit. These systems offer the greatest flexibility in that they can be configured to fit the shape of virtually any space. The dense stacking of totes means that they fit more product into a smaller footprint than other material handling equipment systems. They can be deployed quickly, scale easily without disrupting operations and enable safe physical distancing of workers.



To determine which of these technologies best fit your operation, you should start with the business requirements:

- How many SKUs will the solution handle?
- How many orders per day with how many lines per order on average?
- What are the order profiles?
- Are there variable temperature products? Fresh or fragile items?
- What are your competitive pressures? What is the service promise to your customers?

Once you have outlined business requirements, you can start to evaluate different technologies and operating methods to determine what type and how much space is required for your solution. Note that the process is generally iterative and takes time to assess the trade-offs and find a solution that is balanced and can be financially justified.

SUMMARY

Micro-fulfillment offers one solution to increase speed, agility, and competitiveness in response to some of the challenges caused by rapid eCom growth and disruption. But implementing micro-fulfillment technologies without understanding the holistic needs of the entire ecosystem will not generate the expected value. Executives would be wise to invest the time, money, and effort to identify the optimal strategies and solutions for meeting customer demand and generating long-term value.

FORTNA CAN HELP

The Fortna Micro-fulfillment Strategy Assessment, designed to improve order fulfillment and business continuity, guides you through various micro-fulfillment strategies to find the right solutions and best fit technologies to support your business.

For more information, contact The Distribution Experts at info@fortna.com.

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