Supply Chain Excellence

A Handbook for Dramatic Improvement Using the SCOR Model

Third Edition

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Introduction

During dinner at a recent supply chain conference, a senior executive asked me about the latest thinking on how to improve global supply chain performance. Without hesitation I whispered, ''Have you tried the sardine strategy yet?'' Anticipating the puzzled look, I continued: ''For schooling fish, staying together is a way of life. Fish in a school move together as one.''

Photo by Ihoko Saito/Toshiyuki Tajima/Dex Image/Getty Images.

For schooling fish, the "move as one" trait is innate. Separation means likely death. For global supply chains, misalignment—failure to move as one—means poor service, high inventory, unexpected costs, constrained growth and profits, and loss of market share.

The purpose of this book is not to convince anyone of the importance of supply chain management (SCM). That case has been well made many times in many industries since the first edition of *Supply Chain Excellence* was published in 2003. Even then, only the first two paragraphs of the book's introduction argued the "why" of SCM. The rest was about the "how."

While using the methodology of this book on roughly 100 supply chain projects around the world, "how" has been further refined into a series of processes to achieve the highest levels of supply chain alignment: moving as one.

Here are the 15 most common contributors to supply chain misalignment. Which ones are relevant to you?

Fifteen Common Causes of Misalignment

1. Lack of a Technology Investment Plan

A chief information officer deflected pressure to install the latest and greatest advanced planning system—making the case that simply having state-of-the-art tools was not a good enough reason to put her entire company into the kind of upheaval that such implementations create. As she watched the rapid evolution of web-based applications, event management tools, and demand-driven advanced planning systems, she found herself without a clear technology investment plan that supported the company's business strategy.

2. Little or No Return on Investment (ROI)

A company bought its Enterprise Resource Planning (ERP) package during the vendor's end-of-quarter push to meet sales goals. The

deal included all the latest add-ons—things like customer relationship management, transactional processing, advanced supply chain planning, event management, and web portals providing self-service for customers and suppliers. Now the executive team is looking for an answer to a deceptively difficult question: When will a return on investment start to show up in the earnings statement?

3. Isolated Supply Chain Strategies

Three executive vice presidents—for sales, marketing, and operations—assembled their own well-articulated strategies for developing supply chain competence within their departments. Then they invested in application technology, manufacturing processes, and product development—all with measurable success. Now what's missing is a comprehensive blueprint that combines their individual efforts to drive profit and performance across the entire company.

4. Competing Supply Chain Improvements

A company's top executive for SCM assembled a dozen of his brightest managers for a structured brainstorming process—resulting in a list of 45 high-priority projects. But when the managers began implementation, the results were not encouraging. General managers were being asked to support multiple initiatives that used many of the same financial, human, and technical resources. Goals seemed in conflict. They needed to align their objectives and prioritize projects to make good use of the available resources.

5. Faulty Sales and Operations Planning

The vice president of operations for one of the companies had serious cash-to-cash problems and declining customer satisfaction—all resulting from raw materials shortages, mismatched capacity, poor forecasting, and inventory buildup. The challenge was to address the

planning and forecasting issues and put the balance sheet back in shape.

6. Failure to Meet Financial Commitments

A company's CEO promised the board of directors that he would improve earnings per share. An analysis of competitors' balance sheets and income statements indicated that the company's direct and indirect costs were out of line, and that its cash-to-cash cycle was too long. The leadership was charged with identifying the right mix of improvements to obtain a predictable result that would satisfy shareholders. The CEO's credibility then was at stake.

7. Lack of Support and Specialized Expertise

The director of a new supply chain solutions team needed a proven method for evaluating and implementing projects. That meant being able to show documented examples of its use, and evidence that it was both scalable and repeatable. Then she would have to sell the method throughout the organization—which would require executive references and easy, low-cost access to the method itself. Finally, she would have to develop a team that could use the model to deliver early successes.

8. Mismatch Between Corporate Culture and ERP

As the ERP implementation wore on and business processes were increasingly automated at one of the organizations, things suddenly started to go wrong. The project leader had a pretty good idea why: The company was organized in rigid, vertical functions that directed AS IS practices. But the ERP system was essentially horizontal, organized by transaction flow for purchase orders, sales orders, forecasts, master data, and so on. How could the corporate culture shift from functional management to process management?

