

Competitive Supply Chains



By Larry Lapide

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SUPPLYCHAIN
MANAGEMENT REVIEW



What defines a competitive supply chain?



That is a question that *Insights* columnist Larry Lapide has explored for years. The short answer, according to Lapide, is that a competitive supply chain is essential to a company's go-to-market strategy, and important to winning business. It really comes down to three critical elements: excellence, strategic alignment and optimized demand management. As Lapide wrote in a recent *Insight's* column, the three elements work together: "Without formal, routine joint decision-making processes, a supply chain organization is not really playing a major role in executing a corporate strategy, even if it is strategically aligned."

In this special publication, we're bringing together eight articles and columns from past issues of *Supply Chain Management Review*. Think of them as a roadmap for the do-it-yourself supply chain strategic project manager—the kind of manager we defined in last month's issue—who doesn't necessarily need help from the outside consulting community. As always, Lapide welcomes your comments and questions at llapide@mit.edu.

Bob Trebilcock

Bob Trebilcock, Editorial Director
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contents

Competitive supply chains	2
The best supply chains are more than a collection of technologies and processes. As supply chain evolves from tactical to strategic, competitive supply chains enable a company's go-to-market strategy and competitive position.	
The Essence of Excellence	10
MIT's Supply Chain 2020 Project shows that true supply chain superiority does not come by emulating the best practices of others. Rather, it flows from leveraging a strategic framework and deeper set of guiding principles that lead to competitive advantage for your company.	
The Operational Performance Triangles	17
Strategy alignment is a key step toward excellence in the supply chain, and a triangular framework can help you achieve it.	
Demand-shaping With Supply in Mind	19
Supply chain managers must advocate for "demandshaping with supply in mind," meaning that demandshaping decisions aren't made in isolation of supply issues.	
Optimally Bridging Supply and Demand	21
Typically, supply and demand managers are on opposite sides of a Grand Canyon-sized chasm. Optimized Demand Management can help close that gap.	
Strategic Segmentation	23
All too often companies segment informally in less than optimal ways—meeting customers' demands for additional services without analyzing whether they will be more profitable.	
S&OP: The Linchpin Planning Process	25
Sales & Operations Planning provides the key connection between strategic planning and operational execution. It's a critical factor in how well a company achieves its business objectives.	
Making Promises You Can Keep... Optimally	27
Optimized Order Processing and Fulfillment (OP&F) is a proven technique for pleasing customers by giving them more accurate information on their orders.	

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Competitive Supply Chains

The best supply chains are more than a collection of technologies and processes. As supply chain evolves from tactical to strategic, they enable a company's go-to-market strategy and competitive position.



By Larry Lapide

I. Excellence

Amy Chua, known as the “Tiger Mom,” has been praised and criticized for her views on raising children to be high performing. She co-wrote a book, “The Triple Package: How Three Unlikely Traits Explain the Rise and Fall of Cultural Groups in America,” based on eight successful cultural groups.

Per Wikipedia, the book summarizes three traits that are most predictive of why certain cultural groups perform better: 1) a superiority complex; 2) insecurity and 3) impulse control. Elaborating, they raise

children to believe they are good, but aren't good enough, and are disciplined to work hard and patiently await results. I believe that an excellent supply chain organization should possess these traits, too.

Dr. Lapide is a lecturer at the University of Massachusetts, Boston and an MIT research affiliate. He has extensive experience in industry, consulting, business research and academia as well as a broad range of forecasting, planning and supply chain experiences. He was an industry forecaster for many years, led supply chain consulting projects for clients across a variety of industries, and has researched supply chain and forecasting software as an analyst. He is the recipient of the inaugural Lifetime Achievement in Business Forecasting & Planning Award from the IBF.

What is excellence?

During the MIT Supply Chain 2020 Project that researched the future of supply chain, we focused on future excellent supply chains. The research compared today's excellent supply chains with non-excellent ones in order to answer the question: What is excellence? The definition needed to be reasonable to everyone. It also needed to be operational to provide advice to managers looking to maintain excellence into the future.

We simply defined excellence as having a competitive supply chain. That is, a supply chain needed to be positioned to play a leading (not just supporting) role in competing in the marketplace. It had to be recognized as a critical element in a company's competitive go-to-market strategy, and important to winning business. The definition should have included having a corporate culture possessing the three traits discussed above. However, it would have been deemed as an intangible necessity and insufficient characteristic.

Why not the Gartner 25 criteria?

The excellent supply chain framework we devised as part of the SC2020 Project was published a couple of years after AMR Research (now part of Gartner Inc.) inaugurated its annual list of Top 25 Supply Chains. Since the publication, there has been some confusion around the ranking criteria used by Gartner and the excellence definition.

Most supply chain managers misunderstood the intent of Gartner's list, thinking it is the 25 most excellent supply chains. That wasn't the intent. The companies ranked by Gartner are big and public. The list was developed to foster discussion among supply chain professionals about "the demand-driven operational and innovation excellence" of companies. After each annual ranking, analysts point out that these are not necessarily the top-performing supply chains; rather, they are heroes to emulate.

There are several reasons why the list doesn't necessarily represent the top excellent supply chains. Gartner's criteria weigh financial data and analyst/peer opinions. First, because

it has limited visibility into the detailed practices of the supply chain organizations in companies, it de facto assumes supply chain plays a leading role. Second, because financials include return on assets, inventory turns and growth, Gartner's criteria downgrades mature and asset-intensive companies that most certainly have excellent supply chains. Take, for example, companies in the large-scale petroleum industry: They efficiently source and distribute about 90 million barrels of oil daily, on a worldwide basis. Third, ranking supply chains across vastly different industries is an apples-to-oranges comparison. Finally, relying on Gartner analysts and peer opinions makes the rankings grounded in perception rather than on concrete evidence. Indeed it might be compromised by opinions from managers at competing companies.

Criteria for excellence

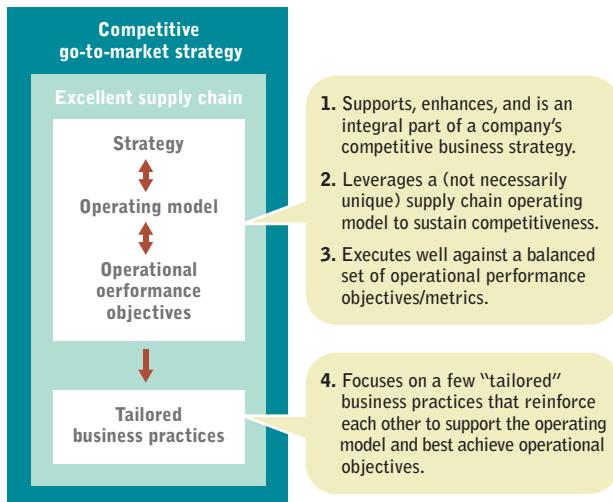
Defining excellence as having a competitive supply chain necessitates using criteria for excellence that relates to whether an organization is positioned to play a leading role in a go-to-market strategy, and is important to winning business. For example, if a company's strategy is to aggressively grow market share at the expense of reduced return on assets—with excessive supply chain costs and inventories—then why wouldn't the supply chain be excellent if it is perfectly aligned with that strategy?

To elaborate on this, two myths were debunked: that an excellent supply chain is 1) part of a highly profitable company; and 2) that it is not part of an unprofitable company. Regarding the first, Levi Strauss in the 1980s enjoyed record growth and profitability as jeans got hot and were being sold in the Soviet Union for \$100 a pair. Eventually, its manufacturing organization could not keep up with demand. Retailers, like JCPenney, resorted to private-label jeans because store shelves were too often bare. Levi's profitability was due to its branding, not its supply chain.

Back when I worked at AMR Research, we conducted benchmarking studies that compared peer companies. One of the metrics we used was order fill rate. In a CPG peer group, all companies had fill rates in the high 90 percentages, except for one well-known, highly-profitable company in the 80 percentages. When asked why, it said that its brands are "so strong that we can ship anything to a retailer and it will accept delivery." The company felt that it wasn't worth spending more money to improve customer service. Thus, while the supply

FIGURE 1

Excellent supply chain framework



Source: Larry Lapide

chain was not excellent, it didn't need to be because strong branding drove financial performance.

Amazon is a case debunking the second myth; it has spent a lot of money on its excellent supply chain because it has been building the largest unit pick, pack and ship e-retailer. Amazon has been unprofitable during much of its history, and Wall Street analysts are still critical of its lack of focus on profitability. Amazon's strategy to focus on becoming the Walmart of the Internet (and more) has paid off as it continues to grab more retail business that leverages its excellent supply chain (regardless of profits).

Lastly during the dot.com bubble, Cisco Systems grew rapidly with high profitability. Many start-ups bought its networking and routing systems. To fulfill orders sourced from multiple locations around the world, Cisco built an excellent virtual, asset-less supply chain. The company also developed a process that seamlessly integrated hundreds of company acquisitions into its order fulfillment systems. However, when the bubble burst, Cisco was stuck with billions of dollars of inventory write-offs that seriously depressed profitability for some time. While Wall Street criticized the company for this profit mishap, Cisco was able to recoup and get back to its old self in short order, mainly on the back of its excellent supply chain. So was it excellent during the period of depressed profits? Absolutely.

The use of best practices was also briefly considered during our research but dismissed as a characteristic of

excellence. Best practices don't necessarily carry across companies within or across industries. Nor do they stand the test of time. We decided instead to focus on practices tailored to directly enable the operational performance objectives aimed at competing.

The excellent supply chain framework

Figure 1 depicts the excellent supply chain framework developed as part of the MIT 2020 Project. An excellent supply chain is shown as playing a leading role inside a competitive go-to-market strategy. The four major, tangible characteristics an excellent supply chain should have are:

1. supports, enhances and is an integral part of a company's competitive business strategy;
2. leverages a (not necessarily unique) supply chain operating model to sustain competitiveness;
3. executes well against a balanced set of operational performance objectives/metrics; and
4. focuses on a few "tailored" business practices that reinforce each other to support the operating model and best achieve operational objectives.

The figure illustrates that the first three need to be iteratively aligned to ensure that supply chain competencies are fully leveraged to play a leading role, in accordance with the first characteristic. After this is done, tailored business practices can be developed to enable excellence. This strategic alignment approach will be discussed in part two of this series. (Note that it does not include the aforementioned intangible three traits of corporate culture because I have no approach to getting this, short of hiring lots of offspring from "Tiger Moms.")

Excellence, like beauty, is in the eyes of the beholder. For assessing the role a supply chain organization plays in a company's competitive go-to-market strategy, the beholder needs to be the enterprise itself, including the executive team as well as other functional departments. Thus, the strategic alignment approach is offered to help companies self-assess whether their supply

chains are excellent, need modification or need redoing. After all, if your supply chain is excellent and winning business from competitors, you shouldn't care if it is not publicly recognized.

II. Strategic Alignment



A talk I give is titled “Supply Chain Excellence = Strategic

Alignment.” I start it by saying that because I represent MIT, it needs equations—and the title is the last one you'll see. It aptly states that to have an excellent supply chain, it must be strategically aligned to the corporate competitive strategy.

As stated in the first section of this feature, four major characteristics of a competitive supply chain are the basis of that approach:

1. supports, enhances and is an integral part of a company's competitive strategy;
2. leverages a (not necessarily unique) supply chain operating model to sustain competitiveness;
3. executes well against a balanced set of operational performance objectives/metrics; and
4. focuses on a few “tailored” business practices that reinforce each other to support the operating model and best achieve operational objectives.

