

Deliver on time or pay the fine: Speed and precision as the new supply-chain drivers

E-commerce giants have raised the supply-chain performance bar. Now consumer-goods manufacturers face a stark choice: achieve new levels of predictability and responsiveness, or pay a heavy price.

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As of mid-2018, approximately 60 percent of Amazon's US customers were members of the company's Prime premium delivery service. Those 95 million consumers are worth a lot to the e-commerce giant; on average, they spend \$1,400 a year with the company, compared to the \$600 spent by non-members. In return, they expect exceptionally high service levels. A key benefit of Prime membership is two-day delivery lead times at no additional cost.

To meet its service promises, Amazon has invested heavily in logistics infrastructure. As of July 2018, the company operated 122 fulfillment centers in the US, with a further 44 in planning or construction. The opening of those facilities will take Amazon's US warehouse space beyond 100 million square feet (9.29 million square meters). The company's distribution network isn't just big, it is also remarkably high-performing. Amazon's network operates with a third fewer days of inventory than most major conventional retailers. Items are picked, packed, and ready to ship two hours after a customer order is placed. And Amazon is also at the forefront of the large-scale application of robotics and automation systems in warehouse operations.

Where Amazon has led, the rest of the industry is following rapidly. Walmart is developing a network of dedicated e-commerce distribution centers designed to allow next-day delivery of on-line orders to 90 percent of the US population. Other top retailers are making big investments to secure their position in the on-line space, acquiring e-commerce rivals and same-day logistics players as well as developing their internal fulfillment capabilities.

Retailers put suppliers under pressure

As they ramp up their own service levels, retailers expect their suppliers to shoulder their share of the burden. Leading players are tightening supplier service expectations and imposing stiff financial penalties for orders that are incomplete or which miss

agreed delivery windows. Kroger fines suppliers \$500 for each order that is delivered more than two days late, for example, while Walmart charges suppliers 3 percent of the purchase price for every order delivered early, late, or incomplete. And both retailers have also narrowed the delivery window for full truck loads from four days to one or two.

As these sanctions become the norm across the industry, they could create real pain for suppliers. Our analysis suggests that penalties could add up to more than \$5 billion a year across the US, if the consumer-packaged-goods (CPG) sector doesn't improve its current delivery performance. Individual CPG players could see their margins cut by a full a percentage point.

To compound these challenges, order complexity is rising alongside service requirements. One way on-line retailers compete is by offering their customers a much wider selection than traditional brick-and-mortar stores. Even by 2014, Amazon's most important US distribution centers held more than five million SKUs, for example. CPG players already struggle with complex orders: case fill and on-time-in-full shipments decrease sharply as the number of unique line items on an order goes up (exhibit).

How supply-chain performance makes the difference

This high-complexity, high-service world is an uncomfortable prospect for consumer-goods manufacturers. Yet it also offers a significant opportunity. Companies that can upgrade their supply-chain performance to meet or exceed the demanding expectations of retailers won't just avoid painful penalties. They'll also have the opportunity to get ahead of their rivals by capturing market share in increasingly important on-line channels and securing preferred-supplier status with major customers.

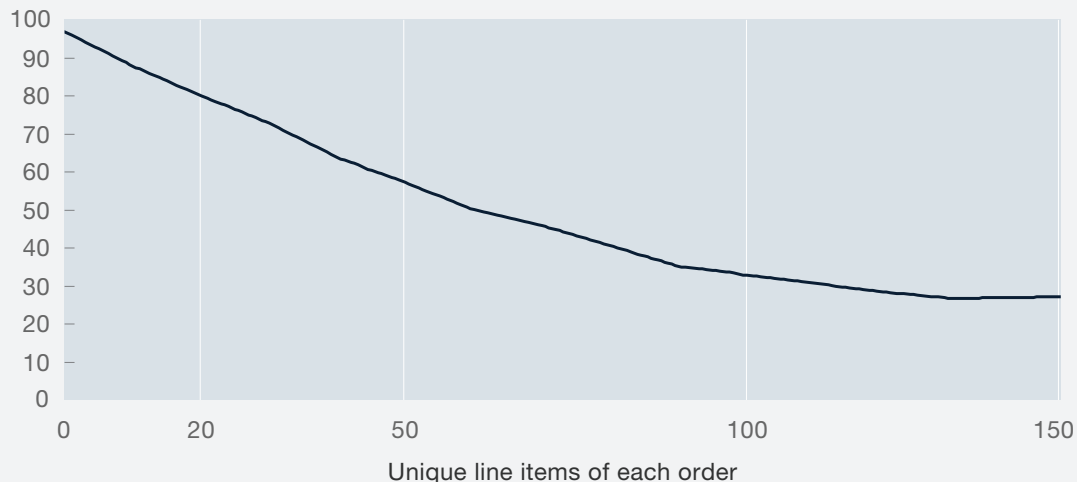
Achieving on-time in-full delivery performance of 95 percent or more for even complex orders will

Exhibit

Consumer-packaged-goods manufacturers struggle to fulfill complex orders.

