

## Adaptive Logistics: Overcome Disruptions and Exceed Expectations

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When it comes to achieving excellence across the end-to-end supply chain, there is a dependence upon a number of key stakeholders. These stakeholders include suppliers, manufacturers, transportation providers, distribution centers, and retailers, all of which need to plan ahead and collaborate to deliver customer orders on time while meeting expectations.

However, no matter how much planning is involved, disruptions will always occur. These disruptions come in many forms, and whether they are major or minor in nature, will impact the overall customer experience. The right planning, and proper execution, focusing on building resilient business models, can allow companies to become agile and continue to deliver on expected service levels.

There are a number of connected technologies that enable an adaptive logistics environment. These include transportation management systems (TMS), transportation visibility systems, and warehouse management systems (WMS), especially when applied to the challenges of expedited order fulfillment, rapidly changing mix of SKUs, fulfillment through multiple channels, and heightened throughput volatility.

### Adaptive Transportation Management

As the global economy continues to expand, disruptions are bound to grow, whether they are related to port closures, weather, factory shutdowns, transportation shortages, trade wars, or other unforeseen events, such as global pandemics. The key is how prepared companies are to respond to these disruptions, and more importantly, how they get ahead of disruptions to ensure customer shipments remain on schedule.

From a transportation standpoint, transportation management systems and in-transit visibility tools can go a long way for companies to help maintain

high customer service levels. A TMS ensures companies move freight from origin to destination efficiently, reliably, and cost-effectively. The primary reason companies buy a TMS is for freight savings. These freight savings can be attributed to simulation and network design, load consolidation, lower cost mode selections, and multi-stop route optimization. But few companies would buy a TMS if it would lead to declining service levels. A TMS maintains service levels by understanding the origin to destination lead time and using that as a constraint during the optimization run.

A contributing technology to a TMS is a visibility tool, which enables in-transit visibility and improved estimated arrival times of goods. Visibility solutions are playing a larger role in the market, as real-time tracking of assets becomes more important. Suppliers of visibility solutions continue to bring in additional data streams for better shipment Estimated Time of Arrivals (ETA).

Visibility solutions are becoming more necessary. The need to know where products are, whether they are on the way to the warehouse, store, or customer, is critical to ensure a positive customer experience. In addition, many companies are looking for visibility beyond simple GPS positioning to include details of cargo condition such as temperature, humidity, etc. This rise of visibility solutions at the container-level is helping to drive the transportation management and execution market to new heights.

Customer expectations of on-time shipments are changing as more data becomes available. These data go beyond simply knowing where an asset is; they include knowing what disruptions can impact the ETA and how to navigate through them. Disruptions such as port closures, weather, factory shutdowns, capacity shortages, and trade wars can adversely affect any component and have cascading effects resulting in delayed shipments, increased costs and, adversely affected customer satisfaction.

Visibility tools enable shippers to get ahead of these disruptions and make alternative plans should problems arise. If the company is unable to make alternative plans to re-route a shipment, it can help avoid problems by contacting the customer to alert them of the problem and figure out a work-around. This proactive approach to mitigating disruptions can mean the difference between a repeat customer and a lost customer.

Real-time visibility solutions are raising the prospect that machine learning can be used to improve estimated times of arrival. But machine learning can be used in other innovative ways as well. For example, in last mile routing the time a job takes to complete is dependent not just on the miles that need to be driven but also on the congestion, the type of vehicle or equipment in use, the type of product being delivered, the type of location, and whether value-added services are provided at the destination. Machine learning can be used to “learn” these constraints rather than having to do time studies and hard code these constraints into the solution.

One of the main drivers for adaptive transportation management success is the move to cloud-based infrastructure. Cloud based Software as a Service (SaaS) solutions are driving the transportation management and visibility market, a position that is not going to change. SaaS is available on any platform, from anywhere, making it key for business continuity. While it features some of the same functionality as on-premise solutions, the SaaS offerings open up a larger pool of prospective clients, especially those smaller tier 2 and tier 3 customers that find the lower cost of ownership of SaaS compelling.

### **Adaptive Warehouse Management**

The expansion of e-commerce has elevated the role of warehousing in the overall customer experience. The role of retail stores in the value chain is reduced and B2B customers are starting to by-pass distributors and go straight to the manufacturer. The competitive dynamics have shifted, placing increased importance and pressures on warehousing. Product customization and availability, accompanied by accurate and timely product delivery, are now more important than ever. These competitive pressures have forced warehouses to carry a broader range of SKUs, adapt to greater order volatility, and efficiently process more individual orders in shortened fulfillment cycles.

Static throughput capabilities are no longer sufficient for today’s dynamic operating environment. Warehouse operations and enabling technologies must be scalable and adaptable to meet changing fulfillment volumes, SKU proliferation and mixes, and processing requirements. Furthermore, warehouse management systems (WMS) must be able to handle the complexity of today’s warehouses that are often fulfilling for multiple channels with distinct processing and handling requirements. Cloud WMS facilitates

inventory visibility across facilities, which is critical for maximizing product availability while minimizing inventory carrying costs.

Finally, expedited fulfillment requirements make responsiveness and reliability essential to success. Orders must be reprioritized due to more frequent carrier cut-off times, inventory must be appropriately allocated to these rush orders, and resource capacity must be assigned for proper completion of tasks. This environment requires end-to-end visibility into fulfillment processes and responsive task execution.

## Conclusion

Continued excellence in logistics is dependent upon synchronized networks of suppliers, transportation providers, distribution centers, and retailers who align to deliver shipments and customer orders. One of the key components of a successful strategy is to identify and proactively navigate disruptions such as port closures, weather, factory shutdowns, and capacity shortages. A dynamic approach to transportation and warehouse management, along with a well-developed contingency plan for these disruptions, allows for an adaptive approach to the end-to-end supply chain.

## More Resources

Above, we examined adaptive logistics, and outlined the core technologies needed to achieve this. This article is supported by three additional articles that go into more depth on these core technologies. These articles include Seamless Order Orchestration: Simplifying and Delivering Orders; Global Trade Compliance: Ensure Perfect Delivery through Minimized Delays, Costs, and Trade Risk; and Perfect Delivery: The New Rules for Survival, Innovation, and Growth.

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