supplychain

LINKING DESIGN AND RESOURCES

The limits of lean

Ten years ago, "lean"—the practice of eliminating waste and non-value-added activities in the business environment—was the darling of the electronics industry. Like the "total quality management" revolution of the 1970s and 1980s, lean spurred an ecosystem of research, consultants, practitioners, awards, and benchmarks. And, like the practices of JIT (just in time) and build to order, lean reduced the levels of physical inventory in the electronics supply chain.

There's no question that lean achieves results. Wall Street analysts who track the electronics industry use low levels of inventory as a measure of sound financial management, hammering companies that hold too much on the shelf. In fact, until two natural disasters rocked the industry last year, nobody questioned whether lean was the right practice for the high-tech supply chain.

In March 2011, an earthquake and tsunami devastated parts of Japan and shuttered wafer-manufacturing facilities. In October 2011, flooding paralyzed Thailand, the global center of HDD (hard-disk drive) supply. In both cases, supplies of key electronics products were put in jeopardy because years of lean practices had eliminated inventory redundancies in the supply chain.

Right after the Japanese disaster, Malcolm Penn, founder and CEO of research firm and consultancy Future Horizons, wrote on *EBN* that the JIT, on-demand, lean, batch, and outsourced-manufacturing models had taken over from inventory, work-in-progress, production lines, and multiple sourcing—despite the fact that the entire manufacturing process, from wafer-build to end-product delivery, takes six months ("Tech needs a healthier supply chain, part 1," http://bit.ly/N8Z8Q8).

In an early indication that the supply chain had been squeezed too far, "Nissan was forced to shut down car production due to a lack of engine management modules, itself the result of a shortage of ICs, despite the chip supplier's claim that it had made all the ICs originally asked for," Penn wrote. Future Horizons forecast an increase in such incidents.

Ultimately, there was no widespread post-tsunami shortage, but that was more a coincidence than a planned strategy. Toward the end of 2010, semiconductor inventories had begun building to what one researcher called "alarming" levels, and the overstock cushioned the supply-chain impact of Japan's natural disasters.

The industry wasn't so lucky in Thailand, where the clustering of HDD plants in a centralized location had eliminated redundancies to such an extent that roughly 70% of the world's HDD production was affected when the floods hit. HDD production is just now recovering.

The disk-drive industry is clearly reassessing its clustering strategy. Seagate Technology, for one, is reducing its number of inventory-holding JIT hubs in favor of value-added fulfillment centers closer to where end customers consume products. Dennis Omanoff, Seagate senior vice president for supply chain and procurement, noted in comments to his July 17 *EBN* blog entry ("Opportunities beckon as risks rise," http://bit.ly/QoJ0fi) that it's important to have strategic partners with global capabilities and regional locations to service the requirements of a particular geography. "This provides a more flexible network that can adapt rapidly to change while improving agility, responsiveness, velocity, and customer service," he wrote.

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Since the 2011 disasters, conversation around the supply chain has been shifting from lean toward such adjectives as "resilient" and "agile." Gartner, in its annual analysis of leading supply-chain companies, noted that global companies are at an inflection point: "The past year brought global-scale supply-chain disruptions that [affected] multiple industries … These disruptions have even called into question whether supply chains have become too lean, requiring a fundamental change in approach" (http://bit.ly/MpVrH4).

It's unclear from Gartner and many other sources, however, exactly how to achieve resiliency and agility. End-to-end visibility among partners is one of the components of a resilient supply chain, and an interesting thing in the electronics industry occurred after the Japan quake and tsunami: Rather than panic buy, customers called distributors to ensure that the components they'd ordered were actually on the shelf. They weren't interested in forecasts or whether orders were in process; they wanted to know where their physical inventory was. That approach runs counter to some of the principles of lean.

Several other trends indicate the supply chain is moving toward a middle ground between lean and gluttonous. In distribution, local sales and support offices are supplementing centralized hubs. Proximity warehouses are springing up closer to customers. Distributors at times even take advantage of opportunistic purchases to pad their inventory.

Lean has definitely increased the efficiency of the supply chain and has rendered many companies financially strong. But experts continually call for a reassessment of supply-chain strategies, and lean doesn't come up in those conversations as much as it used to.

—by Barbara Jorgensen, *EBN* community editor

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