

SUPPLYCHAIN

MANAGEMENT REVIEW®



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IN THE NEXT FEW MINUTES, a customer will double her monthly order, and workers in the office, on the assembly line and at the dock will work on the same page to replenish raw goods, reduce queues and speed up the cycle time so supply can meet demand and shake its firm yet happy hand.

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MANAGEMENT REVIEW

FEATURES

10 Getting Back to Basics

Even the most seasoned supply chain manager needs to revisit the basics from time to time. The reason: the basics of our profession—purchasing, transportation, warehousing, reverse logistics—keep evolving as supply chains become more global and complex. This special report from the University of Tennessee puts the basics of supply chain management into that broader context.

18 Driving Cash Flow with Supply Chain Finance

Supply chain finance has the dual potential to improve a supplier's financial viability and reduce a buyer's purchase costs and internal procurement expenses. And importantly, it's an invaluable tool for improving the cash operating cycle, a key factor in business performance. Stephen Timme of FinListics Solutions and Erik Wanberg of Wells Cargo Capital Finance explain.

26 Supply Chain Security in a High-Risk World: An Interview with Barry Brandman

SCMR interviews Barry Brandman of Danbee Investigations, an authority on protecting the supply chain against disruption. Brandman offers his advice on how to prevent supply chain disruptions from all sources—inventory theft, cyber theft, product tampering, fraud, terrorism, and more. In a world where the potential for supply chain disruption is ever present, a prevention mindset needs to prevail.

32 The Promise of Advanced Supply Chain Analytics

Most supply chain software tools respond to historical data—that is, what happened in the past. But today a more predictive approach is needed, one that gives supply chains the ability to sense-and-respond to events as they happen.

As Jerry O'Dwyer and Ryan Renner of Deloitte Consulting tell us, advanced supply chain analytics provides this powerful capability.

38 Bringing Under-Performing Suppliers up to Speed

There's a strong case to be made for turning supplier development into a core discipline, affirm the experts at The Boston Consulting Group. Doing so can help create competitive advantage by enabling suppliers—particularly those low-cost suppliers in emerging countries that are currently underperforming—to eventually produce at world-class levels.

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The Basics and Beyond

No question about it, we have a lot of sophisticated and veteran supply chain professionals who read *SCMR*. Certainly, over the course of their careers, these individuals have demonstrated a knowledge and mastery of the fundamentals of our profession. But interestingly, every time we run an article that covers the basics of supply chain management—or conduct a reader survey of topics of interest—we’re pleasantly surprised by the overwhelmingly positive response the “fundamentals” receive.

There’s got to be a reason for this counterintuitive result. I haven’t put it to deep analysis yet, but it’s logical that information on the basics is obviously important to persons new to the profession or those who have entered the supply chain space from another business discipline such as marketing or finance. As for the readers who have been in the field for a while, my sense is that they are always interested in revisiting the fundamentals as a way of affirming that their tactics and strategies are well grounded.

So that’s the thinking behind our feature article this issue on Back to Basics, written by logistics and supply chain educators from the University of Tennessee. The article, which is synthesized from a seven-part series that we ran on the topic online (www.scmr.com), examines basics like sourcing, transportation, warehousing, and reverse logistics, but in the context of today’s more complex and increasingly global supply chain. We hope you find it a valuable resource in the year ahead.

And while our first article examines the basics, another feature probes the opposite end of the spectrum—a concept called advanced supply chain analytics. As

Jerry O’Dwyer and Ryan Renner of Deloitte Consulting relate in their forward-looking piece, advanced supply chain analytics represents a new way of analyzing and acting upon supply chain data. Traditional methods have typically been responsive; that is, you analyze what happened in the past for guidance on what to do in the future. With advanced analytics, data is analyzed in near real-time, in order to respond to changes as they happen—a predictive approach.

As you continue to master the basics or contemplate the possibilities of advanced supply chain analytics in your organization, we wish you great personal and professional success in what promises to be an exciting and productive year ahead.



