Turbocharging Six Sigma

Using SCOR as a front end to Six Sigma helps untangle complex supply chain problems.

By Brad Householder and Ross Januszyk

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Everyone knows that Six Sigma is an effective tool for improving quality, reducing costs, and boosting productivity. Leading companies in every industry can attest to its performance-enhancing power. But it's not always easy knowing where to start, or which projects to choose—especially when the underlying problems are complex.

In his book *The Six Sigma Way*, author Peter Pande tells of conducting an informal poll of colleagues who had participated in Six Sigma projects. "Each person identified *project selection* as the most critical, and most commonly mishandled, activity," he notes. Six Sigma project selection works best with problems that occur at a functional level, where data can be fairly easily captured and understood. Tangible, well-defined problems and projects lead to better results. But what if a problem isn't well defined?

That's often the case with supply chain performance issues. The supply chain is complex, with overlapping processes that cross functional, divisional, and company boundaries. Looking at a separate function or process piece doesn't tell the whole story. Without stepping up a level to see an integrated view of the whole, a company can squander resources trying to fix the wrong problems—while the real ones are overlooked.

Six Sigma project selection is especially challenging when it comes to these high-level, cross-functional and cross-company problems—problems that involve complex or unavailable data and resist easy measurement. We've found that the best way to tackle supply chain performance problems is by "turbocharging" the Six Sigma methodology, using SCOR's supply chain assessment for project selection [see sidebar, *What is SCOR?*].

Case in point: A major chemical company set a strategic goal of increasing its return on net assets. Using Six Sigma analysis, the company believed the answer was to focus on cutting costs through better planning and inventory management. To this end, 12 different projects consumed enormous resources, but never got at the root of the problem.

A SCOR analysis at a higher, more strategic level revealed what the lower-level mapping had overlooked—that the problem stemmed from too many manufacturing plants, not inventory management issues. Individually, each plant was world class, so Six Sigma didn't spot the problem. But SCOR's high-level, integrated analysis showed that the real problem was excess capacity: there were 10 plants when only 5 were needed. Instead of simply cutting inventory costs, the real solution was to reduce fixed assets.

Making the Connections

PRTM uses SCOR as a front end to Six Sigma's project-level DMAIC (define, measure, analyze, improve, control) activities as a way to more fully assess the supply chain. This "full supply chain" viewpoint helps companies to more comprehensively define, measure, and analyze supply chain issues, identify projects with the highest potential impact, and ensure that projects are linked to overall strategic goals. Here's how we use it to complement and support Six Sigma's project-level "Define-Measure-Analyze" activities:

- ***Define***—SCOR's supply chain assessment is a qualitative analysis specifically designed to help define supply chain problems. First, we develop an "as is" picture of the supply chain, and identify possible process and performance gaps. We look at the supply chain from multiple levels during mapping and analysis. We explore the geographic and physical flows, identify distinct supply chain "threads," and create a diagram that shows how everything connects together, or where breakages occur. We also interview customers and suppliers to fully understand the implications of supply chain issues.

  The result of our analysis is a list of possible improvement opportunities related to supply chain structure, organization, business processes, information flow, and systems. At this point, we may recommend moving forward on low-risk "quick wins," but the next steps are critical to validate the more complex improvement opportunities, connect them to the business strategy, and prioritize their execution.
- ***Measure***—In this step, we collect actual supply chain performance data and compare them to standardized SCOR supply chain metrics gathered from a population of selected companies. This quantitative benchmarking is crucial—it tells us whether the performance data support our earlier qualitative findings. This external frame of reference can provide a valuable reality check. One company firmly believed that its key issue was delivery performance. The benchmarking data showed that delivery performance was above average, but that supply chain management costs and asset performance were far worse than average. As it turned out, the company was maintaining delivery performance at the expense of virtually every other

aspect of manufacturing and order fulfillment—but these expediting adjustments were so deeply embedded in the processes and culture that they had become invisible. The benchmarking assessment provided the critical supporting evidence of the need to focus on rebuilding the company's broken planning processes instead of further refining delivery performance.

- ***Analyze***—In this step, we anchor all findings and potential solutions in a rigorous definition of the *basis of competition*, which defines how a company's supply chain will win in a competitive marketplace. This is the most important step, and perhaps the one activity most overlooked in supply chain Six Sigma programs. Many companies' supply chain improvement efforts fail to produce results, not for lack of effort, but for lack of focus—scattering resources on a wide range of programs in a futile attempt to achieve leading performance in all aspects of supply chain management. In PRTM's experience, few—if any—companies need to achieve best-in-class performance in every part of the supply chain to be successful in their markets. We believe in the philosophy of the world-class decathlete: excel in a few, select "critical events," and strive to maintain parity in the others. In this step, we focus on defining those key "events" where performance improvements will directly lead to greater market success or increased shareholder value.

One common mistake that companies make is to "overinvest" in certain areas of the supply chain. An electronics manufacturer prided itself on its excellent delivery performance—easily best in class—but was losing market share to competitors with only average delivery performance. Our analysis challenged the long-held notion that superior on-time delivery was the key to success. In fact, the industry had undergone a transformation to a cost-driven basis of competition. Price was now the primary customer concern.

The basis of competition defines the key performance characteristics of the "to be" supply chain, establishing a precise focal point for all subsequent activities. This allows the management team to set a clear direction up front, instead of trying to steer a hodgepodge of loosely connected projects.

Moving Toward Project Selection

After the basis of competition step, we bring together all of the information we've gathered to create an architectural design for the future supply chain. Once again, we use the SCOR model to provide structure and focus, targeting each process area—plan, source, make, deliver, and return—and considering the strategic and competitive drivers uncovered earlier. As we think about what the future supply chain might look like, we take a comprehensive approach, considering:

- Different supply chain configurations and physical flows
- Best practices, techniques, and software tools to apply
- Organizational and incentive changes

We don't develop detailed designs in the assessment—those will be defined by subsequent Six Sigma or project teams. Instead, we focus on architectural models that will take the improvement opportunities we've identified and prioritized and translate them into specific projects and related success criteria that will lead to high-level results.

SCOR's supply chain assessment methodology resolves the challenge of using Six Sigma to identify complex supply chain performance problems and projects. Together, SCOR and Six Sigma pack a one-two wallop that will focus and accelerate your company's supply chain improvement efforts.

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What Is SCOR?

The Supply Chain Operations Reference-model (SCOR®) is a framework designed to improve supply chain performance. Developed in 1996 by PRTM, the Supply-Chain Council, and Advanced Manufacturing Research (AMR), the SCOR model provides a common terminology and standard process descriptions designed to bring order and understanding to the dispersed activities that make up the supply chain.

Today, the SCOR model is maintained by the Supply-Chain Council, now a 700+ members-strong international organization. SCOR is also being adopted by the US Department of Defense.

SCOR isolates the four key supply chain processes—plan, source, make, and deliver—and matches their process elements against industry-specific best practices, benchmarking performance data, and software applications, providing users with a framework for understanding where they need to make improvements. SCOR builds on the concepts of reengineering, benchmarking, and process measurement by integrating those techniques into a cross-functional framework that addresses management issues at the enterprise rather than at the functional level.