9. Underutilization of Existing Technology

A vice president of administration was being pressured by her colleagues to replace a two-year-old transactional system with a new, name-brand system offering advanced supply chain planning. But the ROI analysis just wasn't adding up. A more detailed investigation revealed that not all of the business leaders were complaining. In fact, the vice president found a direct correlation between a business leader's satisfaction and the effort he or she had exerted to learn the system. Those who were least satisfied didn't handle implementation very well and as a consequence were utilizing few of the available modules. The challenge was to motivate business leaders to use existing functionality better.

10. Vaguely Defined Goals

The executive team achieved consensus that it would differentiate the company through a strategy of operational excellence. The other choices had been customer intimacy and product innovation. Now that the decision was made, the team had to define—at more tactical levels—the characteristics of an operationally excellent supply chain.

11. Impact of Mergers and Acquisitions

The executive teams from companies that had been acquired or were purchasing others needed the acquisition to go smoothly and yield short-term synergies. The challenge was how to leverage efficiencies in material flow, technology platforms, work and information flow, and capacity in the due diligence, integration, and stabilization stages of the merger.

12. Mismanagement and Poor Standardization of Business Processes

Five years after a "successful" ERP implementation, a company found pieces of chaos at different levels of its organization. Fifteen

plants opted to turn off select pieces of the system functionality in the name of continuous improvement and leaning out their processes. Three business units independently opted to redefine how date fields were used by customer service to promise-date orders for their customers. Corporate logistics added a transportation optimization tool that subordinated the promised ship date to efficient truck load. And finally, business rules to manage planning master data were changed, ignored, or forgotten by new employees, who did not have the benefit of the original training.

The net result was poor delivery performance, extended order cycle times, and seemingly routine feast-or-famine capacity mismatches to demand. After a disastrous performance review by the company's largest retail account, the executive team members finally realized that they needed to get a handle on defining and managing supply chain process performance . . . at their level.

13. Extension from Supply Chain to the Value Chain

One company's operating committee issued the difficult directive to simultaneously improve quality and reduce cost in manufacturing. It challenged the supply chain executive with some equally difficult improvement pairings: support the increased pace of new-product rollouts while making material acquisition more efficient; support increased sales productivity while making presale and postsale customer service more effective; make global distribution more flexible while increasing the efficiency of warehouse and transportation costs; and implement planning for customer supply chains while improving internal planning efficiency. The challenge with competitive global manufacturing and sophisticated information exchange is that the improvement pairings move beyond the four walls of the company and include more than just supply chain processes. Executives need to define the concept of "value chain" processes and figure out how to improve them.

14. Running Out of Ideas for New Improvement Projects

After five years of using the annual ''brainstorming'' technique, a company's Lean Sigma executive steering team concluded that corporate impact on operating income had peaked. With all efforts seemingly aimed at inventory, many project scopes were competing for the same resources and had conflicting metric impact (supply chain cost versus service level improvement). Projects were moving further and further away from having legitimate strategic impact, and the proximity of the projects still seemed to be manufacturing. The steering team's challenge was to more effectively and efficiently identify and scope projects to solve more than just manufacturing issues.

15. An Organization That Defies Effective and Efficient Supply Chain

''We've got five business units, six high-level profit and loss statements, two headquarters, four global regions, 26 regional distribution centers, 18 plants, the requirement to implement collaborative planning, forecasting, and replenishment with our largest accounts, and about 5,000 active suppliers. We need a buildup to one unit forecast that supports the corporate financial plan *and* a set of supply chain plans to support the regional service levels and cost commitments. How do we staff this thing?'' There is no more to be said about the challenge here.

Why Supply Chain Excellence?

Ultimately, one or more of these performance issues will inflict enough pain that the enterprise takes action. The question is how to do that without disrupting other areas where things are going well—how to move globally as one. Put another way, how to act like a school of sardines.