Analysis of order-complexity or service-performance impact, example

Fill rate compared to complexity of orders, % orders that are complete/full, 2016



Insights

- More than 70% of orders consisted of fewer than 50 line items
- Product availability at source distribution center depressed fill rate, given that large orders included both high-volume and long-tail or infrequent items
- Complexity of offering can correlate with performance on retailer scorecards

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require manufacturers to take an end-to-end view of their forecasting, planning, manufacturing, and distribution operations. Here are four top areas of opportunity:

Significantly improve predictive precision

The combination of big data, machine learning, and advanced analytics can dramatically increase the sophistication of demand forecasts, allowing manufacturers to predict demand more accurately, at a more granular level, and over a longer time horizon. And as well as improving inventory

allocation decisions for base SKUs, these systems can also help companies predict the impact of promotions and new-product introductions.

One large, global CPG company applied machine-learning algorithms to more than 100 specific demand drivers, including demographic and socio-economic data on the people living near its stores, as well as local weather conditions. The approach allowed it improve forecast accuracy by 10 to 15 percent and extend forward-looking visibility from ten days to three months.

Even the smartest forecasting technologies can only work with good data, and only deliver results if the organization acts on their information. Therefore, companies also need to ensure they have effective collaboration and data sharing with suppliers and customers and should set an aspiration for “no-touch” planning to seamlessly translate forecasts into production and deployment schedules.

Make execution flawless, but flexible

Strong plans need to survive contact with the real world. That requires manufacturing and warehouse operations that work efficiently, reliably, and quickly. The best companies achieve those goals through a combination of new technologies and old-fashioned process discipline. They use lean methods and other performance-improvement techniques to streamline activities, cut error rates, and boost reliability. They invest in robotics and automation, especially in warehouse processes, to accelerate the handling of complex orders. And they use smart IT tools to track performance against targets in real time.

A second big consumer company has built a real-time performance cockpit covering all critical supply-chain performance metrics across its planning, manufacturing, and logistics-execution processes. The system uses advanced algorithms to point the user to exceptions that require attention, and gives them the ability to drill down to the status of individual SKUs in specific locations on particular days. That way they can isolate the specific problem and intervene immediately when necessary.

Fast, flexible manufacturing, accurate planning, and close coordination between commercial and operations functions can create a virtuous circle. Quick order-to-delivery lead times rely on more-accurate shorter-term forecasts. And when manufacturing and logistics operations have forecasts they can use with confidence, they can further streamline their activities, cutting buffer stocks and other sources of waste.

Reassess supply-chain assets

Just as retailers have redesigned their logistics networks to meet higher service requirements and omnichannel fulfillment, CPG players will have to modify their own supply-chain footprints. Fast, flexible supply chains may require distribution facilities that are located closer to critical customer facilities. The need for greater reach without excessive costs will encourage manufacturers to explore alternative ownership models: outsourcing warehouse operation to specialist providers, for example, or sharing facilities with customers or other players.

In this context, a global CPG manufacturer is undertaking a significant restructuring of its US distribution network. The company is consolidating distribution into fewer than a dozen primary centers and a smaller number of “mixing centers,” with the goal of reducing the delivery lead time for 80 percent of its US production to less than 24 hours.

Relationships with carriers will evolve too. The need for greater flexibility will require players to balance relationships between companies that own their own truck fleets and brokers that can access additional capacity on the market. Carrier contracts and incentive schemes will need to reflect the tight schedule compliance required to meet stringent retailer delivery windows. And the technology used to manage shipments may require an upgrade, with seamless information sharing between supplier, carrier, and retailer, and greater use of track-and-trace systems to monitor shipment progress and identify delays and problems more rapidly.

Master the complexity pipeline

Some of the complexity that impairs CPG supply-chain performance is self-inflicted. Poorly controlled new-product-introduction processes can lead to portfolio proliferation and skyrocketing numbers of SKUs to forecast, manufacture, and manage. By raising supply-chain management costs

while reducing delivery performance, the resulting excess portfolio complexity can outweigh any profit the products generate.

To avoid this trap, one major consumer player implemented an end-to-end complexity-reduction program. The company revisited its existing SKU portfolio and pipeline through the lenses of design-to-value product design, total cost of complexity by SKU, price-pack architecture, and strategic importance. The rationalized portfolio contained 20 percent fewer SKUs, but allowed the company to improve sales by more than 2 percentage points and net margin by more than 5 points.



None of the opportunities described above is a quick fix. And consumer-goods companies will need to address all of them if they are to achieve

significant, sustainable improvements in supply-chain performance. That is going to take time, effort, and investment. Companies that want to get ahead in the race for supply-chain superiority need to think about how the systems processes and infrastructure they are building today will enable them to meet the customer expectations of tomorrow. ■

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