Frank Quinn, Editor
fquinn@ehpub.com

Introducing “Benchmarks.” To help gauge how well you’re doing on executing the core competencies, *SCMR* this issue introduces a new section called “Benchmarks.” Produced by APQC, a leading research and benchmarking organization, this regular feature will focus on specific metrics that are critical to supply chain performance. The first installment, for example, examines key metrics like lead time and on-time delivery. In particular, it contrasts how companies with SRM programs in place do on these key metrics compared to those without fully developed SRM programs.

SUPPLYCHAIN MANAGEMENT REVIEW

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Cheap Oil Is History—Really!

The supply chain community is finally coming to the realization that they need to act now to reduce fuel costs and consumption.

Dr. Lapidé is a lecturer at the University of Massachusetts' Boston Campus and is an MIT Research Affiliate. He welcomes comments on his columns at llapide@mit.edu.

THE RUN-UP OF OIL PRICES since late 2004 tended to get masked by increasing short-term volatility. Whenever prices dropped, optimism reigned that we might be getting back to the Cheap Oil Era when low oil prices enabled managers to implement supply chains that were global, fast, responsive, and relatively inexpensive.

Recently I watched a show on CNBC's *Executive Vision: Leadership in Action* series titled "Global Logistics." The program featured logistics luminaries from MIT, service providers, and others addressing global supply chain issues such as energy and pollution. Their views indicated that the industry (especially the logistics providers) has finally come to realize that Cheap Oil is dead and that supply chains will need to change in the wake of its demise.

This column is my fifth discussing the end of Cheap Oil and its impact on future supply chains. It represents what seems to be morphing into an annual update. The first two columns were written in early 2007. The initial column, which showed a crude oil price chart from 1980 to late 2006 (updated in Exhibit 1 here), argued that we were no longer in a period of Cheap Oil, as "real" prices for a barrel of crude were steadily rising starting late 2004. The second column of 2007 talked about the pervasiveness of oil in supply chains and argued that changes were needed to "squeeze oil out of the supply chains," the result of almost 20 years of inexpensive oil.

In 2009, I wrote that while oil prices had skyrocketed to \$147/barrel, and then plum-

meted to the low \$40 range, the low-price was almost twice the "real" price during Cheap Oil. Moreover, the price would be short-lived because it was precipitated by the Great Recession. Last year, I wrote: "With economies showing improvement and oil prices rising to \$70 to \$80 per barrel—almost twice the price at the time of last year's column and three to four times more than during the Era of Cheap Oil—I feel compelled to write about energy efficiency again." Almost one year later, oil prices have climbed to the high-\$80 range. Thus, I write again.

Logistics Providers Get the Message

This time I write with a different spin because logistic providers are no longer fooled by the volatility in oil prices, and recognize the steady climb in oil prices (as displayed in Exhibit 1). The price rise is due to increased global demand for oil from developing economies as well as the increased cost of extracting oil from new and more difficult places. One could argue that the recent BP oil spill in the Gulf highlighted the extra costs that will be incurred by drilling in places never drilled in before—costs relating to additional safeguards and the use of innovative drilling techniques.

At the 2010 Council of Supply Chain Management Professionals Annual Conference, Charles L. (Chuck) Taylor received the Council's Distinguished Service Award. Among his other career accomplishments, Chuck was cited for his role in highlighting the end of Cheap

Oil. (I can remember joining Chuck on a panel discussing the topic at CSCMP's annual conference back in 2006.) The council praised Chuck for being one of the first to point out oil price rise issues to logistics managers, and why they were important.

Comments made by logistics providers on the "Global Logistics" show I mentioned above present further evidence that providers understand the new realities of fuel costs. The CEO of Maersk Line discussed a program called "Slow Steaming" that his company was the first to implement. Since embraced by much of the ocean carrier industry, the program entails slowing down an ocean vessel's speed by 20 percent to save on costs and energy. While this adds two to three days to a vessel's travel time, it is justified by a 40 percent reduction in fuel consumption. In a similar vein, when discussing the future 10 years out, the head of UPS said on "Global Logistics" that while he has spent most of his career speeding up supply chains, he now may be slowing them down.