The content of the third edition of *Supply Chain Excellence* is

refined by 30 additional project experiences (now more than 90 in total). It also has been enriched with more practices that have helped global supply chains move as one, with special emphasis on processes and practices in the SAP environment, including:

- Effective integration with global supply chain strategy
- Techniques for global organizational supply chain design
- Effective cross-references with software tools
- Project implementation case studies
- Quick assessments focused solely on smaller-scale performance analysis

As with the first and second editions, this book follows the progress of one company, Fowlers Inc., toward supply chain excellence. It is intended as a working handbook for using SCOR (the Supply Chain Operations Reference model) as a tool to help leaders at every step as they undertake supply chain initiatives. It is structured on a week-by-week project timetable, providing achievable action plans to navigate through the steps of a SCOR project.

Specifically, each chapter focuses on a week's worth of work conducted in face-to-face, remote, or classroom meetings with follow-up assignments (or "homework," which many clients have learned to love). Included are sample deliverables, summaries of tasks, tables, and figures to illustrate the step-by-step processes. An important note about Fowlers Inc.: It is not a real company, and the Fowlers employees are not real people. Fowlers is a compilation of circumstances found in a variety of projects. The purpose was to provide a textbook case study that addresses the broadest range of issues, while maintaining continuity to help readers follow the logic of the SCOR approach from beginning to end.

CHAPTER 1

The Supply Chain Operations Reference Model

▶ The Cross-Industry Standard for Supply Chain

Peter Bolstorff was introduced to the Supply Chain Operations Reference (SCOR) model in the fall of 1996 when he became part of a newly formed corporate ''internal consulting'' team for Imation, which had just been spun off from 3M. He's been using the SCOR model in supply chain improvement project work ever since. He was a delegate at the first conference of the Supply Chain Council, and has remained active in the Council, involved in the process of improving SCOR and teaching others how to use it. In fact, the Supply Chain Council adopted *Supply Chain Excellence* as the core text for its SCOR Project implementation workshops globally.

So he's heard all the questions. Among those most frequently asked are these: What is the Supply Chain Council? What is SCOR? How do I use SCOR? What is the value to my organization? How do I learn more about SCOR?

The Supply Chain Council

The Supply Chain Council (www.supply-chain.org) is an independent not-for-profit corporation formed in 1996 as a grassroots initia-

tive to develop a supply chain process model. Among those involved at the start were individuals from such organizations as Bayer; Compaq; Procter & Gamble; Lockheed Martin; Nortel; Rockwell Semiconductor; Texas Instruments; 3M; Cargill; Pittiglio, Rabin, Todd & McGrath (PRTM); and AMR Research, Inc. In all, 69 of the world's leading companies participated in the council's founding. Its mission today is to perpetuate use of the SCOR model through technical development, research, education, and conference events. By the end of 2010, the council's technical community had released nine subsequent versions of SCOR, providing updates to process elements, metrics, practices, and tools. SCOR 10.0 also incorporates a "People" standard for describing skills required to perform tasks and manage processes.

The council has about 1,000 corporate members worldwide, with chapters in Australia/New Zealand, Latin America, Greater China, Europe, Japan, Southeast Asia, and South Africa. Membership is open to any organization interested in applying and advancing principles of supply chain management. In 2010 there were four tiers of membership: global, standard, small business, and nonprofit.

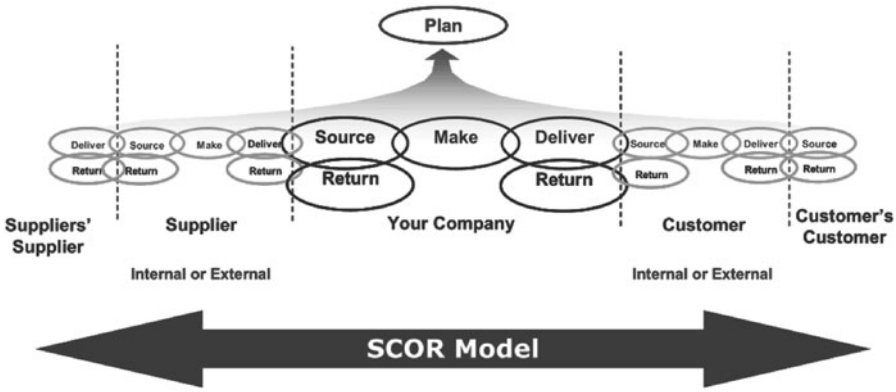
The SCOR Framework

SCOR combines elements of business process engineering, metrics, benchmarking, leading practices, and people skills into a single framework. Under SCOR, supply chain management is defined as the integrated processes of PLAN, SOURCE, MAKE, DELIVER, and RETURN—from the supplier's supplier to the customer's customer (Figure 1-1). The Supply Chain Council Web site, www.supply-chain.org, has an online overview of the model that can be viewed both by members and nonmembers.