I've helped a few companies use this approach to begin to strategically design their supply chains. While developed for design, it can also be used to assess whether a supply chain is already competitive, needs redesign or whether a competitive one is necessary (such as when competitiveness only needs to be enhanced by marketing and sales operations, and not by the supply chain).

The approach involves self-assessment. To gauge the role an organization plays in competing, the beholder of excellence needs to be the company itself, including its executive team and functional departments, not the court of public opinion. As described below, the approach involves three steps: develop a supply chain strategy; develop an operating model and operational performance objectives; and define tailored practices. Let's look at each step.

STEP 1: Supply chain strategy

The first characteristic of a competitive supply chain is that it supports, enhances and is an integral part of a corporate competitive strategy. Thus, the supply chain organization plays a leading role, and not just a supportive role. The first step in the approach involves understanding the corporate competitive strategy. If it is non-existent, then it needs to be developed in the context of strategic elements that can be directly influenced by the supply chain.

The left-hand column of the table in Figure 2 lists potential competitive strategy elements. They are expressed in terms like the highest, lowest and fastest, to be the best among competitors, and provide market differentiation. (Note that revenue and market share aren't listed because supply chain operations do not directly influence them.) On the right-hand side are supply chain characteristics that directly align to enhance elements, also expressed in terms of highest, lowest and most efficient/effective. For example, an element of Walmart's competitive strategy is “everyday low pricing.” Thus it targets achieving the lowest costs in getting products on to store shelves.

The table is used to align characteristics to corresponding strategy elements. If a company has done its corporate strategy well, the latter would be comprised of just a few differentiating elements that win business. These are then used to identify corresponding characteristics that need to be the focus of its supply chain.

STEP 2: Operating model and performance objectives/metrics

The second and third characteristics of a competitive supply chain are that it leverages a supply chain operating model to sustain competitiveness, and executes well against a balanced set of operational performance objectives/metrics.

FIGURE 2

Competitive strategy elements and corresponding enhancing supply chain characteristics

Supply chain influenced competitive strategy element	Supply chain characteristics aligned to enhance the element
Lowest prices	• Lowest operating costs
Highest margin products	• Highest availability at point-of-sale • Lowest operating costs
Highest quality	• Highest quality of suppliers • Strongest process quality controls
Fastest customer response	• Shortest order-to-delivery cycle • Fastest request-to-promise date
Most innovative	• Most efficient/effective new product launch
Highest return-on-assets	• Highest plant/DC utilization • Lowest inventories
Broadest product line	• Most efficient/effective inventory management • Shortest manufacturing changeover and setups
Highest customer service ratings	• Most effective customer service segmentation • Highest availability at point-of-sale
Most effective post-sales support	• Highest availability of service parts
Most environmentally responsible	• Lowest waste and highest recycling

Source: Larry Lapide

Thus, once characteristics are identified, the second step of the approach develops the operating model and performance objectives.

The operating model is the general design of the supply chain in terms of from where goods will be sourced, made and delivered, and includes manufacturing postponement, offshoring and outsourcing strategies. It needs to enable the characteristics from step one, yet does not have to be unique. Walmart, for example, runs a competitive retail supply chain with traditional goods flow: suppliers to regional warehouses to stores. However, many supply chains uniquely leverage e-commerce. For example, Dell started by eliminating brick-and-mortar merchandizing and sold by phone and the Website. Cisco Systems ran a virtual supply chain in which most manufacturing and logistics functions were outsourced, with Cisco rarely handling physical goods.

Developing a balanced set of performance objectives/metrics is contentious. Most demand-side management objectives will be resource and asset-intensive as well as costly; while supply-side objectives will be opposed to them. Therefore, a balance between objectives needs to be negotiated, along with any increase in revenue to cover any

needed additional supply chain costs.

In an earlier column, I detailed a “triangular framework” used to balance objectives/metrics. It is predicated on the fact that a supply chain objective is one of three types: efficiency, asset utilization and customer response. The position of a point in the triangle represents a balanced focus among competing objectives. In addition, focused objectives are targeted to be “best” among competing companies, while non-focused ones are just average, “peer” performing. A point close to an edge or corner is meant to depict that those types of objectives will be focused on in order to be competitive. So if a supply chain is focused on efficiency to maintain competitiveness, the point is close to that corner of the triangle; if it is more focused on customer response, it is close to that corner.

The triangle helps managers visually set performance objectives directly aligned with the competitive strategy. They discuss the trade-offs between objectives, establish their focus and then set metric targets. For example, if seven key performance objectives are identified, three of them might be focused/targeted to be best, while the remaining non-focused ones just require average performance.

STEP 3: Tailored practices

The fourth characteristic of an excellent supply chain is that it focuses on a few tailored business practices that reinforce each other to support the operating model and best achieve operational objectives. Thus, once objectives/metrics are developed, the third step of the approach is to develop “tailored” practices aimed directly at achieving “best” operational performance objectives. To provide a surgical focus toward achieving performance objectives, only a few tailored practices should be developed. Michael Porter discusses Activity Systems that foster competitiveness in “What is Strategy?” an article in the November-December 1996 issue of the *Harvard Business Review*.

Practices should fit, be reinforcing and be cross optimized. They are fit and reinforcing if they make sense together by not competing

FIGURE 3



Source: Larry Lapide

against each other. For example, one should not be aimed at maximizing product availability while another is aimed at minimizing inventories. They should be cross optimized to work together to enhance similar objectives so that performance maximization follows a “1+1= 3, not 2” mantra.

Figure 3 depicts a strategically aligned supply chain for an illustrative customer-focused company (sans an operating model). Note that performance objectives and tailored practices are aligned to directly enhance competitive strategy elements.

Lessons learned

I learned valuable lessons using this approach with companies. While defined straightforwardly, it is not linear, involving the frequent revisiting of prior steps. This happened, for example, when a company didn’t have a defined corporate competitive strategy. The strength of the approach was that it provided a language for discussions during each step. Another issue was getting agreement on focused performance objectives because most managers wanted to work in “best” performing operations. Lastly, when assessing a company’s current position in the triangle, managers inflated the customer-response focus. However, companies like Walmart have minimal focus on customer-response because customers don’t want to pay for frills. So, it was important to recognize that focusing on customer-response assumes the company is spending

lots of money on customer facing versus back office operations. (Think Best Buy versus Walmart store experiences.)

Managers who want to assess whether their supply chains are (or need to be) competitive should consider the approach. However, be pre-warned: Because a competitive supply chain strategy needs to be developed collaboratively among supply, demand and financial managers, it will likely take many months to muster buy-in. After

accomplishing this, the work isn’t done. Three important demand management (i.e., supply-demand matching) processes also need to be implemented: customer segmentation and service; sales and operations planning (S&OP); and order promising and fulfillment processes.

III. Optimized Demand Management



I have often researched, spoken and written about the sales and operation planning (S&OP) process, especially addressing supply chain manager issues. Speaking before supply chain audiences, I point out that this “matching of supply and demand” planning process has been a major focus of mine because, before joining the supply chain community, I started my career on the “dark side.” Many in the audience smile when I ask: “What do I mean by that?”

My demand-supply perspective

Most assume that I came from sales. Actually, for the first 15 years of my career I was in marketing. I point out that too many in the audience don't really know or care about the difference between the marketing and sales functions because "all those managers complicate things for supply chain folks, making our jobs harder." But, there is a difference. A sales rep is responsible for selling the products a company has today, while a marketing manager focuses on promoting products and ensuring that a company has products to sell in the future. Thus, marketing is a strategic function. In the S&OP process, sales offers valuable input about short-term revenues, while marketing is more knowledgeable about the long-term.

I began my career in supply chain management (SCM) in 1990. I was lucky to be involved during its heyday. SCM evolved over time by integrating a variety of supply-side silos within a company, including the warehousing, transportation, inventory management, manufacturing, procurement and (sometimes) the customer service functions. However, one of the most important integrations rarely happened. Often there was a chasm between supply-side managers (e.g., in manufacturing/operations, logistics, supply chain, procurement and merchandize planning) and demand-side managers (e.g., in marketing, sales, merchandizing and customer service).

That chasm still exists today. My experience shows that managers from each side think differently and rarely—if ever—communicate. There has always been (likely throughout history) a chasm between these functional groups; much of it comes from conflicting objectives. Supply-side managers are largely goaled to minimize operating costs and inventories, while it is the job of demand-side managers to maximize market share and revenues. Historically there has been a dearth of routine demand-shaping processes, enabled by joint decision-making among the groups, and aimed at optimizing profitability and other corporate goals.

Yet, demand management (DM) processes that formally enable supply- and demand-side managers to collaborate over time are necessary for a supply chain to be competitive. Without a formal, routine and joint decision-making process, a supply chain organization is not really playing a major role in executing a corporate strategy—even if it is strategically aligned.

Demand management needed

Some time ago, I assembled a Demand Management Solutions Research working group of sponsoring companies to research DM processes. The group routinely met over a two-year period and defined DM as "the matching of supply and demand over time—in real time and during planning." The major research question it addressed was: What strategies, principles, methods and solutions can be leveraged to optimally match supply and demand over time? The group recommended three major collaborative processes a company should have to jointly match supply and demand over time: the long-term, medium-term and short-term (including real-time).

Figure 4 is a visual display of the recommendations. It shows that the three processes should work to bridge the supply-demand chasm as well as to integrate three levels of management: executives, senior managers, and lower-level managers and staff. Meetings to collaborate and make decisions regarding the matching of supply and demand for each of the time frames involve cross-functional, peer-level managers who are empowered to make decisions at their level by higher-level management.

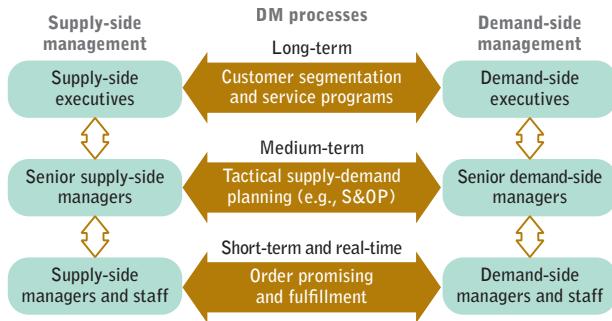
Long-term matching

Demand-side managers often work directly with customers to tailor service policies without sufficient input from supply-side managers. However, customer terms and conditions and priorities, such as those dealing with special packaging and delivery requirements, co-managed inventory programs, and the sharing of downstream data, greatly affect supply-side operations and long-term customer profitability. Demand-side managers often unilaterally develop customer segmentation strategies based solely on a customer's revenue while disregarding factors such as profitability and the strategic importance of a customer. Left to their own devices, demand-side managers will tend to give away the store to a company's largest revenue customers. This is not always optimal. For example, how often have you heard: "Walmart gets all the service they demand whether our company loses money or not?"

The process of setting service policies and seg-

FIGURE 4

DM bridges and enables cross-functional collaboration at all levels



Source: Larry Lapide

ments represents the long-term aspects of supply-demand matching because they set the stage for how demand will take place and the supply resources needed to service customers in the long-term. This process offers opportunities to jointly optimize future supply and demand, and should be an important area for supply-side managers to get involved in to play a major role when competing.

Medium-term matching

S&OP and merchandize planning and allocation (in retail) represent medium-term DM processes that should collaboratively balance tactical supply and demand plans. These and other named supply-demand planning processes represent the medium-term aspects of supply-demand matching because they set the stage for how demand will take place and the resources needed to supply customers in the medium term—often on a monthly or weekly basis.