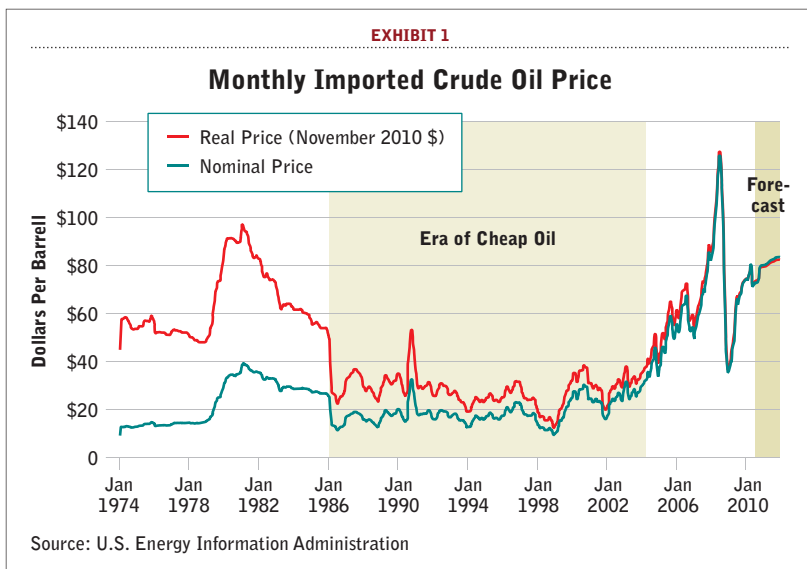
Shippers Need to Get on Board, Too

It is not surprising that logistics providers are among the first to recognize the need to act on reducing fuel costs and consumption. Fuel affects their operating costs in a very significant and direct way. For the service providers, the desire to slow down supply chains for greater energy efficiency and cost savings is more compelling than for shippers. Shippers don't directly see fuel costs hitting their operating costs; they only see what providers charge them.

Providers, however, constantly do their best to keep pricing competitive. So increased energy costs get absorbed as long as possible and are passed on to shippers only when absolutely necessary—usually via a price increase or a reduction in service. However, providers can't implement energy conservation programs unless shippers agree with these initiatives. The Maersk CEO pointed out that his customers agreed to "Slow Steaming" only after the ocean carrier guaranteed more reliable delivery to make up for an extended delivery time.

With the death of Cheap Oil, shippers need to part-

ner with their logistics providers to conserve energy, and to keep pricing and service levels reasonable under the new regime of more expensive and increasing oil/fuel costs. This means not "whipsawing" their service providers with last-minute changes to their needs. Shippers should be doing their best to give providers ample notice of future logistical needs and to reduce the volume of expedited shipments through better co-planning. Further, shippers need to work with providers on programs like "Slow Steaming" that slow down their supply chains so goods are moved at lower rates and use more energy efficient transport modes (for



With the death of Cheap Oil, shippers need to partner with their logistics providers to conserve energy, and to keep pricing and service levels reasonable.

example, ocean rather than air, and rail and barge rather than truck and parcel).

Of course, the kinds of programs we're talking about here will likely increase lead times and could run counter to shippers' JIT programs in ways that might increase in-transit and safety stock inventories. However, implementing such energy-conservation initiatives would better align supply chains with future oil prices, tempering long-term supply chain costs. Of course, a secondary benefit is that such programs also reduce environmental emissions—and these would help to save the Earth!