Here's what's included in each of the SCOR process elements:

PLAN: Assess supply resources; aggregate and prioritize demand requirements; plan inventory for distribution, production, and ma-

Figure 1-1. The SCOR Framework.



terial requirements; and plan rough-cut capacity for all products and all channels.

SOURCE: Obtain, receive, inspect, hold, issue, and authorize payment for raw materials and purchased finished goods.

MAKE: Request and receive material; manufacture and test product; package, hold, and/or release product.

DELIVER: Execute order management processes; generate quotations; configure product; create and maintain customer database; maintain product/price database; manage accounts receivable, credits, collections, and invoicing; execute warehouse processes including pick, pack, and configure; create customer-specific packaging/labeling; consolidate orders; ship products; manage transportation processes and import/export; and verify performance.

RETURN: Defective, warranty, and excess return processing, including authorization, scheduling, inspection, transfer, warranty administration, receiving and verifying defective products, disposition, and replacement.

In addition, SCOR includes a series of ENABLE elements for each of the processes. These processes focus on management around performance, information, policy, inventory strategy, capital assets, transportation, physical logistic network, regulatory, and other management processes to enable the planning and execution of supply chain activities.

SCOR spans all customer, product, and market interactions surrounding sales orders, purchase orders, work orders, return authorizations, forecasts, and replenishment orders. It also encompasses material movements of raw material, work-in-process, finished goods, and return goods.

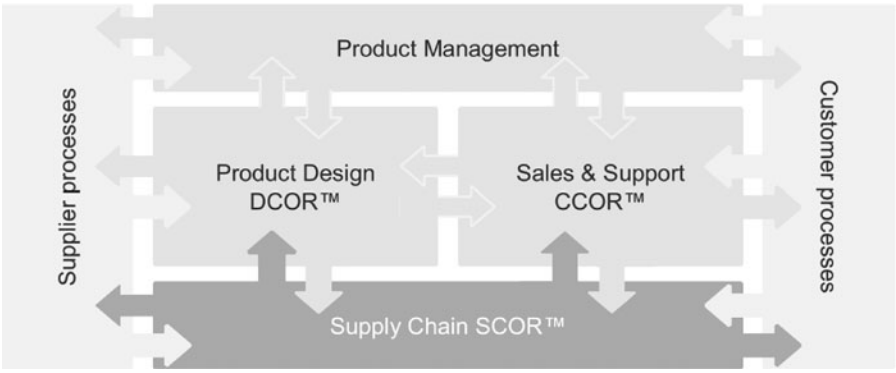
The SCOR model includes three levels of process detail. In practice, *Level 1* defines the number of supply chains, how their performance is measured, and necessary competitive requirements. *Level 2* defines the configuration of planning and execution strategies in material flow, using standard categories such as make-to-stock, make-to-order, and engineer-to-order. *Level 3* defines the business processes and system functionality used to transact sales orders, purchase orders, work orders, return authorizations, replenishment orders, and forecasts. *Level 4* process detail is not contained in SCOR but must be defined to implement improvements and manage processes. Advanced users of the framework have defined process detail as far as *Level 5*, software configuration detail.

Value Chain Processes

In 2004, the Supply Chain Council introduced two new frameworks that help piece together more of the detailed mosaic of enterprise value chains (Figure 1-2). The Customer Chain Operations Reference (CCOR 1.0) model defines the customer part of the value chain as the integration of PLAN, RELATE, SELL, CONTRACT, SERVICE, and ENABLE processes.

The Design Chain Operations Reference (DCOR 2.0) model

Figure 1-2. Value Chain frameworks.



defines the design part of the Value Chain as the integration of PLAN, RESEARCH, DESIGN, INTEGRATE, AMEND, and ENABLE processes.

Chapter 19 will discuss how these process models can be used with SCOR to drive overall value chain performance improvement.