These processes are becoming more prevalent. For example, S&OP has grown in use over the past two decades as businesses globalized. The processes are “linchpin” processes, if the matching of supply and demand is done in accordance with the strategic goals of a company, because the process then ties to day-to-day operations to strategic intent. In the case of a competitive and strategically-aligned supply chain, the matching of supply and demand should be aimed at “executing well against the balanced set of operational perfor-

mance objectives/metrics” developed during the strategic alignment process discussed above.

Short-term/real-time matching

One of the functions of customer service and sales reps is the matching of supply and demand in real time. As orders come in, they routinely quote customer delivery dates. Accurate estimates of these are needed to properly set each customer’s expectation to a promise that can be kept.

Estimating promise dates represents an opportunity to optimally match supply and demand in the short-term/real-time. Accuracy ensures efficient order fulfillment, with minimal expediting. Accurate quoting requires planning out how each order will be filled and “pegging” supply to it; by assessing what current and future supply will be allotted to fill the order (in the context of other expected future demand, as well). In addition, customer priorities need to be considered when scarce supply needs to be allocated.

The process of setting promise dates and planning an order’s fulfillment represents the short-term aspects of supply-demand matching because it sets the stage for how both available and future planned supply will be used to fill customer orders in the short-term. This DM process offers opportunities to jointly optimize supply and demand, however, optimized matching is often not the norm. Either orders are filled on a first-come-first-served (FIFO) basis or it is the sales rep that screams the loudest who gets the earliest promise dates for his or her favorite customers. Similarly, rather than optimally planning order fulfillment, operations managers often quote standard lead times, leading to promise dates that are not necessarily optimal. In order to enable a competitive supply chain, joint decision-making is necessary.

Generally, I believe that optimizing the three DM processes represents the next phase in the advancement of SCM because it enables “commercialized” supply chains, making them competitive.

If you want an excellent supply chain organization, align it strategically to your company’s competitive strategy, and then implement DM processes to enable the supply chain organization to play a leading role in being competitive. In doing so, supply-side managers will be helping demand-side managers win business, so that both groups can celebrate those wins together. ∞∞



MIT's SC2020 Project

The Essence of EXCELLENCE

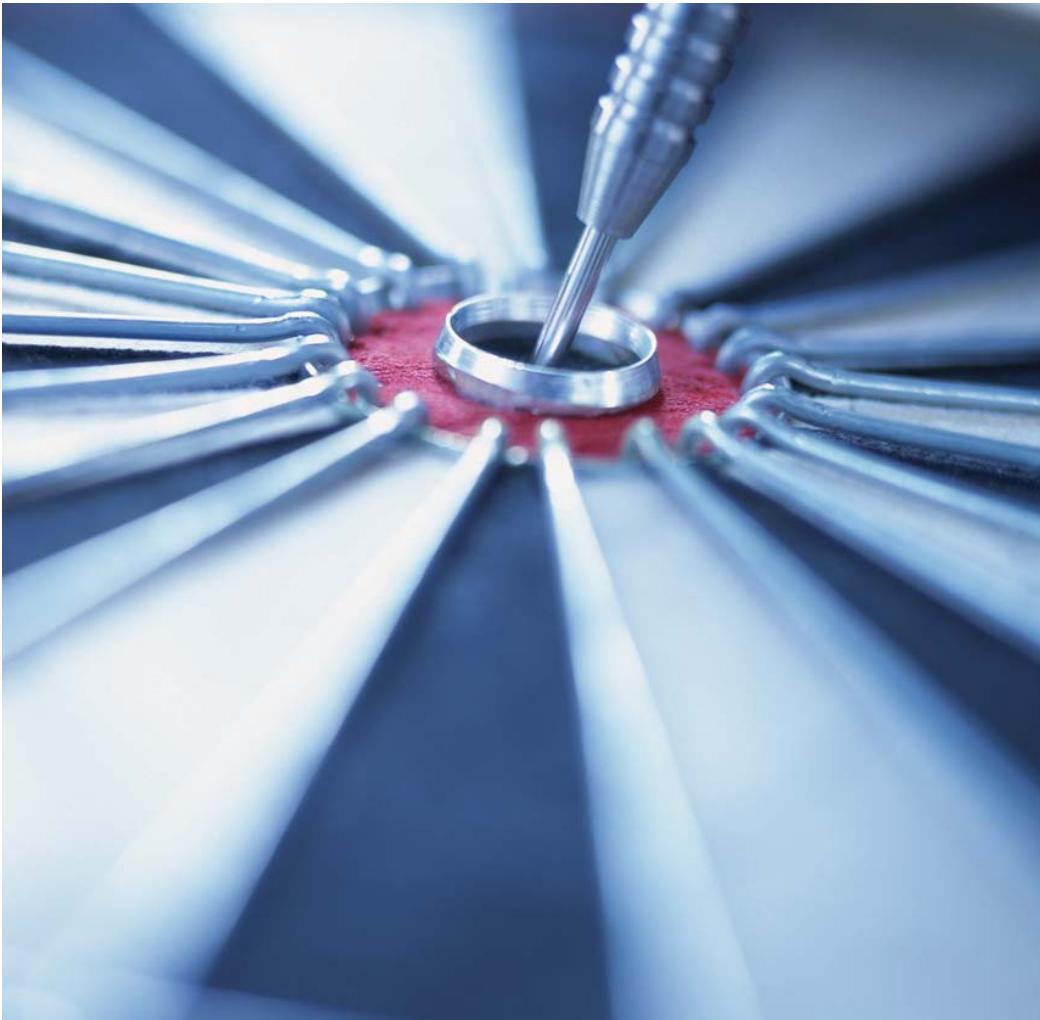
By Larry Lapidé

MIT's Supply Chain 2020 Project shows that true supply chain superiority does not come by emulating the best practices of others. Rather, it flows from leveraging a strategic framework and deeper set of guiding principles that lead to competitive advantage for your company. This is the notion of the "competitively principled" supply chain. Here's a look at the framework and principles that can form the core of supply chain excellence.

Since ancient times, military strategists, civic planners, and global traders have all viewed integrated logistics as strategically important. But it is only within the last dozen years that the corporate world has begun to acknowledge supply chain management as a discrete discipline that is essential to a sound business strategy. Much of this recent realization has been sparked by the widely publicized successes of companies such as Toyota, Wal-Mart, and Dell. Each has effectively demonstrated that back-office functions can be turned inside-out to help win the long-term business battles being fought by front-office sales and marketing staff.

The visibility of those companies' achievements has encouraged supply chain managers from many other industries to benchmark against their practices and to try to apply some of the practices in their own organizations. Unfortunately, such best-practice emulation rarely works well. Toyota's approach to supply chain superiority is not the same as Dell's or Wal-Mart's. One size does not fit all; not only are there obvious differences between the automotive industry and the high-tech sector, but the companies themselves operate quite different supply chains and compete in different ways. So this begs a more interesting question: What exactly is an excellent supply chain?

The Center for Transportation & Logistics at the Massachusetts Institute of Technology (MIT) is striving to answer that question. Last year, we launched a multi-year research project that we call Supply Chain 2020 (SC2020).



performance metrics, and practices are aligned in a strategic framework. These supply chains leverage core principles to establish a high degree of competitive differentiation.

Rethinking the Meaning of “Excellence”

Early in the SC2020 project, the research team wrestled with the concept of excellence. We knew that our SC2020 team was not the first to investigate the idea of the “excellent” supply chain. Various business publications and more than a few consultants have bandied the concept around over the last several years. Some have even gone so far as to rank high-performing supply chains based mostly on financial and qualitative criteria. We believe, however, that those rankings are fundamentally flawed.

For example, many observers would argue that a company that has succeeded financially for many years must have an excellent supply chain

The project hopes to identify the factors that will be critical to the success of future supply chains. It will also map out the process innovations that will underpin successful supply chains as far into the future as 2020. The first phase of our project, completed in the summer of 2005, has begun to answer the “what” question: What makes successful supply chains tick? The second phase, now underway, is attempting to answer the “why” and the “how” questions.

We hope that part of the work of the SC2020 Project will be to take the emphasis off best practices. It is not our intent to dismiss the value of best-practice benchmarking in the right context. But it concerns us that managers continue to search fruitlessly for the “silver bullet” practice that they expect will transform their organizations into the next Toyota or Dell.

What we are finding so far is that there is a strategic framework and a set of deeper guiding principles—not best practices—that underpin supply chain superiority. This article introduces the concept of “the competitively principled” supply chain—one in which strategies, operating models,

while those that have done poorly have supply chains that perform poorly. However, although there are broad linkages, there is no direct correlation. A company can turn in outstanding financials despite having lackluster supply chain capabilities. A host of companies live off their robust brand names and their prowess in marketing and sales.

Such was the case for clothing manufacturer Levi Strauss during the 1980s. Worldwide demand for its branded jeans frequently outstripped supply. The jeans flew off retailers’ shelves faster than Levi’s could provide them, creating scarcity that further burnished its brand image. The company was highly profitable then, extracting high margins based on the brand’s global mystique.

In contrast, a company that is struggling financially might have an excellent supply chain if it is aligned to meet corporate goals or if the supply chain is designed to help it survive financial ups and downs. For example, Internet retailer Amazon.com was losing money during its early years—a time when it was creating an innovative supply chain to support its emerging business model. The company’s develop-

ment involved substantial investment in the physical infrastructure needed to fulfill a large number of small orders shipped by parcel. It also established several highly efficient distribution centers that could handle orders for a broad range of items picked at a warehouse as “one-offs.” Since then, of course, Amazon has become profitable, bolstered by an excellent supply chain that both supports and enhances its business strategy.

So if supply chain excellence cannot be defined simply by strong financial performance, what’s a better way? Consultants and analysts often define excellent supply chains as those that leverage so-called best practices and technologies—for example, the most effective and efficient use of key performance metrics, or the most consistent collaborative planning with suppliers, or the smoothest integration with new product development. However, realistically, there is no such thing as a “best” practice; best practices only work under certain business conditions in certain industries. Dell’s direct-sell, build-to-order business model does not directly apply to other industries such as brick-and-mortar retail businesses like Wal-Mart and Tesco. Indeed, it does not even apply to all segments of the computer hardware business. To supply sophisticated high-end computer servers and services to large businesses that operate global and complex technology networks, IBM’s high-touch customer service model is more apropos.

Some months into our research, we noticed a shift in the conversation. Our research had started out with a focus on best practices. But as more and more findings came in, the concepts of “tailored practices” and “underlying principles” surfaced in our discussions. We began to think about viewing SCM excellence “top down”—from the strategic level down to the practices and their underlying core principles that could be taught, encoded, and implemented. The principles would, we hoped, answer fundamental questions such as:

What really makes this supply chain so effective? What trade-offs are being made?

Today, with the completion of the phase-one intelligence-gathering and analysis, our SC2020 research has determined that an excellent supply chain is essentially a “competitively principled” supply chain. The supply chain’s operation is guided by principles along at least two dimensions. First, the supply chain is strategically designed and operated according to an “excellent supply chain framework” (addressed below), which ensures alignment between supply chain business practices and the

competitive strategy of the overall business. (See Exhibit 1.) Second, excellent supply chain managers recognize and act on the idea that they need to adhere to the intent of the supply chain strategy. They don’t exhibit a “silo” mentality, and they distinguish between those operations that have to be best-in-class when compared to competitors and others that need to be only par. Therefore, trade-offs need to be made among departments in terms of the effort expended and resources applied. These trade-offs need to align with the competitive strategies in place.

