

LANDING ON THE DOORSTEP: ACHIEVING LAST-MILE DELIVERY





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One of the trickiest challenges in supply chain management has long been finding ways to affordably and effectively deliver goods from warehouse hubs to their final destination.

Transportation companies have mastered efficiencies in every other step in the process, yet no one has completely solved last-mile delivery. Several modern processes and economies of scale have been incorporated into the shipment of goods throughout the supply chain network, but delivering packages along that last leg have continued to be slow and costly. This is a critical factor in supply chain management, as transport accounts for 10% of a product's cost and last mile accounts for 53% of a product's transport costs, according to Jean-Paul Rodrigue's "The Geography of Transport Systems."

While the initial stages of supply chain management involve the movement of products from manufacturers in large containers via ships, commercial airplanes and rail, last-mile delivery is different. The process of last-mile fulfillment is wrought with complexity, typically involving trucks with smaller loads transporting goods for short distances through urban traffic. Trucks fill up with shipments at warehouses and distribution centers and set out to deliver individual packages to hundreds of addresses; it's a difficult process to automate. It's also the step of the supply chain where customers demand attention to detail and extras, such as photos of packages on their doorstep, along with fast delivery.

This 4-part white paper will uncover the logistics behind supply chain visibility, detailing how and what technologies companies are investing in, how companies are working to meet same-day delivery and what forms of technologies are best for mitigating supply chain risks. This series of white papers will break down grocery retail, last mile and warehouse automation, revealing how procurement soft-

ware, enterprise resource planning (ERP), warehouse management systems (WMS), robotics and other automated solutions help companies better forecast for inventory, waste reduction, fleet management problems, a future in contactless and driverless and more.

When e-commerce skyrocketed, so too did the last mile, and with it, came a slew of supply chain optimization needs. Here's how companies are making on-demand trucking and warehouse localization more prevalent.

BUMPING UP TECHNOLOGY

Modern technologies and e-commerce giants like Amazon have quickened the pace of last-mile delivery and increased customer expectations of same-day and next-day deliveries. The lockdowns in 2020 associated with the COVID-19 pandemic also put last-mile at center stage, with companies rushing to seek out ways to deliver goods to customers as quickly as possible.

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Jean-Paul Rodrigue's



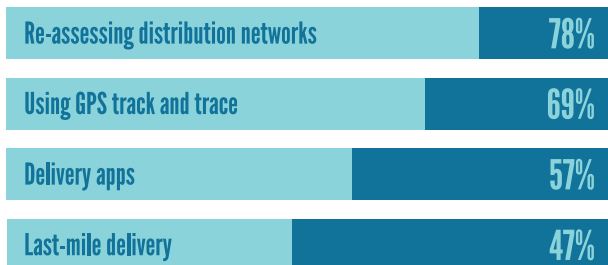


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For decades, companies have increasingly added technologies such as global positioning systems (GPS), sensors and mobile communications technology to increase shipping efficiencies.

customers. Supply chains must understand the flow of materials and the cycle time attributed to those tasks vs. the expected outcomes. You must 'see' as much as you can 'see' across all critical processes so that you can create a competitive advantage and reduce risk."

COMPANIES' INVESTMENTS FOR THE FUTURE



According to a survey conducted by *Food Logistics* and *Supply & Demand Chain Executive*.

Supply chain visibility technologies play an important role in that measurement, he says.

"Start with logistics process visibility and look for your constraints as a result. Don't just blame the transportation process when you sight constraints in the logistics process, though, for late delivery may be a result of your planning team's processes," Baxa says.

"To get to the real version of the truth, you must have visibility into your supply chain processes to uncover the complexity that has the potential to bring the operations to their knees. Do start with logistics visibility and work upstream from there. But, be ready to work backward from the delays you see in the transportation function, as the constraints you learn of there often lead to root cause to rest in upstream processes."

According to a survey conducted by Food Logistics and Supply & Demand Chain Executive, companies are investing in track and trace and visibility technologies to improve last-mile delivery success. Of those surveyed, 78% said they were investing in re-assessing their distribution networks and are using GPS (69%), track and trace (57%) and delivery apps (47%) in last-mile delivery.

When it comes to delivering thousands of packages effectively, day after day, it's important to be able to measure each step, says Mark S. Baxa, president and CEO of the Council of Supply Chain Management Professionals (CSCMP).

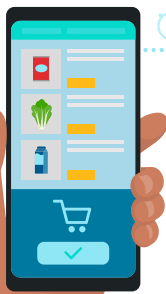
"You can't measure that which you do not see," he says. "If you do not understand the total supply chain cycle and a means to measure the length of that cycle, you are losing money, time and likely

LAST-MILE DELIVERY AND THE PANDEMIC

The pandemic revealed the lack of resiliency in the supply chain, a problem that needs to be addressed with technology and redundancies, Baxa says.