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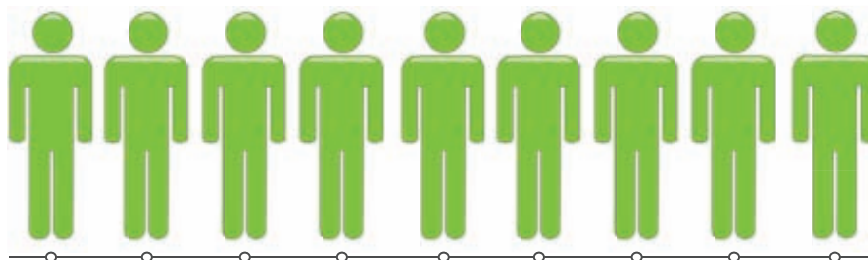
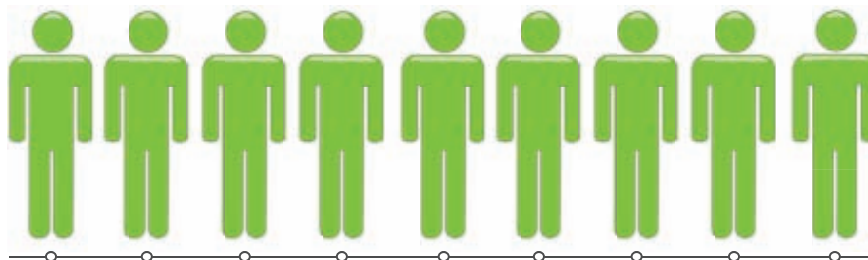
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PEOPLE WHO ARE WRONG



 = LOTS



Spirited Leadership: Michael Regan

By John Kerr

If you're trying to locate Michael Regan, the question can never be: "Where's Mike?" The much more pertinent question is: "Where isn't Mike?"

Regan is unabashedly an "everywhere man." He's in the office, continuing to run TranzAct Technologies, Inc., the logistics software company he co-founded in 1984. He's regularly on the road, meeting customers, suppliers, and partners. He's at trade shows and conferences, discussing today's tough logistics challenges with his industry peers.

He's an active board member at other companies. And he serves on the boards of numerous industry organizations including the Council of Supply Chain Professionals (CSCMP), the National Industrial Transportation League (NITL), NASSTRAC (the shippers' strategic transportation council), and the Transportation Intermediaries Association (TIA.)

We're not finished yet. Mike Regan is an active member of the American Institute of CPAs, and of the Illinois Society of CPAs and he belongs to the Executive's Club of Chicago, the Institute for Supply Management (ISM), and more. He also authors a regular blog for *Logistics Management* magazine. And he still manages to find time to serve on the boards of ministry-based organizations such as Youth With A Mission and The Center for Faith Walk Leadership.

"I find the time because it's an issue of priorities," explains the TranzAct chairman and chief executive. "The metric I use is 'do I get more out of it than I give?' I give a lot to those organizations, but the returns are fantastic. The insights that I've gained, the friendships I've made—that's what make it all worthwhile."

The "Servant Leader"

This tireless networker is the model of the "servant leader"—the kind of person for whom giving is not done with gains in mind. Ask him for his definition of leadership and he'll tell you that it's all about influence—about the ability to influence others to achieve an objective, whether agreed upon or not. Ask him to say what distinguishes exceptional leaders from others, and he'll cite an attitude of serving others as one of the three essentials.

This "other-oriented" mode of leadership involves a deep understanding that the boss is there for the employees, not the other way round.

Regan doesn't pretend that it's easy to acquire, let alone maintain, that mindset. "You have to continually remind yourself of that," he says. "It was very difficult for me to understand 15 to 20 years ago."

Regan's other two leadership essentials: integrity and competency. He questions the value of



Integrity, competency and "servant leadership" are core tenets of Mike Regan's leadership philosophy.

John Kerr is a special projects editor for *Supply Chain Management Review*

ethics courses, refuting any idea that ethics can be taught if they aren't already part of an individual's moral fiber. And he notes that employees have a right to expect competent command, rooted in an ability to "put the pieces together" and to extend influence in directions that employees consider worthy.