Putting it another way, excellent supply chains have an intended focus and purpose, and excellent supply chain managers understand, act on, and respect those intentions.

Framework for Excellence

Qualitative research during phase one of SC2020 delved into nine industries’ drivers and challenges and the supply chain responses to them. In addition, the supply chains of 21 case-study companies were profiled to identify the important linkages that exist among competitive strategies, operating models, operational performance objectives, and business practices. The research supported the premise that an excellent supply chain:

1. Supports, enhances, and is an integral part of a company’s competitive business strategy.
2. Leverages a supply chain operating model to sustain a competitive edge.
3. Executes well against a balanced set of competitive operational performance objectives.
4. Focuses on a limited number of “tailored” business practices that reinforce each other to support the operating model and best achieve the operational objectives.

While these four characteristics sound relatively straightforward and easy to put in place, they are not. It takes years to mesh the elements together—and a great deal of effort to

alter them as the competitive landscape changes over time. If you were to start from scratch to build an excellent supply chain, you would start on the first characteristic, which is strategic in nature. You would then work sequentially down the list above to those characteristics that are more tactical and operationally oriented. In the course of doing this, upper-level characteristics might have to be revisited. You would follow a similar process if you were trying to drive an existing supply chain toward excellence.

It’s valuable to look at key aspects of the characteristics in detail, moving from the top level down.



Aligning the Operating Model

The first three characteristics in the excellent supply chain framework are interrelated and deal with alignment to a competitive business strategy (See upper box in Exhibit 1). In an excellent supply chain, the business strategy and its relevant elements need to be explicit and clearly understood by supply chain managers. At the same time, the supply chain operating model should not only support the business strategy but also be a major element in enhancing that strategy. The model needs to help the company carve out the markets in which it chooses to dominate. It also needs to continually realign itself as strategies evolve. Exhibit 2 depicts a potential list of supply chain-related elements that could be part of a competitive business strategy. The elements not only dictate what the operating model needs to do to support them but also reflect the operating model characteristics that are needed to enhance the overall business strategy.

EXHIBIT 2

Competitive Strategy Elements and Supporting Model Characteristics

Competitive Strategy Elements	Examples of Operating Model Characteristics That Support Strategy Elements
Lowest prices	Lowest operating costs
Highest margin products	Maximum availability at point of sale
Highest quality	Highest quality of suppliers Strongest manufacturing quality controls
Fastest customer response	Shortest order-to-delivery cycle Fastest request-to-promise date
Most innovative	Most efficient new product launch
Highest return-on-assets	Highest plant utilization Lowest inventories
Broadest product line	Adept at managing complexity
Best customer service	Specific service for each customer segment Maximum availability at point of sale
Best post-sales support	Maximum availability of service parts
Most environmentally responsible	Minimize waste and maximize recycling

Wal-Mart, Dell, and Cisco Systems have supply chain operating models that are aligned to both support and enhance their business strategies. Wal-Mart's corporate strategy over time has been to be the everyday lowest-priced retailer for cost-conscious customers. To do this, the retailer has shifted its operating model to distribute goods to store shelves at the lowest cost, helping to ensure that it can consistently price lower than local competition.

Part of the Wal-Mart operating model involves operating large stores that leverage a limited number of formats. These big stores, which are supplied by large distribution centers, yield economies of scale and efficient asset utilization, resulting in lower long-term operating costs. Wal-Mart tends to stay away from fickle-demand fashion items, choosing instead to market limited assortments of low-risk, faster-moving items

that are more certain to sell. This also helps the retailer to avoid the costs of merchandizing and promoting products.

For its part, Cisco Systems' business strategy is to be the dominant leader in the data-networking market by selling world-class end-to-end IT solutions. The communications-equipment company's operating model includes the rapid integration of technology-rich acquisitions—more than 100 during its history. This keeps Cisco's R&D costs low and its margins high while offering advanced technology to its customers. The operating model focuses on the new product introduction process to help maintain its technology leadership edge. It involves outsourcing its supply chain operations to partners, such as Jabil Circuit, the electronics-manufacturing-services provider that builds Cisco's modular switching equipment.

Exhibit 3, on page 22, summarizes Cisco's operating model and framework and those of other supply chain leaders studied by the SC2020 research teams.

Balancing Performance Objectives

The constant pursuit of operational excellence is a necessary ingredient for excellent supply chains—albeit difficult to pin down in an objective way. Operations managers constantly look to improve supply chain performance, especially to achieve operational excellence. Excellent supply chain managers formally and frequently check on the outputs. They measure how well the supply chain is doing, and they keep applying continuous improvement methods to raise the stakes.

Yet while a supply chain might execute well, that in and of itself does not make it excellent. Trying to do all things well or focusing on things that are not as important is not part of operational excellence. Excellence is about doing well at what matters most—the things that matter to stay competitive. For example, in fashion product businesses, it is misguided to focus too much on reducing inventories; there, high product availability is more important to achieving profitability goals.

An excellent supply chain must execute well against a set of operational performance objectives and metrics that match its business goals. Some supply chains, such as Wal-Mart's and Dell's, need to be highly efficient to keep costs low and to stay price-competitive. Others are designed to place greater focus on being responsive, with less focus on costs. (See Exhibit 3.) IBM is an example of a company that needs to focus on customer responsiveness to capture sales for its high-margin products and services (possibly at the expense of maintaining higher inventories and operating costs). IBM needs to do this to maximize margins generated over the total life of its customer relationships.

To assess which operational performance objectives to emphasize, it's useful to group them into three types, as shown in Exhibit 4, on page 33.

1. Customer Response. These include measures such as order cycle time, perfect order fill rates, product quality, and new product time-to-market that assess the perfor-

mance of the customer-facing operations of a supply chain. (Note that metrics of this type do not directly relate to the metrics on a company's financial statements.) Companies in industries with high-margin, short-life-cycle products often emphasize these types of objectives; examples include the pharmaceutical, fashion apparel, and media and entertainment industries.

2. Efficiency. These operational performance measures are internal; they assess how well a supply chain converts inputs into outputs. Examples include labor productivity, labor content, supply chain costs, and waste. (Note that these metrics relate directly to metrics on the income statement.) Cost-conscious companies such as food and beverage, basic-goods retail, and industrial supplies often focus on these types of objectives.

3. Asset utilization. These operational measures are also internal. However, they focus on how effectively assets such as facilities and inventories are being used. (They relate directly to the balance sheet.) For example, capital-

intensive companies such as semiconductor fabricators and petrochemicals producers generally run around the clock to maximize the use of their expensive production equipment.

Common supply chain metrics that fall into each of these categories include: costs, which measure efficiency; fill rates, which measure customer response; and inventory turns, which measure asset utilization. Use of several types of metrics requires trade-offs—for instance, improving fill rates often requires higher inventories and increased costs.

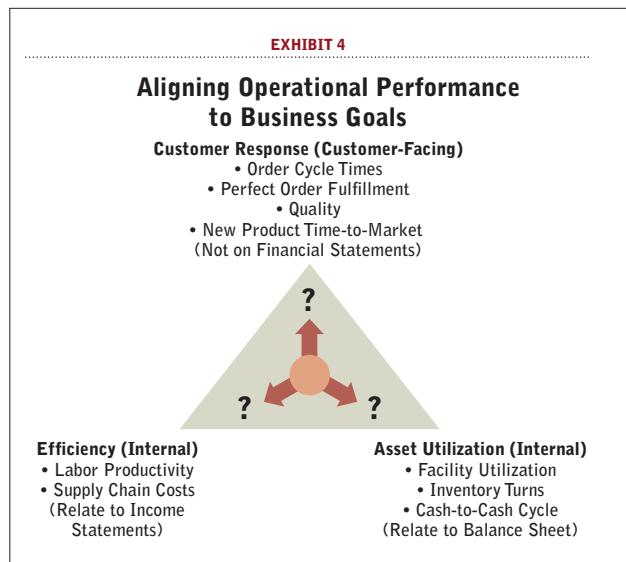
A competitive strategy calls for using a balanced set of operational performance metrics that purposefully puts varying emphasis on metrics from each of these three types—placing greater focus on some and less on others. As depicted in Exhibit 4, the trade-offs are necessary in order to place the focus (represented by the small circle's position in the triangle) in alignment with the business strategy and the operating model.

EXHIBIT 3

Case Studies of Successful Supply Chains

Company/ Industry	Strategy	Operating Model	Ranked Performance Objectives *	Set of Tailored Practices
Dell/High Tech (Computers)	Highest value-to-price provider of computers and accessories to price-conscious customers.	Direct sales to customers via Web/phone. Build-to-order manufacturing. Box-level service.	1. Efficiency (e.g., costs) 2. Asset utilization 3. Customer response	Consigned inventory supplier hubs. Demand shaping. Inbound transportation collaboration.
IBM/ High Tech (Computers)	Diversified and value-added provider of networked technology solutions to businesses.	Direct, single face to customer via sales reps. Build-to-order manufacturing. Extensive pre- and post-sales support.	1. Customer Response (e.g., satisfaction and sales rep efficiency) 2. Efficiency 3. Asset Utilization	Consolidated customer fulfillment process. Launch "buffer" manufacturing. Centralized procurement. Consolidated and outsourced logistics.
Cisco Systems/ High Tech (Communications Equipment)	Market world-class IT solutions. Be industry leader in the data-networking market. Become end-to-end solution provider.	Outsourced supply chain leveraging partners. World-class new-product-introduction process. Facilitate rapid integration of technology-rich acquisitions.	1. Efficiency (Costs) 2. Customer response 3. Asset utilization	Virtual supply chain. Partner visibility into end-to-end processes. Early design engagement. Operating standards to support rapid assimilation of acquired companies.
Wal-Mart/Retail	Everyday low pricing for cost-conscious customers.	Lowest-cost, brick-and-mortar retailer with supplier/retailer DC-to-store flows. Large-format stores carrying a wide variety of products (not necessarily brands and SKUs).	1. Efficiency (e.g., supply chain costs) 2. Asset utilization 3. Customer response	Vendor collaboration with co-managed inventory programs. Flow logistics distribution including cross-docking, direct-store-delivery, and differentiated flow. Network design incorporating large-sized DCs and short-haul private fleets for economies of scale.
Amazon/Retail	Be the largest one-stop shopping site on the Internet. Offer customers low prices, convenience, and a wide selection of merchandise.	Internet retail with unit-level picking, packing, and parcel fulfillment. Multi-tier network of inventories for distributed fulfillment from partners to offer scale and scope.	1. Customer response (e.g., availability) 2. Efficiency 3. Asset utilization	Drop-ship fulfillment from multi-tier partner network. Advanced batched-order warehouse picking, packing, and shipping strategies. Customer lead-time service-window management.
Limited Brands/ Fashion Apparel Retail	Sell innovative, technologically advanced, high-margin fashion products. Reduce risk by balancing basics vs. fashion mix.	Control supply chain operations from plants to DCs to owned stores. High shelf availability at store level.	1. Customer response (e.g., responsiveness) 2. Asset utilization / efficiency	Segmented fashion vs. basic supply chains. Captive global sourcing company. Captive, shared-services logistics provider--from plants to stores.

*Note: Performance objectives ranked by the competitive focus placed on each type, with examples for the highest focus.



Tailoring Practices

The fourth characteristic of an excellent supply chain is its focus on a limited number of business practices that reinforce one another and are in alignment with the operational objectives. Excellent supply chains avoid the trap of trying to do everything well because then nothing is done well. To be excellent, a supply chain focuses its resources on the inputs that matter most and applies only adequate resources to those areas that are not as important to the strategy and operating model. Practices are tailored to be consistent, reinforcing, and cross-optimized.