"We learned during both the era of China Section 301 tariffs and the human health impacts of COVID-19 that most supply chains were not prepared for what was to come," Baxa says. "For

Of those surveyed, 78% said they were investing in re-assessing their distribution networks and are using GPS 69%, track and trace 57% and delivery apps 47% in last-mile delivery.



many, this was sudden and disruptive but left many scrambling to overcome, yet the end result was a loss of revenue or the entire business. Why? A lack of resiliency. We simply were not ready to put to the test whatever alternative sourcing strategy or alternative supply chain approaches we may or may not have thought about. After all, who wants to invest where investment does not seem to be warranted? Building in redundancy as a part of a resilient supply chain is now becoming a critical part of supply chain strategy. To measure how well our supply chains perform and to sight where constraints may be introducing risk takes visibility into processes.”

Grocers were at the center of the last-mile delivery challenge during the pandemic. While many had begun to add e-commerce functionality to their businesses, few were prepared for the increased demand of those services when customers were under lockdown, says Phil Lempert, a food industry expert, food trends editor for NBC’s Today Show and owner of SupermarketGuru.com.

“Grocers never had to figure it out before,” he says. “A lot of retailers were playing with e-commerce, certainly, but they never expected to have to ramp up so quickly.”

Many grocers opted to rely on third-party e-commerce and delivery solutions, such as Shipt or Instacart. There have been many challenges with the entire process, however, including untrained shoppers picking low-quality meats and produce, long waits for deliveries and third-party companies creating high costs for customers and lower profits for grocers.

“Grocers discovered that they lose about 10 bucks on every delivery order and that’s problematic,” Lempert says.

Moving into the future, grocers need to reduce delivery time from the typical two-hour window to 30 minutes, Lempert says. And, grocers are moving in that direction. Albertsons announced plans to increase its click-and-collect sites from 1,400 to

1,800 by the end of fiscal year 2021. Click and collect, also known as buy online/pick up in store (BOPIS), allows grocers to maintain more profits and control the customer experience instead of handing those two elements over to third-party sources.

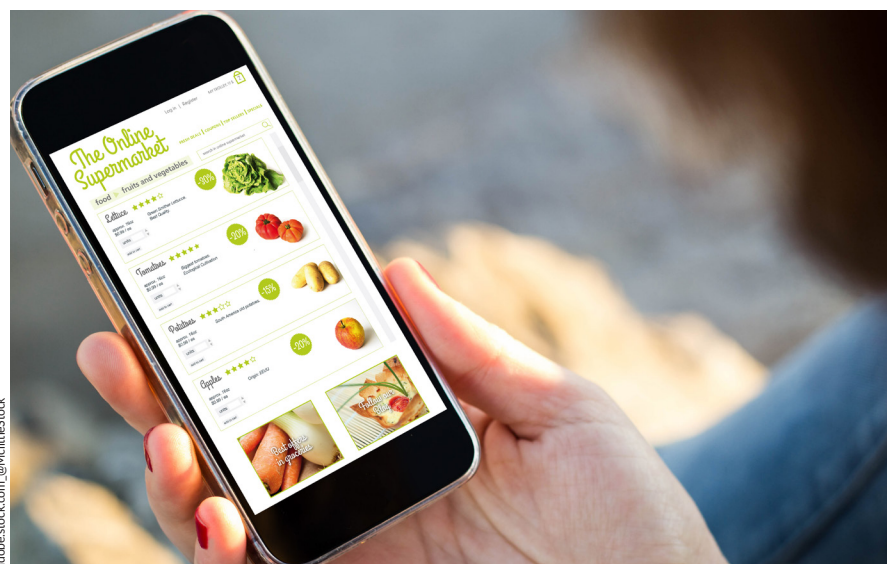
“Albertsons is doing everything that they can to say, ‘drop Instacart and go right to albertsons.com because it’s going to be less expensive,’” Lempert says.

Technology is the key to improving last-mile delivery in grocery, he says. For example, last year, Amazon secured the rights to acquire 5.44 million shares of SpartanNash to help distribute Amazon grocery deliveries.

“I think that the ones that will do well in a year or five years from now are the ones that are embracing technology, not being scared of it, understanding that they’ve got to hire the right people, like Albertsons,” Lempert says. “Like Hy-Vee, if you look at the deal with SpartanNash and Amazon, that’s brilliant when you really look at it. SpartanNash has all these independent grocers who don’t have enough facilities. Now, with Amazon owning a significant piece of Spartan, there’s no question we’re going to start to see more advancements from them. Amazon Fresh is going to be killer. Aldi’s is going to just continue to rise too.”

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Phil Lempert





SOLVING THE TRANSPORTATION PIECE

A shortage of truck drivers has compounded the difficulties of last-mile and has encouraged shippers to look at creative solutions to improve delivery times. Trucking companies are vigorously recruiting new truck drivers and industries are looking at increasing micro-fulfillment sites to help solve the issue. While still on the horizon, many are also hoping autonomous trucking will help alleviate the pressures on last-mile deliveries.

"To me, the No. 1 problem in our supply chain is food transportation," Lempert says. "During the pandemic, we saw Publix step up with a lot of farmers who couldn't get truckers to bring their goods to stores, so Publix sent their trucks. We saw the same thing with dairies in the Midwest that were dumping milk, or recently in Texas dumping milk. We have a huge transportation problem that we've got to solve. I don't know if it's Elon Musk with driverless trucks that will solve it. But, what I do think is the system that we have now, where 96% of all lettuce is grown in California and has to be trucked to every other part of the country, that's not efficient, that's not sustainable."



