Supply-Chain Resilience: Not Just for Big Events

There’s no pill for resilience, but you can’t blame executives of a pharmaceutical company for wishing one existed. When the patent on one of their most popular drugs was about to expire, the executives predicted the market would soon be overtaken by generic versions. So they optimized their supply chain, lowering equipment use and capacity requirements for the popular drug, and allocated surplus capacity for new drugs. But then, to everyone’s surprise, regulatory matters delayed the generic’s market entry. The executives found themselves in a jam.

If the company could continue shipping more of its original drug without affecting the ramp in production of newer medications, it could enjoy a renewed sales bonanza. But it had just adjusted the supply chain to make less of that older medication, not more. Adding capacity would take at least 12 to 18 months. So filling the market void—and gloating the revenue—appeared out of reach.

Resilience is the ability to recover from or adjust to misfortune or change. By that definition, the drug maker’s executives were truly resilient. They chose to partner with Tata Consultancy Services (TCS), a global leader in IT services, consulting and business solutions. Using TCS’ scientific supply-chain design framework, which includes simulation and visualization tools, the team characterized the drug maker's demand mix profile, analyzed its capacity constraints, and created improvement scenarios that captured and modeled supply-chain variables and interdependencies. Data from these simulations was used to identify any obstacles to boosting the drug maker's manufacturing capacity.

The results were surprising. The problem was not the need for incremental production line capacity. Instead, there were too few containers moving product among workstations, and those containers took too long to clean, further diminishing the number available for production.

Armed with this analysis, the drug maker invested modestly to add containers and cleaning capacity. Then it ramped up production of the original drug to take advantage of the market opportunity. The result: Demand fulfillment increased by up to 15 percent. Best of all, the total process took only weeks.

A New Approach to Resilience
When supply-chain professionals mention resilience, they usually mean either that something is needed after a natural disaster or some other catastrophic event, or that something is needed after a company changes its business model or enter new markets. Unpredictable events and big process-reengineering efforts are important (see sidebar), but TCS suggests a new way to think about resilience.

Traditionally, many companies take a deep, granular approach to resilience, focusing on low-probability/high-impact events. By contrast, TCS focuses on high probability events with low to medium disruptions, mainly because these are far more likely to occur. The question, then, is how to enable flexibility in the face of everyday events.

“Tsunamis and other black swan events do not happen daily,” says Raj Nooyi, head of TCS’ Center for Supply Chain Excellence. “What happens daily is the nitty-gritty details. How do you manage smaller disruptions, especially in an environment where consumers and clients are unforgiving? How do you take advantage of a competitor slipping or a new market opportunity appearing suddenly?”

Adds Nooyi: “It’s not that catastrophic events are unimportant. It’s more that in today’s complex world, supply chains have never been more vulnerable to disruptions both large and small. Nor have supply chains ever been so ripe for seize-the-day opportunities.”

Many companies, Nooyi says, are insufficiently agile and resilient, for these main reasons:

• Talent: Their supply-chain organizations lack sufficient talent. The staff they do have is too often siloed by either region or business unit. In operations research and other related fields, many staff members also lack the knowledge needed to study the problems in sufficient detail.

• Data: Although clean data is critical for decision-making, it’s often accorded too little commitment. “Dirty” data is incomplete, inaccurate, duplicative, irrelevant and inconsistent. Cleaning this data is a labor-intensive and far from glamorous task.

• Systems: Enterprise resource planning (ERP), supply-chain planning and other systems of record are necessary, but they can’t manage the everyday shocks inherent in today’s high-speed supply chains. Further, because planning systems are designed to optimize specific supply-chain functions, they can actually reinforce silo boundaries and hinder supply-chain rigidity.

For most supply chains, these are fundamental structural deficiencies, Nooyi says. “We believe these are the reasons that, despite billions of dollars spent over the past 25 years on supply-chain software and tools, for many companies the desired results just aren’t there.”

Innovation-Led Platforms
To bolster these organizational investments, TCS has developed several science-based decision-support tools. These enable resilient supply-chain design by leveraging the simulation and optimization tools clients already have. They also reach across organizations to pluck needed data from siloed systems. “In today’s highly dynamic business environment,” Nooyi says, “the traditional process reengineering approach is no longer acceptable.”

Standard optimization and simulation tools work well to redesign supply chains when there is a window of a year or more. But today’s routine disruptions and opportunities require tactical redesign and optimization in days and weeks, not years. “This new need for speed is the reason why many supply-chain professionals are turning to TCS’ platform for scientific supply-chain design,” Nooyi says.

TCS’ platform starts with a client’s existing optimization and simulation tools, and then enhances them to address shortcomings. This makes the tools easier to use by supply-chain professionals and requires less support from operations research specialists.

TCS’ platform also often enhances supply-chain organizations with added expertise, delivering its supply-chain competency as a managed service. Its operations research and analytics experts partner with clients’ vertical industry experts, ensuring that all necessary talent is quickly brought up to speed. Even then, TCS remains on board through analysis, planning and full execution. “Heavy investment in ERP and other supply-chain software has fallen short in supporting the rapid decision-making required in today’s dynamic markets,” Nooyi says.

The TCS approach helps clients protect their investments by supplementing and augmenting off-the-shelf solutions. TCS offers technology innovations (some patented), a multi-tenant cloud-based platform and highly interactive visualizations.

Speed and agility are part of the TCS approach, as well. “We leverage an execution accelerator-based approach that can be implemented in a short timeframe,” Nooyi says. “Our scientifically designed IT solutions combine robust analysis of complex data sets with engineering rigor. This lets clients derive quick benefits without needing to re-invent in long, drawn out process redesign/reengineering consulting initiatives.”