The TranzAct chief is endlessly enthusiastic about all things supply chain. And he has high praise for the improvements in professionalism that he has seen among supply chain managers in the last couple of decades. "One of the things I love about supply chain is that you get to connect all the dots [between different business functions]," he says. These days, he observes, supply chain management is being seen as a core corporate discipline, and as such, it is attracting a higher caliber of individuals. Because the supply chain touches functions as varied as manufacturing, purchasing, and finance, Regan argues it is the ideal training ground for tomorrow's captains of industry. He is quick to cite examples such as Mike Duke, until recently chief executive of Walmart, who came up through the supply chain ranks.

One of Regan's regular talks is called "Career Insurance." It's a talk he gives to supply chain professionals at nationwide events as well to entrepreneurs at the local level. Giving a nod to Stephen Covey's concept of "sharpening the saw"—the seventh of the famous seven habits of highly effective people—Regan talks about making conscious decisions to invest in yourself. His theme is aimed particularly at mid-career individuals who may feel that they have stalled professionally. Regan's response is that it is never too late to invest in and build your career.

He recalls a time early in his entrepreneurial career with TranzAct when he expressed doubts to a mentor about whether he was up to the task of lead-

ing the fast-growing company. The mentor's response was simple: "If it's to be, it's up to me"—the "me" in the rhyme being Regan. The expression has stuck with the TranzAct boss. He understood immediately that his mentor was saying that Regan's actions would determine whether or not he was capable of leading the organization. It was his responsibility—nobody else's—to commit to learning and growing and serving others. In other words, Regan was entirely responsible for his own destiny and, by extension, largely responsible for the destiny of the company.

Regan himself benefited from a very supportive family who expressed strong support for him and his capabilities even though in school he "wore out the carpet between his classroom and the principal's office," he recalls. Sent to private high school largely because he and his father clashed so much, Regan nevertheless drew enormous inspiration from his dad, a successful entrepreneur. It was his father who, when Regan was 28 and had been working for leading banks and accounting firms, told his son he would not be happy until he had "built something."

That something became TranzAct, and Regan Senior continued to provide advice that Mike Regan freely shares with others. One of the most widely applicable pearls of wisdom for leaders: The need to be able to distinguish between what's urgent and what's "merely" important. With that distinction made, Regan's father was very clear about what happens next: When it's an emergency, you do it yourself. If it's urgent, you delegate. If it's important, you form a commit-

tee to study it. Behind this lesson was the idea of accepting the inevitability of making mistakes, but committing to learning from them. Regan's takeaway: That's the only way that leaders can get the experience to tell when something is truly urgent.

Energy, Spirit, Commitment

Coming back to the concept of "servant leadership," Regan is very clear that it does not equate to permissive leadership. In other words, if an employee falls short of the organization's well-publicized and consistent performance standards—or worse, if the employee fails to uphold the organization's values—then he or she must

Employees have a right to expect competent command, rooted in an ability to "put the pieces together" and to extend influence in directions that employees consider worthy.

be dismissed. "There's not going to be harmony there," says Regan. At the same time, he warns against the kind of egotistical leaders who are convinced that their charisma will more than compensate for the shortcomings of such employees. He notes that no leader can teach ethics, or intelligence, or work ethic. "You've got to recognize your limitations," he says.

So where's Mike today? There's a good chance he's with a customer in your town. Or perhaps he's in a board meeting for Youth With A Mission, talking about building homes in Mexico. Or he may be preparing his next blog for *Logistics Management*.

Wherever he is and whatever he's doing, he's doing it with energy, spirit, and deep commitment. Just as every leader should.

Special report from the University of Tennessee

The following educators from the University of Tennessee-Knoxville College of Business Administration contributed to this report: J. Paul Dittmann, David K. Ecklund, Daniel J. Flint, Diane Mollenkopf, Matthew B. Myers, Theodore P. Stank, and Wendy L. Tate.