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Susan Beardslee, principal analyst of supply chain and logistics at ABI Research, says the truck driver shortage is resulting in more gig workers taking on the job, especially for last-mile deliveries.

"The driver shortage appears to have a stronger impact on long-haul drivers due to a variety of factors, from driving schools shut down during the pandemic to drivers lost to non-compliance from the Drug and Alcohol Clearinghouse, to aging CDL holders and less desire for the long hours and time away from home," she says. "Many companies are offering signing bonuses and higher pay. The new last-mile drivers increasingly do not see themselves as professional drivers, but mobile workers."

The use of gig workers in trucking is just the latest development in last-mile, next-day and same-day delivery, she says.

"The time to deliver continues to shrink, even as supply chain disruptions continue across geographies, modes and verticals," Beardslee says. "Next-day deliveries are becoming table stakes, with large retailers offering two-hour delivery for some customers and products. One emerging change is the classification of gig workers in California. This has also occurred in the United Kingdom and is in consideration in multiple European countries. This is likely to further promote autonomy to reduce costs."

TRENDING SOLUTIONS

Strategies for last-mile delivery have shifted dramatically in recent years, especially since the start of the pandemic. Many retailers are rethinking just-in-time (JIT) deliveries, for example, and moving distribution centers closer to urban areas.

"Multiple supply chain companies such as grocers, retailers and distribution providers are reconsidering JIT inventories and deciding to build up 'panic pallets' and higher inventory levels to reduce the risk of stock-outs," Beardslee says. "This is supported by integrated supply chain solutions to target high volume and at times higher margin products. Autonomy is also growing in distribution centers,

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Susan Beardslee



along with growing micro-fulfillment centers closer to suburban and urban centers. Some leading consumer packaged goods companies have also led SKU reductions to focus production, inventory and stocking on strategic products.”

Many new technologies are being implemented, as well, she says.

“Transportation companies are focused on optimized routing and mapping to enhance delivery capacity, reduce miles and idle time as well as inefficient miles,” Beardslee says. “Mapping and routing solutions are key to consistently providing flexible and efficient delivery.”

An analysis by Gartner concurs with that analysis. According to Gartner analyst Bart De Muijnck in “Last-Mile Delivery Solutions,” advanced technologies are improving last-mile deliveries.

“Last-mile delivery solutions are increasing,” he says. “These solutions are adaptations of traditional routing and scheduling, wherein a route could be replanned and a dispatcher would control the process. Many of these solutions use AI and machine learning to speed up the optimization process and predict occurrences and impacts based on real-time information. Support for pieces of this technology, such as automated vehicle locating, is becoming more mature and commonplace.”

Drones, robots and electric vehicles are quickly being adopted by shippers and retailers, as well.

Early drone testing has shown that delivery times can be trimmed down to 30 minutes in some urban areas, Beardslee says.

Retailers like Walmart and Kroger are using the zero-emission, autonomous delivery vehicles, while other companies are using delivery robots by Starship Technologies. The Nuro could reduce delivery costs by 50%, she says.

“Nuro’s R2 offers zero-emission, autonomous delivery and has engaged with Walmart, Kroger, Domino’s, Chipotle, CVS Pharmacy and most recently an agreement with FedEx. The R2 has permission to

operate on public roads,” Beardless says. “Another option for smaller deliveries is the ground-based delivery robots from Starship Technologies, which make over 10,000 sidewalk-based deliveries daily, including to universities, single-story buildings and other comparable locations.”

Meanwhile, companies like Amazon are using electronic vehicles (EV) to reduce their carbon footprint in last-mile deliveries. Amazon is investing in Rivian, while UPS is buying Arrival vehicles.

“Amazon has both backed and ordered Rivian EVs, with plans to expand this year and ultimately add another 100,000 EVs in the next nine years,” she says. “UPS is purchasing 10,000 Arrival EVs through 2025. GM created BrightDrop to develop and deliver sustainable last-mile solutions, with FedEx involvement. All of the commercial OEMs including Daimler and Volvo are developing solutions.”

While e-commerce shopping has exploded in growth in recent years, especially due to the pandemic, so too have technologies and the solutions they provide. Shipping companies and retailers are taking on several innovative ways to reduce last-mile delivery time and costs to meet increasing consumer demands. To top it off, many are working to decrease the carbon footprint of deliveries and fleets using electronic vehicles and similar means.

Check back for the remaining section of this white paper, which will break down warehouse automation and it relates to the state of supply chain visibility. ■

[CLICK HERE](#)

TO READ PART 1

Which uncovers the logistics behind supply chain visibility, detailing how & what tech companies are investing in, how companies are working to meet same-day delivery and what forms of technologies are best for mitigating supply chain risks.

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TO READ PART 2

Which details how consumer shopping trends have changed the way grocery retailers approach sourcing, distribution and transportation, especially in terms of supply chain visibility.

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