These tailored practices need to be integrated so that the whole system of tailored practices is greater than the sum of the parts. This set of tailored business practices is what management strategist Michael Porter terms the “activity system” necessary to maintain competitive advantage.

In excellent supply chains, a practice is “best” when it fits in a set of tailored practices to support a competitive strategy. This means that “best” is dependent on industry characteristics as well as the competitive position that one is trying to achieve. Consider Dell. Its tailored practices include the use of consigned inventory supplier hubs that feed their assemble-to-order manufacturing operations. This practice allows the company to hold minimal inventory and provides Dell with the benefits of a negative cash-to-cash cycle—so Dell gets paid by its customers before it has to pay its suppliers. (See Exhibit 3.) While forcing suppliers to carry the risks associated with holding inventory might seem harsh, other aspects of Dell’s tailored practices mitigate this risk. One is supplier collaboration, in which Dell provides suppliers with real-time demand signals. Dell also links its back-end operations to its Web site, which allows the company to shape demand. The products offered and promoted on the Web site are changed daily based on inventories in the supplier hubs. This assures suppliers that their inventories will not sit idle for long.

These tailored practices work extremely well for Dell.

They would make far less sense for a brick-and-mortar retailer like Wal-Mart. Instead, Wal-Mart’s tailored practices include leveraging economies of scale in its network design and creating a highly-automated, differentiated logistics flow enabled by the extensive use of technology. Although Wal-Mart’s practices also include supplier collaboration and the sharing of demand signals, they don’t involve supplier hubs because product needs to flow more rapidly throughout the retailer’s vast distribution system than supplier hubs would allow. Even though it is in the same industry, IBM also cannot just replicate Dell’s best practices in its own tailored practices. For its high-end server business, IBM sells globally, with sales reps taking orders that are more complex than Dell’s and have much longer selling cycles. So, for example, while IBM does some type of demand-shaping, it is more complicated (often on a deal-by-deal basis) compared to Dell’s, which involves changing a Web site.

An Introduction to Operating Principles

To really understand tailored practices, however, it is crucial to understand the underlying principles. A basic premise of the SC2020 study is that there is a set of time-independent immutable operating principles that underlies all supply chain best practices. In other words, while practices may change over time and across industries and between companies, the operating principles will not.

Our SC2020 project team is currently working on identifying the most important operating principles—the parts of the toolkit, if you will—now at work in today’s best practices. This, in turn, will help identify the innovative practices that will need to be in place by 2020. We know we haven’t identified them all yet; but we’ll discover more as the project progresses.

To illustrate how a best practice in use today leverages these underlying principles, let’s look at them within the context of the best practice of supply chain integration. During phase one of the SC2020 Project, we analyzed 25 quantitative studies from consultants, analysts, and academics to assess how company performance is affected by supply chain management practices. The research revealed that supply chain integration practices—both internal and external—provide the strongest correlation with short-term financial metrics and market share. Let’s look at how this key practice is leveraging six underlying operating principles for advantage.

1. Expand the Sphere of Influence. This principle comes into play when a dominant company increases its sphere of influence over its operations or those of its partners; generally all parties then tend to act in the interest of the company. When a company integrates its operations internally or vertically, it is strongly broadening its span of management control. It can be applied externally too; Wal-Mart’s collaboration with its suppliers is a good example of this. Wal-Mart provides suppliers with point-of-sale (POS) data on their products via its RetailLink system. Target has a similar program. By providing information that their suppliers need to help with their plan-

ning and forecasting, these retailers are increasing their influence (albeit on a low level) over the suppliers.

2. Increase Transparency. By increasing visibility throughout the supply chain, participants can better manage it. Collaboration between a supplier and customer in which data is shared on a one-way basis increases transparency along a supply chain. For example, while historical POS data from RetailLink helps to increase Wal-Mart's influence

It is extremely important to think about leveraging operating principles, rather than best practices. Best practices change over time; principles do not.

over its suppliers, the suppliers in turn are getting more information on Wal-Mart's needs. Generally, increased transparency can aid in better forecasting of demand and supply among supply chain partners. Dell and Wal-Mart both provide their suppliers with forecasts of their needs out to 13 weeks or more.

3. Relax Constraints. If a supply chain constraint is removed or relaxed, it can lead to more optimized operations. Often in collaborative relationships, the customer shows more flexibility. For example, a customer might agree to accept deliveries within a window of time rather than at a fixed time. In this case, its supplier can better optimize its operations because the delivery constraints for the customer's orders have been relaxed. The supplier now has more options with which to optimize the delivery of all of its customer orders, using techniques such as increased load consolidation.

4. Match Supply with Demand. This principle involves balancing supply and demand over time in order to satisfy demand, optimize operations, and minimize wasted resources. It is predicated on the realization that marketing and sales decisions made jointly with supply chain operations provide better outcomes than decisions made by each organization in isolation. The sales and operations planning process, an internal integration process practiced at many companies, applies this principle to tactical planning. Dell's demand-shaping practice uses it on a short-term, execution basis. In addition, a collaborative planning, forecasting, and replenishment program that includes joint forecasting and planning between a supplier and customer also uses the principle.

5. Trade off Inventory Against Cycle Time. Supply chain integration practices that reduce the cycle time of the ordering and fulfillment process—by using the Internet or other electronic channels, for instance—also reduce the inventories being held. For example, co-management inventory programs utilize continuous replenishment processes that take time out of the process, hence reducing inventory.

6. Use Supply Contracts. This principle involves using gain-sharing arrangements to provide a customer with an incentive to increase the sales of the supplier's product

beyond that provided by the customer's own margin contribution. For example, Blockbuster Video and the movie studios leverage the supply-contract operating principle in their business relationships. The studio sells a movie to Blockbuster at a heavily discounted price with an understanding that it will receive a portion of the rental revenue. In this manner, Blockbuster Video can buy more copies of a movie for the same investment as it could before the sharing of revenues. Moreover, it can increase revenue by fulfilling more requests thanks to higher availability.

As the examples cited demonstrate, supply chain operating practices can leverage a variety of principles depending on how they are implemented. So it is important to identify all the operating principles being leveraged by a particular practice because they provide the basis for assessing the cost-benefits of that practice. They also help gauge whether the practice is consistent with, reinforces, and cross-optimizes the company's other practices. In this regard, tailored practices work best when the operating principles being leveraged by them support similar resource trade-offs and target similar performance objectives.



Leveraging the Principles

These days, it is extremely important to think about leveraging operating principles rather than best practices. Best practices change over time, but the principles upon which the practices are based do not. Indeed, supply chain practices can eventually become obstacles to meeting corporate goals.

Therefore, to have an excellent supply chain—a competitively principled one—it is important for supply chain managers to create an evolving set of tailored practices based on understanding the operating principles being leveraged by them. These practices must also operate within the context of the “excellent supply chain framework.” This understanding will help managers to develop the executive-level business cases needed to drive change.

That is why the SC2020 Project is currently identifying the operating principles applied in today's excellent supply chains. The next phase of the research promises to be rewarding. We expect to learn much about the contours of tomorrow's supply chains as we start to understand what external factors and business demands will shape them. And we expect to gain a clearer picture of what companies will have to do to prepare for that future.



Author's note: The author wishes to acknowledge the valuable input from his colleagues at the MIT Center for Transportation & Logistics, especially Mahender Singh and the members of the SC2020 Project's advisory councils. For more on the research, visit www.sc2020.net.



The Operational Performance Triangles

Strategy alignment is a key step toward excellence in the supply chain, and a triangular framework can help you achieve it.

In the April 2006 issue of *SCMR* I published an article titled “The Essence of Excellence.” While the article’s premise was simple—that excellence just involved aligning supply chain operations to corporate competitive strategy—the article appears to have generated a lot of interest. The article formed the basis of the MIT Center for Transportation & Logistics’ Strategy Alignment (SA) Workshop training module that I’ve been overseeing.

I’ve given multiple presentations and executive education lectures on Strategy Alignment, as well as conducted training workshops at a couple of company sites. The one framework that generates the most discussion is what my colleagues call “The Triangle.” Invariably whenever I discuss it, and overlay competing firms within it, there will be a buzz in the audience as people start asking themselves and their colleagues: Where is our company’s supply chain within it? We never gave it a name in the article; it was just labeled “Exhibit 4: Aligning Operational Performance to Business Goals” and is reproduced here as Exhibit 1.

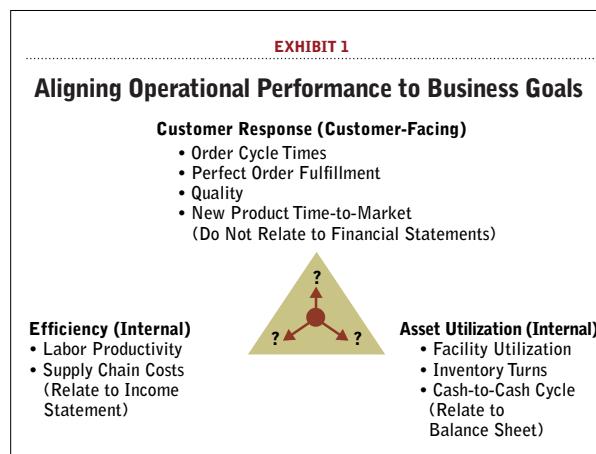
The first premise behind the Triangle is that every supply chain operational performance objective is one of three types: efficiency; asset utilization; and customer response. The first two are internal and directly relate to financial income statements and balance sheets, respectively. The third is what is experienced externally by customers, and does not directly relate to financial statements. The

position of the dot in the triangle represents a balanced focus that is being placed among these three, often competing, types of objectives. A dot close to an edge or corner is meant to convey those types of metrics are being focused on to compete. So if a supply chain is focused on efficiency to maintain competitiveness the dot is close to the lower left-hand corner; if it is more focused on customer response it is shown close to the corner at the top.

The second premise of the Triangle is that a company focused in the middle is not really differentiating on objectives, because they are trying to be all things to all people. Thus, Exhibit 1 shows a dot in the middle with arrows and question marks to convey where a supply chain should focus to support a company’s competitive strategy.

The Customer Response Dilemma

Whenever I do an exercise with managers and ask them where their supply chain per-



formance is within the triangle, they put the dot near the top. After all, don't they care the most about serving customers? Yet as I probe, they'll confess that they are primarily driven to reduce costs and inventories, so their performance focus should be somewhere on the bottom of the triangle. This is a dilemma. While all supply chains focus on costs and inventories, some excellent ones are really more customer-responsive than others, competing on that basis.

To address this dilemma, I've developed a two-triangle approach as depicted in Exhibit 2. There are "absolute" and a "relative" operational performance triangles. The "absolute" triangle relates to the comparison among the operational performance across companies and industries. To compete within an industry, a company must focus on certain objectives to just "play in the game." For example, retailers focus on efficiency so they reside within the lower left of the absolute triangle. While they care about customer response, they just don't expend as much money and resources on customers, because their customers are more interested in price versus value. Meanwhile, capital-intensive process manufacturers must focus on asset (such as plant) utilization so they focus within the lower right.

The "relative" triangle relates to the focus on performance among a "peer" group of competitors. While all focus within the same area of the "absolute" triangle, to compete they need to differentiate by excelling in different areas of operational performance. For example,

in illustrating a retailer "relative" triangle I've always depicted Wal-Mart on the bottom edge, focused largely on cost and asset utilization to maintain their "everyday low prices." Meanwhile, I show Best Buy and Amazon in the top part of the triangle because they spend relatively more on their customers' shopping experience, caring less about maintaining the lowest prices.