Last October, *Supply Chain Management Review* launched a series of articles on our web site (www.scmr.com) called “Back to Basics.” The articles in this series were authored by educators at the University of Tennessee, one of the nation’s leaders in logistics and supply chain education. Each installment in the seven-part series examined how excellence in the core logistics and supply chain activities leads to overall business success.

The Back to Basics series focused on different core competencies of supply chain management—sourcing and procurement, transportation, warehousing, returns management, service, and collaboration. Our premise in developing this series was that excelling at these activities and then integrating them into a customer-responsive supply chain lays the groundwork for sustained success.

This article synthesizes the key messages of the Basics series. It offers proven techniques and strategies for making the supply chain a forceful driver in your organization’s survival and success. It’s important to note that we concluded the series—and this article—

with a discussion of supply chain collaboration, which enables the benefits of operations excellence to extend to all of the supply chain partners.

For managers working in the supply chain space for a number of years, a logical question is, “why do we need to revisit the ‘basics’ in the first place?” The short answer is that the basics are changing as the supply chain expands dramatically in scope and complexity.

Supply chain professionals still need to be proficient

Getting Back to Basics



Why revisit the basics of logistics and supply chain management? The short answer is that these “basics” keep evolving as supply chains become more global and complex. Execution and integration of the core competencies, as always, remain critical to business success. But today, those activities need to be carried out within a broader—and more challenging—supply chain environment.

at managing the core functions such as transportation, warehousing, inventory management, and reverse logistics—but within the context of this broader supply chain process. That process today extends end-to-end and even outside the firm, including the relationships with suppliers and customers on a global basis. Our aim here is to explain and explore the basics within that broader context.

Sourcing and Purchasing

The supply chain process kicks in with the sourcing and procurement of a product, component, or raw material from a supplier. Strategic purchasing—the goal to which companies should aspire—involves finding innovative ways to use supplier capabilities to drive sales, achieve or maintain a competitive advantage, or strengthen the company’s strategic position.

Yet purchasing historically has been overlooked as a strategic contributor and instead viewed more as a tactical function with a largely internal focus. The tendency of even the most seasoned buyers has been to react to problems rather than proactively respond to the current operating environment. The primary goal of procurement is to support the firm’s operational requirements by ensuring uninterrupted flow of needed materials, products, and services. However, purchasers must accomplish this efficiently and effectively—often with limited resources—while minimizing risk to the organization.

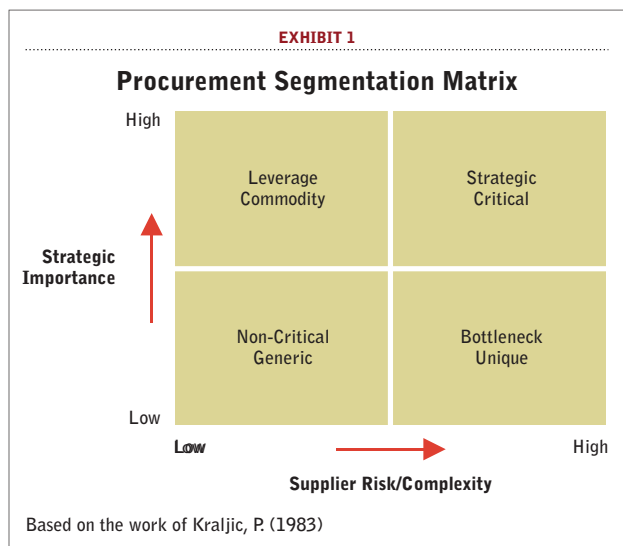
To avoid supply disruptions and leverage the organization’s buying power, purchasers should assess and segment purchased materials, services, and

components in terms of importance to the organization and difficulty in accessing the materials. This segmentation process leads to a more strategic perspective on managing supplies and the supply base while facilitating the application of appropriate cost management tools and negotiation strategies.

