The Next BIG IDEA

What trends and technology will benefit supply chains?

Technology trends:
- 3-D dilemma
- Leveraging data
- Managing risk

MODEX 2014 PREVIEW ISSUE

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While data analytics and end-to-end visibility receive much attention, they’re far from the only supply chain technologies gaining hold.
This “telematics” data contributed to UPS’ recently deployed route-optimization software ORION, or On-Road Integrated Optimization and Navigation, which the company says reduces miles driven, fuel used and carbon dioxide emitted. Most routes designed by ORION, which combines mapping data with algorithms, have shown a mileage reduction, according to UPS, which says it can save $50 million annually if each driver travels just one mile fewer per day a year.

Deployment to all 55,000 U.S. routes is scheduled for completion in 2017.

“UPS is one of the best examples of pushing analytics out to front-line processes – delivery routing in particular. This initiative, ORION, is arguably the world’s largest operations research project. It will eventually reconfigure a driver’s pick-ups and drop-offs in real time,” Tom Davenport, International Analytics Institute co-founder and Babson College professor, said in the UPS release announcing the rollout.

UPS’ optimization initiative is one example among a wide range of new technologies that manufacturers, logistics providers, retailers and other companies are using to make their supply chains and general operations more reliable, adaptable and efficient. The broader emergence of cloud-based and mobile technologies, along with other advances, has fueled growth in new supply chain tools and made them available to a wider array of businesses.

“I think companies are embracing technology faster than they used to in the past,” said Hakan Yildiz, assistant
professor of supply chain management at Michigan State University's Eli Broad College of Business. He sees data analytics, or "big data," as a noteworthy, new supply-chain trend, with companies like UPS and Walmart using point-of-sale, geolocation, sensor, RFID and other data to cut costs and improve customer service and operations.

While such data previously was used in a descriptive sense, as in the display of sales data, Yildiz said, companies are trying to convert the information into profits by using predictive as well as prescriptive models. Walmart in June acquired predictive analytics startup Inkiru to help boost its big data efforts, with an eye toward customer personalization on the retailer’s website, better search capabilities, fraud prevention and marketing.

The global supply chain management software market grew by 7.1 percent to reach $8.3 billion in 2012, despite economic pressures, Gartner Research reported in May. While global economic conditions caused businesses to cut costs, supply chain remained "a key source of competitive advantage in driving business growth objectives," Chad Eschinger, research vice president at Gartner, said at the time.

The top five vendors – SAP, Oracle, JDA Software, Ariba and Manhattan Associates – accounted for nearly half of the market revenue. (SAP acquired Ariba in 2012, and JDA merged with RedPrairie that December, forming the largest supply-chain-focused vendor, Gartner noted.)

Lisa Harrington, supply chain management professor at the University of Maryland’s Robert H. Smith School of Business and president of consultancy L. Harrington Group of Easton, Md., sees the concept of end-to-end visibility across the supply chain as perhaps the hottest area now.

That visibility encompasses not just a company and its tier-one suppliers and customers, she said, "but kind of deeper into the bench on both ends of the supply chain," including tier-two and -three suppliers and their inventories, their production cycles and their potential risk factors, like sourcing issues, that could affect a company’s operations. It also includes a company’s customers’ customers, she said. Such technology aims to help a company understand demand signals, achieve good visibility into final demand, and then transfer that visibility back through the supply chain, explained Harrington.

This interest in end-to-end visibility has led to talk of a "control tower," an entity or mechanism "to sit on top of your supply chain much like an airport control tower does," monitoring the health and wellbeing of the supply chain in real time. "Then you have the opportunity to see problems and issues before they become problems," she said.

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The automotive industry has succeeded in putting control towers into final demand, and then transfer demand signals, achieve good visibility, and he expects more focus on that area over the next few years.

"Visibility's a very hot topic. It's a very fragmented market at this place in time. I think it's progressing and I think what we'll see is the definition of visibility will solidify over the next couple of years," he said.

Klappich noted that many companies over the last 25 years have operated in "silos" in terms of organization and technology, but that the idea of "executive convergence" in the supply chain has become an emerging trend. Companies now are moving toward putting in place tools that span the organization. Not managing the supply chain end to end can create problems, he said. For example, if manufacturing becomes more efficient without looking at the bigger picture, the operation might make more products, placing a burden on warehouse workers who must sit on the inventory, Klappich said.

Industry is starting to take baby steps in this direction, according to Klappich. Some companies are trying to do this on their own by cobbled technology together, but the systems must work well together, not simply pass data back and forth, he said. "That's why I think the vendors are going to be pushed in this direction," Klappich said.

New technology is increasingly accessible to smaller businesses, the University of Maryland's Harrington

“The idea in this whole control tower concept is not just to manage more effectively, but it streamlines the flow of goods through the supply chain” to remove costly delays, missed shipments and customer service failures, said Harrington. The control tower can be internal or outsourced to third-party logistics providers like DHL or Ryder. The automotive industry has successfully put the concept into practice, on the in-bound side, to their production lines, relying largely on 3PL companies, she said.

“This requires a lot of very robust capabilities both in supply chain management expertise as well as in technology expertise, so the model seems to be toward outsourcing this to a third party, like to a global third-party logistics service provider,” said Harrington.

Mining data from the supply chain and using business intelligence to plot trends sooner allows companies to react to demand more agilely and adjust production, she noted. Consumer goods companies such as Unilever and Procter & Gamble have started to explore their
If I’m a small to mid-sized company I can now operate as effectively as a big company,” said Harrington. Cloud technology makes some of these tools available in scaled-down versions, she said. “You don’t necessarily have to invest huge amounts in all kinds of bells and whistles these days. You can use something as simple as a smartphone” to bring technology to companies, she said.

Harrington cited IBM’s cloud-based platform, IBM Smarter Commerce, which promises to give mid-sized businesses the same tools as large enterprises, including operations data and customer insights analyses. IBM in 2012 announced a multi-million-dollar deal with Australian department store David Jones Limited to develop a cross-channel retail platform to allow customers to shop through the Internet, mobile phones or physical stores.

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In the past 12 to 18 months, Gartner has seen an exponential increase in interest in material handling automation, or warehouse control systems, according to Klappich, who now receives several inquiries a week, versus one or two a year just two years ago. Many companies have solid warehouse foundations and now are looking to squeeze out more performance, he said.

Warehouse control systems are adding business logic-like analytics on top of convergence tools, Klappich said. Longer term, he also predicts a major emergence of robotics.

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— Lisa Harrington, supply chain management professor, University of Maryland’s Robert H. Smith School of Business

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