Setting Operational Performance Objectives

The two-triangle concept is useful for setting your operational performance objectives (i.e., metrics). To maintain your company's base level of competitiveness within the industry, a set of your supply chain's objectives needs to be at least at parity with competitors'. To get an edge on competitors, however, some of these need to be the best

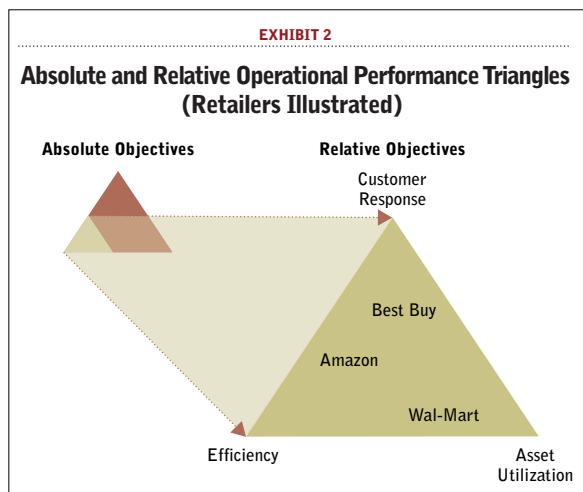
While all supply chains focus on costs and inventories, some excellent ones are really more customer-responsive than others, competing on that basis.

in the industry, as reflected in your "relative" triangle.

Using this approach to set operational performance objectives is straightforward. For example, using a balanced scorecard approach, you might first identify the 7 to 10 operational objectives that your industry competes on. Determine the performance targets for these that will keep your company at parity to its competitors.

Next, using your company's competitive strategy, assess the extent to which your supply chain needs to be best in efficiency versus asset utilization versus customer response. From the 7 to 10, pick the 2 to 3 related objectives to be best at, and set performance targets for these to be the best. To achieve the desired balance, assign each a percentage weight, adding up to 100 percent. Set this way, if the "peer" and "best" performance targets are achieved, your supply chain will be aligned to best support corporate competitive strategy.

Here's the caveat to this approach. While straightforward, it's not easy. Getting a consensus on what is the corporate strategy and the proper competitive balancing of objectives is contentious and time-consuming. However, in the long run it is worth doing, as your company garners more business at the expense of its competitors. ∞





Demand-shaping With Supply in Mind

Supply chain managers must advocate for “demand-shaping with supply in mind,” meaning that demand-shaping decisions aren’t made in isolation of supply issues.

At many of the supply chain events I attend, a slew of speakers advocate demand-sensing and shaping—as do I. Usually, we are referring to these activities in the context of leveraging various downstream demand signals and their associated plans, such as historical point-of-sale (POS), warehouse withdrawal, and distributor/retailer inventory data. Supply chain managers in the audiences must scratch their heads and wonder why we are discussing demand-shaping with them.

After all, demand-shaping isn’t their problem; nor are they directly affected should revenue goals not be met. That is the responsibility of managers in the marketing and sales departments. They are held accountable by the executive team for achieving revenue goals. Their performance reviews, pay raises, promotions, and job security are predicated upon meeting, and sometimes exceeding, revenue goals. That said, while supply-side managers don’t make any final decisions regarding demand-shaping activities, they have important support roles to play. The most important is ensuring that supply is available when customer demand materializes.

To that end, supply chain managers should be advocates for “demand-shaping with supply in mind.” That is, they need to ensure that demand-shaping decisions aren’t made in isolation of supply issues. Generally this involves identifying supply issues, such as an inventory or parts shortage or surplus, and then creating sales programs aimed at ameliorating the issue.

Doing a better job of aligning demand with supply eliminates waste, improves service, and leads to improved profitability—in contrast to only enhancing revenue which demand-side

managers are largely concerned with. During S&OP meetings, supply-side managers should make sure to vet all sales and marketing plans in terms of whether or not they align with potential available supply and with profitability goals.

Supporting Competitive Demand-Shaping

As anyone who has taken a basic marketing course will remember, marketing and sales activities fall under four categories. They are termed the *4Ps of the marketing mix*: 1) Price, 2) Promotion, 3) Product, and 4) Place.

Most supply chain managers have no influence in the decisions made by marketing and sales managers. Yet the ramifications make their jobs harder and often result in increased demand volatility and uncertainty. For example, at most consumer packaged goods (CPG) companies, these types of “self-inflicted” demand variations (due to product promotions) are a company’s dominant source of demand variation. This complicates the job of supply chain managers who favor constancy in demand so they can buy lots of materials and components to take advantage of volume discounts, make long production runs (i.e., make the same product over and over again), and fill up warehouses and load trucks with the same types of goods. Nevertheless, supply chain managers need to support 4P competitive activities. This can happen in multiple ways.

The first P of Marketing (Price) involves establishing and changing product prices. These activities cause significant demand variation and uncertainty depending upon the price elasticity of products and competitive reactions. Establishing the price for a new

product is very risky and leads to significant uncertainty in demand. Revising the price of a mature product is less risky, but still causes significant demand variation. Supply chain managers can support pricing decisions and demand variations and uncertainties in several ways. For example, they can carry material and component buffer stocks, reserve excess manufacturing capacity, and maintain safety stocks of finished goods.

The second P of Marketing (Promotion) involves activities aimed at promoting and selling products to potential customers. As with pricing activities, these cause significant demand variations and uncertainties. Prior to a promotional campaign the primary role of supply chain managers is to fill downstream supply chains with product to cover the often substantial uplift in expected demand.

The third P of marketing (Product) involves establishing and changing the portfolio of products sold, including the introduction of new and reformulated products and the phasing out of old obsolete products. New product launches especially have significant demand uncertainty. Yet it is important to ensure that product is available to satisfy first-time buyers. Supply chain managers need to execute launches by initially filling downstream supply chains with sufficient inventories, as well as help-

As a rule, “demand shaping with supply in mind” involves identifying supply issues and creating sales programs aimed at ameliorating them.

ing to ensure new products are positioned at the points of sale. As a product launch progresses, supply needs to be replenished all along the downstream supply chains, as well as at the points of sale.

The fourth P of marketing (Place) involves establishing the distribution and sales channels through which products are made available for sale. Similar to new product launches, opening a new channel involves very significant demand variation and uncertainty. It involves establishing the ways products will flow and be inventoried throughout a new channel, as well as initially stuffing and replenishing it with inventory. For example, establishing an online Internet sales channel often involves deploying new order fulfillment and supply strategies, such as piece picking, packing, and shipping in customer-facing warehouses.

Advocating “Demand-Shaping With Supply in Mind”

The best example I know of a supply chain group that successfully implemented “demand-shaping with supply in mind” is Dell, during its heyday. We researched its

practices during the first phase of the MIT Supply Chain 2020 Project that involved research into excellence. Every day a team of Dell managers met to discuss whether or not to revise the merchandizing of products sold online via the website. The team assessed the “consigned” inventories of components at supplier warehouses. If they uncovered components that had excessive inventories, the team would alter the daily list of specially promoted items to include computer configurations that included these components. In contrast, if they uncovered components that had inventory shortages, the team would “de-promote” them. This meant taking them off the daily list of specially promoted items, raising their prices, and increasing their delivery lead times. Essentially the Dell team was running a quasi-S&OP process daily.

Remember what we stated at the outset: As a rule, “demand shaping with supply in mind” involves identifying supply issues and creating sales programs aimed at ameliorating them; thereby achieving a better alignment of supply with selling activities and enhanced profitability. If there is an excess of materials and components, underutilized plants, or a surplus of finished goods inventories, supply chain managers ought to work with sales and marketing managers to develop programs aimed at correcting these excess supply situations that might result in significant inventory obsolescence and write-offs. On the other hand if there are shortages of any type of supply, then marketing and sales should be convinced into changing demand plans to not aggressively sell products impacted by the shortages. If demand winds up exceeding supply for these products, supply chain managers will have to execute emergency procedures to meet the excess demand; and this will lead to increased costs and reduced profits. These include procedures such as paying higher (e.g., “spot market”) prices for procured materials and components, expediting procurement orders, adding emergency/overtime shifts at production plants, and expediting customer shipments.

Supply chain managers must recognize that they have a role in shaping demand. In addition to their primary role of ensuring that sufficient supply is in place to meet demand generated by marketing and sales activities, they need to ensure that demand is most profitably aligned with potentially available supply. This means that demand-shaping should be done “with supply in mind,” and not done independent of supply considerations. Joint decision-making with demand-side managers should be incorporated within integrated supply-demand planning processes, such as in the S&OP process. Doing so will shift sales and marketing goals from just maximizing revenue towards maximizing profits as well—and that is a good thing. ☺☺☺



Optimally Bridging Supply and Demand

Typically, supply and demand managers are on opposite sides of a Grand Canyon-sized chasm. Optimized Demand Management can help close that gap.

As stated in my April 2007 Insights column, “The noblest goal (and real purpose in life) of any supply chain organization is to optimally match supply and demand over time. I define this as optimized demand management (DM).” To foster optimization, supply chain organizations need to put on “corporate hats” when coordinating the activities of the departments involved in matching supply and demand. The reason: these always balance in the long-run, but not necessarily in the best interests of the enterprise. DM processes represent the bridges that cross wide chasms that exist among supply- and customer-facing managers (Exhibit 1). Optimize these processes and they can unlock your supply chain’s potential to help win rather than just support customer demand.

My first encounter with the chasm that divides the supply and demand sides took place as a marketing manager in the Field Services Division of

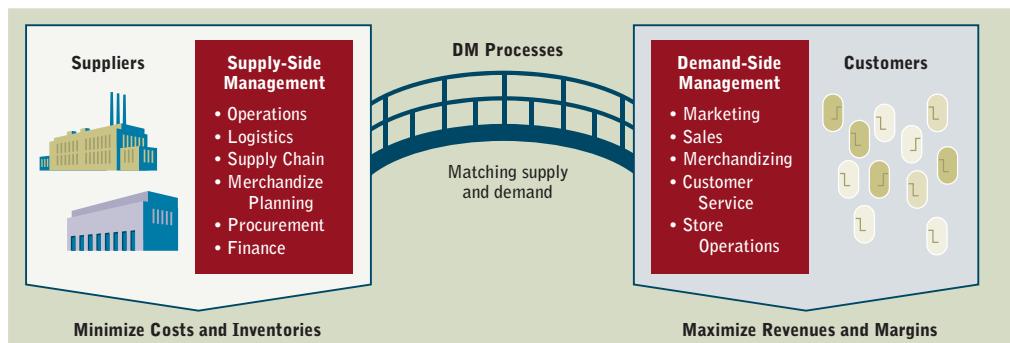
a computer-maker. I received a message from the VP of Manufacturing & Logistics asking if we could meet to phase out services being marketed on our older products. The parts needed were getting prohibitively expensive and resource-intensive to make, stock, and replenish. I told him I’d think about it and get back to him. I never did. Why?

Upon reflecting, we were generating revenues on these products and since my goal was to generate revenue I didn’t care much about costs and inventories, so why take a negative hit on revenues? I decided I was too busy to call back.