Using SCOR to Drive Supply Chain Improvement

For all its power and flexibility, the SCOR model is still essentially a series of definitions for processes, metrics, and leading practices. Simply having the ''dictionary'' doesn't do any good for a business. To use SCOR, it is necessary to add effective change management, problem-solving techniques, project management discipline, and business-process engineering techniques. *Supply Chain Excellence* is a handbook on how to use SCOR with a refined five-step formula that has been tested and proven in the course of more than 100 projects on six continents, in ten languages and with six enterprise software systems, incorporating Lean and Six Sigma, growing sales and profits, improving inventory turns, increasing productivity, and making customers happier.

The phases of the *Supply Chain Excellence* approach, as detailed in this third edition of the book, have been refined to support global projects in which units operate more like small business. The refinements have helped reduce the resource and time requirements to develop a project list by 50 percent and have eliminated non-value-added analysis by shifting material, work, and information flow analysis to implementation. We use the same analytical tools but focus only on the scope of each project. The refined steps are as follows:

1. Build organizational support
2. Define project scope
3. Analyze performance
4. Develop project portfolio
5. Implement projects

Build Organizational Support

Chapter 2 examines how to build organizational support for a SCOR project. The chapter explores four important roles: the "evangelist," the person in the company who has the passion, experience, and talent to lead a supply chain project; the "active executive," the individual who is accountable as sponsor of a supply chain project through modeling, influence, and leadership; the "core steering team," which has the champion role to review and approve recommendations and ultimately lead the implementation efforts; and the "design team," which analyzes the supply chain from end to end and assembles recommendations for change.

Define Project Scope

Chapter 3 helps to define and prioritize the organization's supply chains using a combination of data and strategic assessment. One of the primary outcomes from the discovery step is a Project Charter,

which helps define a project's scope, approach, objectives, schedule, milestones, deliverables, budget, organization, measures of successes, and communication plan.

Analyze Performance

The analysis stage (Chapters 4 through 7) is where the metrics are defined, data are collected, defects are analyzed, benchmarks are tallied, and performance gaps are calculated. Frequently used SCOR metrics include cash-to-cash cycle time, inventory days of supply, perfect order fulfillment, order fulfillment cycle time, total supply chain management cost, and upside supply chain flexibility. This phase also helps the team to prioritize and balance customer metrics with internal-facing metrics: delivery, reliability, flexibility/responsiveness, cost, and assets.

Develop Project Portfolio

Chapters 8 through 10 describe the analytical steps required to identify a company's preliminary project list. Tasks in this phase include further analysis of metric defects; conducting a brainstorming session; using problem-solving tools such as fishbone diagrams, run charts, and affinity grouping; and working with finance to validate both financial and customer-service improvement commitments.

Implement Projects

Chapters 11 through 18 describe the thirteen steps necessary to implement a project identified in the portfolio. Analytic techniques for this phase include process and geographic mapping, transactional data analysis, leading practice assessment, ''staple yourself to an order'' interviews, storyboarding, design and test solutions, and the final rollout to the enterprise. This section also discusses effective supply chain strategy as a means to sustain gains and build momentum for future years.

Extend to the Greater Value Chain

Chapter 19 introduces a Value Chain Excellence project roadmap that can be used with any combination of DCOR, CCOR, and/or SCOR process frameworks. Although every project follows the same five steps, the deliverables have been tweaked to accommodate the broader scope of value chain issues, such as product development, sales, postsale service, or engineering changes and product life cycle management.

The Value of a SCOR Initiative

The *Supply Chain Excellence* approach is reliable and predictable with respect to project duration, cost, and benefits. Implementation results across the 100-plus projects for which this approach has been used are consistent:

- Operating income improvement, from cost reduction and service improvements in the initial SCOR project portfolio, averaging 3 percent of total sales; depending on how your company compares with benchmark data, it could be as high as 4.5 percent or as low as 1.5 percent. Return on investment of two to six times within twelve months—often with cost-neutral quick-hit projects under way on a six-month timeframe.
- Full leverage of capital investment in systems, improving return on assets for fixed-asset technology investments.
- Reduced information technology operating expenses through reduced need for customization and improved use of standard system functions.
- Ongoing profit improvement of 0.5 percent to 1 percent per year, using continuous supply chain improvement.