When I switched from a customer-facing career to a supply-facing career in 1990, I started feeling guilty at not taking an enterprise view. My ensuing experiences showed that I was not unique, and that there were abundant opportunities to cross the chasms with improved DM processes. These would involve more joint decision-making among

EXHIBIT 1

Demand Management (DM) Processes Bridge Supply and Demand Managements



Maximize Sustained Profitability and Other Corporate Goals

Source: L. Lapidé, "Demand Management: Optimizing Supply and Demand Over Time", an MIT Center for Transportation & Logistics (CTL) Symposium, September 12-13, 2006, Cambridge, MA

When I switched from a customer-facing career to a supply-facing career, I started feeling guilty at not taking an enterprise view.

supply-side managers (focused on minimizing costs and inventories) and customer-facing managers (focused on maximizing revenues and margins). This collaborative approach led to decisions that maximize sustained profitability and other corporate goals.

Supply chain management (SCM) organizations should focus on addressing these types of supply-demand decision-making processes, and optimization should be their mantra. What are the DM processes that supply chain managers should focus more on?

In defining DM to simply be the “matching of supply and demand over time,” the phrase “over time” is important because it means at every instance of time, including during long, medium, and short-term planning as well as at every other moment of time. It extends beyond the ubiquitous Sales and Operations Planning (S&OP) and retailer-based Merchandise Planning and Allocation (MP&A) processes. It also includes balancing demand and supply between planning cycles. Three types of important DM processes are described below.

Long Term Supply-Demand Matching

Customer-facing managers work directly with customers to tailor service policies often without sufficient input from supply chain managers. However, the policies, such as those dealing with delivery requirements, co-managed inventory programs, and the sharing of POS data, greatly impact supply-side operations. As part of these efforts, demand-side managers also often unilaterally drive customer segmentation decisions.

Setting service policies and segments represent long-term aspects of supply-demand matching, since they set the stage for how demand will take place and the resources needed to service customers. The processes offer opportunities to jointly optimize future supply and demand, while giving supply chain managers an opportunity to take on expanded responsibilities. Their role would be to help tailor services to customer segments with the intent to optimize long-term profitability and meet strategic corporate goals.

Medium-Term Supply-Demand Matching

S&OP and MP&A represent medium-term demand management planning processes that tactically and collaboratively balance supply and demand plans. Other related DM processes include promotions and new product launch planning.

As suggested in my April 2007 column, these are natural processes for supply chain managers to lead because they involve coordination among supply and demand-side organizations. In addition, SCM managers should drive the processes toward making decisions that optimize profitability and meet other corporate goals.

Short-Term Supply-Demand Matching

Matching supply and demand in real time is a key responsibility of customer service and sales reps. As orders come in these individuals routinely quote customer delivery dates. Accurate estimates of these are needed to properly set each customer's expectation to a promise that can be kept.

Estimating promise dates represents an opportunity to optimally match supply and demand in the short term. Accuracy ensures efficient order fulfillment, with minimal expediting. It requires planning out how each order will be filled; assessing what supply will be available to meet its demand (in the context of expected future demand). In addition, customer priorities are to be considered when scarce supply needs to be allocated.

Often, optimization is not the norm. Either orders are filled on a first-come-first-served (FIFO) basis or according to the sales rep who screams the loudest for the earliest delivery promise dates for his/her customers. Similarly, rather than optimally planning order fulfillment, manufacturing or logistics managers often just quote standard lead times, leading to promise dates that are not necessarily optimal.

While SCM managers typically aren't in the business of promising delivery dates on a daily basis, they do have an important role to play in making sure that these supply-demand matching decisions are made in a more optimal fashion. This includes conducting in-depth and unbiased analyses when setting up the customer priorities that drive promising decisions.

I believe that optimizing the DM processes represents the next phase in the evolution of supply chain management, leading to “commercialized” supply chains. Certainly, supply chain managers can continue to be heroes in their company if they keep driving out costs and inventories. But that's the easier path. The nobler course is to get more involved in building the DM processes that can make their supply chain a competitive weapon that helps customer-facing managers win battles in the marketplace. ☺☺



Segment Strategically

All too often companies segment informally in less than optimal ways—meeting customers' demands for additional services without analyzing whether they will be more profitable.

As part of my Demand Management (DM) research, I've spent a fair amount of time investigating company practices in customer segmentation and differentiated customer services. With DM defined as "the matching of supply and demand over time—including both during and between planning cycles," these practices are strategic in nature since the alignment of services (that is, supply) to customer segments (that is, demand) is not frequently done. Optimal alignment involves a purposeful focus on sustained profitability growth and requires balancing the incremental costs of providing differentiated services with the long-term growth of revenues and margins generated.

However, all too often companies segment informally in less than optimal ways—meeting customers' demands for additional services without analyzing whether they will be more profitable. Haven't you heard someone say, "If Wal-Mart wants something they get it?" Of course, for free. This is "squeaky-wheel-gets-the-grease" segmentation, in which complimentary services are provided to those customers (or sales reps on their behalf) that scream the loudest or threaten the most. This type of segmentation leads to hampered profitability in the long run.

What is Customer Service Segmentation?

Conceptually, customer service segmentation involves identifying groups of customers for which a company will provide sets of services. It works on the premise that all customers are not created equal and should not necessarily all get the same services. Exhibit 1 depicts an alignment of differentiated services to customer segments with the left-hand triangle showing a build-up of services aligned to each customer segment depicted in the triangle on the right-hand side. It shows lowest-tier customers only getting basic services, mid-tier customers additionally getting some special services, and top-tier customers getting these plus some high-level value-added services.

One of the most difficult aspects of segmentation, however, is identifying which customers should be in each tier. A survey I conducted with Larstan Publishing, prior to the launch of the Demand Management Solutions Group, queried managers on what customer criteria were being used by their company to segment its customer base so as to provide specialized and customized services. Here is a summary of the survey results:

- 43 percent used importance (such as strategic, long-term contract customers)

- 38 percent used sales dollars
- 34 percent used channel
- 27 percent used profitability
- 24 percent used delivery time requirements
- 24 percent did not segment

Thus, while segmentation appears to be prevalent, with about three-quarters of respondents saying their companies segment, the results support the fact that big, important customers largely drive segmentation, with service requirements playing a lesser role.

Optimal Segmentation

The basic concept around optimal segmentation is the understanding that services should be matched to customers to achieve long-term strategic goals, such as sustained profit-ability growth. Optimality will depend on the criteria used to segment the customer base as well as the services offered to each segment, so that customers (demand) are most profit-

ably matched with services (supply). In Exhibit 1, service-segment alignments are depicted as double-sided arrows to represent that customer needs and service offerings are aligned in accordance with strategic “push-pull” objectives.

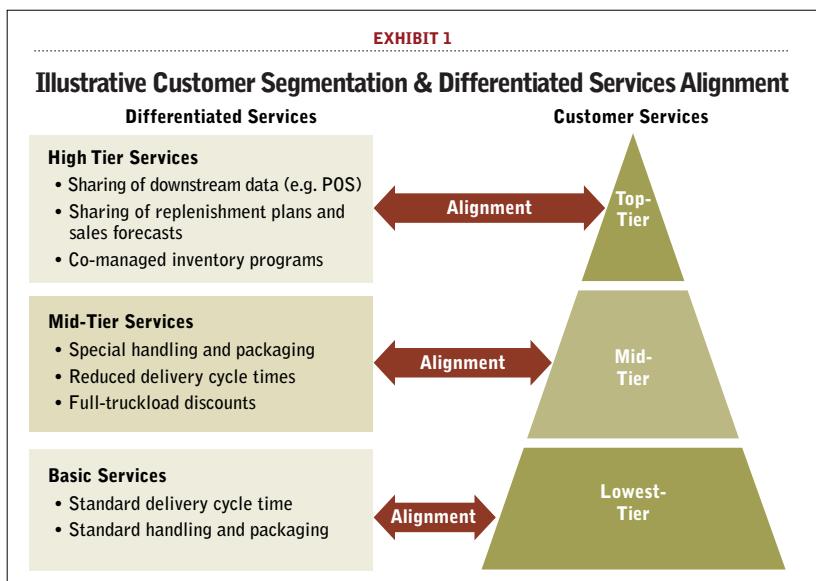
For example, if segmentation criteria are based only on customer size, the alignment will be focused on maximizing revenues, not profit-ability. This would be represented in Exhibit 1 as “pull” alignment, with arrows going from right to left to depict customers dictating the segmentation and services, with little regard to their impact on a company’s costs or inventories. Hence the biggest customers get anything they want and services take a back seat—often given away—to driving product sales.

On the other hand, if customer segments are developed using just customer service requirements, the matching will be focused more on efficiencies, less on sales. Hence companies will

tend to “push” the services they are most efficient at rather than the ones customers really need. In Exhibit 1 this would be depicted with alignment arrows going from left to right.

A process manufacturer I know of is a good example of a company that is trying to achieve optimal segmentation. This company segments its customers into three tiers with the top tier being big global accounts, mid tier being big regional and rapidly growing accounts, and the low-est tier being the rest. In contrast to most companies, it provides more services to the mid rather than the top tier accounts. The reason is that big customers only buy on price, which tends to erode profitability. Strategically the company decided to wean themselves off these customers and move to generating more business from mid tier accounts that don’t nickel-and-dime them over pricing and are growing faster. These represent more opportunity for long-term profitability growth.

Summarizing, optimal customer service segmentation should be done formally and purposefully to meet strategic goals. To do this requires segmenting customers on criteria that are both demand- and supply-oriented. This segmentation approach makes more business sense than giving everything away to the biggest and baddest customers. ☺☺





S&OP: The Linchpin Planning Process

Sales & Operations Planning provides the key connection between strategic planning and operational execution. It's a critical factor in how well a company achieves its business objectives.

Once advised an MIT graduate student who was conducting research comparing the Sales and Operations Planning (S&OP) processes across manufacturing industries. One day he came into my office, a little confused after interviewing a consulting firm that told him they consider strategic planning as part of their S&OP consulting services.

This perspective differed from my view that S&OP is a medium-term, tactical planning process, whereas strategic planning is a long-term planning process. Having been a consultant, I perhaps too glibly posited that this firm was including strategic planning in S&OP implementations to make the consulting projects bigger deals. In any case, whenever I discuss S&OP, I refer to this anecdote in pointing out the differences between the planning processes.

Recently, an ex-consultant countered that sometimes it is not them who add strategic planning requirements to a consulting engagement. Rather, clients sometimes add a strategic planning component to their request-for-proposal (RFP). So the consultant includes strategic planning in their proposal, often knowing it might jeopardize a successful S&OP implementation. They recognize that a heavy concentration on strategic planning will drain time and resources away from the S&OP implementation. So invariably, most consultants will downplay the strategic planning aspects of the engagement and concentrate on doing the myriad things needed to implement an S&OP process.

One other observation about the relationship between strategic planning and S&OP bears mentioning. I'm familiar with one S&OP

process team that is asked to review strategic plans; thus, they feel that their job includes strategic planning. Their perspective can be risky, too, because it often draws too much attention on long-term factors that are immaterial to consider during a medium-term S&OP process.

Levels of Planning

In examining S&OP's proper positioning in planning, let's look at the three business planning levels and how they interplay. We start with a definition. According to wikipedia.org: "A plan should be a realistic view of the expectations. Depending upon the activities, a plan can be long range, intermediate range, or short range. It is the framework within which it [i.e., the plan] must operate."

Consistent with this definition, the three levels of planning are: Strategic (long-term), tactical (medium-term), and operational (short-term). We go into more detail into each of the three levels below. But to conceptually grasp the differences consider the planning of a family vacation that involves several days' driving distance from home.

Strategic planning addresses such issues as how to enjoy ourselves during the vacation, what roads to drive, and where to stay and eat. Responses to these issues set the strategic plan or "blueprint" for the vacation. Tactical planning deals with updating the vacation plan based on whether the trip is going according to the blueprint. Plans might change, for example, because of travel delays. Lastly, the operational planning, which is done daily, covers the actions to be followed each day.

Two major differences among planning

levels include: (1) the “horizon,” or how far out in time the planning extends and (2) the “time buckets,” or granulations in time. Strategic plans have long planning horizons, are developed at aggregated levels, and change on an ad-hoc basis. Tactical plans have medium-term planning horizons, are more detailed, and are changed routinely. Operational plans have short planning horizons, are the most detailed, and are changed most frequently.

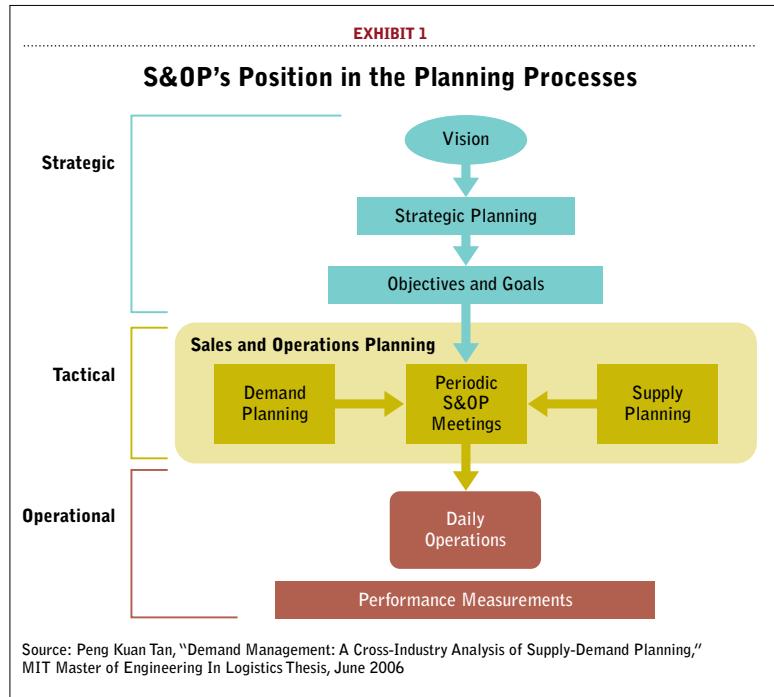
S&OP Connects Strategy and Operations

Exhibit 1, which was developed by the graduate student I mentioned in the opening anecdote, depicts how and where S&OP fits among the planning processes. As the graphic shows, S&OP is a routine tactical planning process in which supply and demand (i.e., marketing and sales) plans are synchronized or matched. The S&OP process is guided by output from strategic planning and, in turn, drives daily operations. This makes S&OP the “linchpin” planning process, connecting strategy to execution. Obviously, this is a critical planning process for any business. The accuracy of S&OP plans invariably determines how well a company achieves its strategic operational goals and objectives.

Drilling down into each planning level we find that:

- **Strategic Planning** looks out over a long planning horizon with time-buckets in years. It involves the development of a roadmap to the future and typically has a planning horizon of from three to five years (or longer in capital-intensive industries). Strategic planning differs from other planning processes because business environments change significantly in the long-run. Macro factors alter a competitive landscape as well as a company’s markets, products, channels, and supply base. Demand forecasting has minimal use in strategic planning as the plan is developed based on a company’s “vision” of itself in the future and is driven by future scenarios of the business environment. For example, a company’s competitive vision might be to be the lowest-cost provider in the industry (such as Walmart strives to be), the most innovative (Apple, for instance), or be the highest-quality provider (a Sony objective). As part of the strategic planning process, companies develop roadmaps of the goals and objectives to be achieved over time. Performance measurements and targets are set against these objectives to gauge progress against these goals.

- **Sales and Operations Planning (S&OP)** is a routine tactical planning process that typically looks out over a six-month to two-year horizon, using time-buckets



in months and weeks. The outputs are sets of demand plans that delineate the selling, marketing, and new product launch activities over the horizon. Also, a set of supply plans are developed that delineate activities to source, supply, and manufacture goods as well as inventory them. S&OP plans are driven by demand forecasts. As shown in Exhibit 1, the matching of the demand and supply plans should be driven by the strategic goals and objectives. S&OP performance measures assess whether these goals are being met and provide feedback to the strategic planning process, helping to evaluate whether things are progressing as planned.

- **Operational Planning** typically has a one to two-week or a single-day horizon with time-buckets of days or hours, respectively. Operational planning is driven by the S&OP demand-supply plans. Outputs of the process include the schedules for various sales, marketing, and supply chain activities. For example, they might include a daily production schedule for a plant, a one-week transportation schedule for order deliveries, and a two-week schedule of customers to be called on by sales reps.

While the planning levels are unique with respect to horizons and time buckets, they need to be integrated as prescribed above to ensure that operations align to strategy. Each should be treated distinctly because each (in its own right) is important to sustaining performance. Any attempt to do two of them together within a single integrated process—such as strategic planning with S&OP—dilutes the efforts and effectiveness of both planning processes, and puts achieving strategic goals and objectives at risk! ☹☹



Making Promises You Can Keep... Optimally

Optimized Order Processing and Fulfillment (OP&F) is a proven technique for pleasing customers by giving them more accurate information on their orders.

OVER THE COURSE OF WRITING “INSIGHTS” I have periodically discussed aspects of my research into Demand Management (DM), defined as “the optimized matching of supply and demand over time”—with matching occurring during planning and between planning cycles. The processes previously covered included Customer Service Segmentation and tactical Supply-Demand planning, also termed Sales and Operations Planning (S&OP).

Now it’s time to discuss my favorite of the three DM processes: Order Promising and Fulfillment (OP&F). OP&F is important because it occurs following the moment-of-truth for supply chain managers—when a customer expresses an interest in placing an order and generates revenue.

Doing OP&F accurately and optimally involves making a promise to a customer based on tactical supply-demand plans and on the customer expectations established from services offered to the customer’s segment. The OP&F process brings together all of the DM processes in an integrative fashion, yielding the greatest benefits.

Inaccurate and Non-Optimal Promising

I’ve presented results from my multiyear research initiative into optimized DM on a few occasions. To be provocative (and ensure that the audience is awake), I begin by pointing to surveys showing that the majority of companies use standard manufacturing lead times to give the customer an estimate of when an order will be filled (for example, when shipped or delivered). Yet the estimate

is a lie and a promise that can’t necessarily be kept. When a customer service representative relies solely on product lead time estimates, his or her response to the customer is based on average, typical, or inflated historical lead times that do not reflect the current and future availability of supply.

Let’s say, for example, that a customer service rep provides a quote of one week in which to ship a product to a customer. What if the product is sitting in a warehouse somewhere, ready to be shipped immediately? On the other hand, perhaps the product is currently out-of-stock and manufacturing has not scheduled it to be made during the next two weeks? Unless the production schedule is revised, the product wouldn’t be shipped for at least two weeks.

In addition, the quote was not optimal because if the product was immediately available, it might be shipped sooner than the customer expected it or held longer than desirable in inventory. Meanwhile, if the product was not currently available and not scheduled to be manufactured, then the order would either be shipped late or schedules would need to be altered to fill it on time, thereby disrupting production and increasing costs.

Accurate and Optimal OP&F

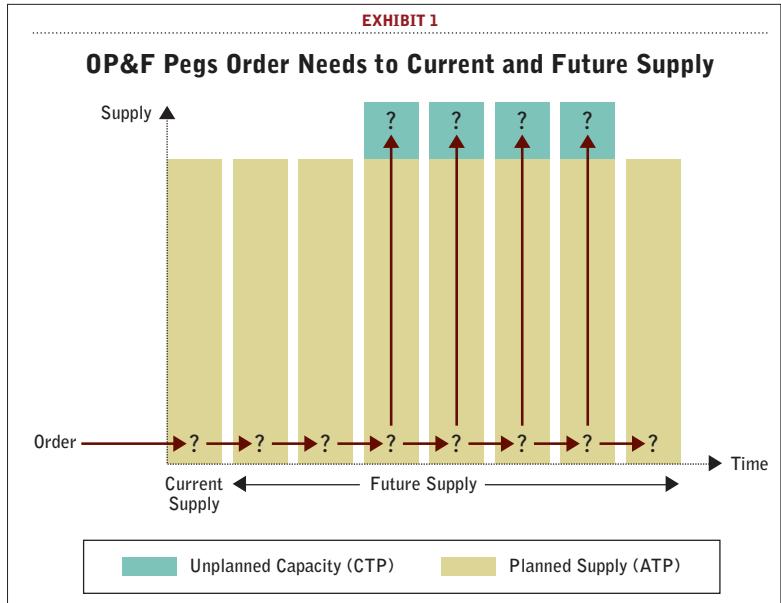
Accurate Order Promising & Fulfillment requires developing a plan for filling an order based on current and future supply availability, and once planned, “pegging” the allocated supply to that order so that it cannot be used to fill another order. This is the basis for what software companies term available-to-promise (ATP) and capable-to-promise (CTP) functionalities.

Exhibit 1 graphically depicts these functionalities, showing how supply over time is used to plan order fulfillment. Current Supply is that in inventory. Planned Supply, which is used to enable ATP functionality, represents the supply expected from scheduled plant capacity and the planned use of materials and components. Unplanned Supply is used to enable CTP functionality and represents supply that would be expected from using unplanned (or excess) plant capacity, materials, and components. The time dimension could be in months, weeks, days, or hours depending on the dynamic nature of supply replenishment and order frequency.

The ATP/CTP logic for an order requiring immediate fulfillment, for example, is as follows. Current Supply is checked to see if it can be used to fill an order. If not, the logic moves sequentially over time (to the right) to find the earliest time when supply is available. When found, that supply is “pegged” to the order. During a period in which there is Unplanned Supply, that Unplanned Supply also is checked to see whether it should be used rather than deferring the fulfillment to the next period. This decision is often predicated on the profitability or the importance of the order because Unplanned Supply is more costly than Planned Supply (which might require overtime and expediting, for example).

These ATP/CTP functionalities are more optimal than typical OP&F methods because they enable more accurate promising. To get greater optimality requires prioritizing customers so that the more strategically important ones are given priority. Important customers, for example, might generate more profits for a company, or be the biggest or fastest growing customers, or be less costly to service. Exhibit 2 depicts the optimized OP&F functionality used by a case-study company in an industry that routinely experiences short supply.

Similar to the first exhibit, Exhibit 2 shows Planned and Unplanned Supply over time. However, it also shows those periods where products are put “on allocation” due to limited supply. Customers are segmented into three tiers in order to prioritize supply and to ensure that strategic customers are given adequate supply, when limited. During the first-in-first-out (FIFO) periods, supply is equally available; however, in “on-allocation” periods an order can only draw supply allocated to the customer’s tier. Using this logic, the company in our example provides bet-



ter fulfillment services to its most important Tier-1 and Tier-2 customers.

In summary, Order Promising & Fulfillment is most accurate and optimized when promising is done by planning an order’s fulfillment using customer-prioritized tactical supply plans that are consistent with customer service segmentation strategies. Enabling this requires that supply chain planning systems be integrated with order management and customer contract systems—and this type of integration is not prevalent. That said, managers should consider implementing optimized OP&F because more accurate promising will please customers, while at the same time providing greater benefits overall. And what could be wrong with doing that? ∞