One proven segmentation strategy was developed by Peter Kraljic and described in his 1983 *Harvard Business Review* article titled “Purchasing Must Become Supply Management.” Kraljic identified four major categories, each of which requires a distinct procurement approach. (See Exhibit 1.) These are described below:

Non-critical or generic purchases. For these low-importance, low-supply risk items the focus is on finding the lowest possible purchase price from a field of many suppliers. These purchases entail low switching costs, allowing for easy “supplier hopping.” Typical procurement approaches to the non-critical purchases include purchasing cards (p-cards) and short-term contracts. Relationships with the suppliers of these items are often arms-length and transactional.

Leverage commodities. These have great importance to the buying company in terms of volume purchased, percentage of total purchase cost, and impact on quality or business growth. Yet they are essentially commodities that many suppliers are capable of providing. The purchasing decision for these items is generally based on consolidation; leveraging volumes is key to success. Supply base reduction and reverse auctions are among the approaches used to leverage volume. The idea is to combine the requirements



of different operating units and capitalize on supplier fixed cost allocation and improved productivity.

Strategic, critical. Products in this category have more complexity and risk involved in the purchase, often because of limited availability or limited number of suppliers with the technical capabilities to provide the goods. These are the most critical items for the organization to obtain to ensure success and meet the demand for their products. There is much more collaboration and integration between the buying and supplying firm with a focus on continuous improvement. Buyers often enter into long-term, cost-based contracts with the suppliers of these items and may, in fact, engage the suppliers early in the process of new product development. Buyers look to these suppliers for innovation and cost-reduction ideas.

Bottleneck items. These types of purchases are

The expected benefits of world-class operations at the point of supply, production, or customer locations will never be fully realized without excellent transportation planning and execution.

more product oriented or unique, and have a high level of market complexity. They often consume a disproportionate amount of time relative to the item's value. The focus here for purchasing is to simplify the procurement of these items, or if possible get them out of this quadrant and into the leverage or strategic quadrants. Companies buying products or services that fall into the bottleneck category could participate in buying consortiums to better leverage the spend and minimize the associated risk.

Organizations need to take a long-term perspective at all times, avoiding the low-price temptation without considering the total cost and the total value provided by the product and by the supplier relationship. This requires a clear understanding of what is being purchased, the importance of the purchase to the organization, and the value of the purchase to the customer. The segmentation approach we just described helps on all three counts.

Transportation

Once the product or commodity is purchased, it must be moved to the next point of use—be it an intermediary production facility, a distribution center, retailer, or

end-consumer. As with sourcing and purchasing, however, the strategic importance of transportation is often overlooked. The reality is that the expected benefit of world-class operations at the point of supply, production, or customer locations will never be fully realized without excellent transportation planning and execution.

For transportation to make that needed impact in an integrated supply chain, managers need to become proficient at making smart decisions on four different levels—long-term strategies, lane operations, mode and carrier selection, and dock operations.

At the highest *strategic decision level*, managers must fully understand total supply chain freight flows and have input into network design. At this level, long-term decisions are made about the appropriateness and availability of transportation modes for freight movement. Managers need to decide which primary mode of transportation is right for each general flow (i.e., inbound, interfacility, outbound) by product and/or location, paying careful attention to any consolidation opportunities. Factors such as volume, frequency, seasonality, physical characteristics, and special handling requirements are part of the analysis. Strategic mode and carrier-sourcing decisions should be considered part of a long-term network design, identifying core carriers in each mode to enhance service quality and increase bargaining power. Also, managers need to make decisions regarding the level of outsourcing (if any) desired for each major product flow.

The second level of decision-making regards *lane operation decisions*. Whereas network design decisions focus on long-term planning, these decisions deal with daily operational freight transactions. At this level, transportation managers armed with real-time information on product needs at nodes in the system must coordinate product movements along inbound, interfacility, and outbound shipping lanes to meet service requirements at lowest total costs. Decision-makers adept at managing information can take advantage of consolidation opportunities, while ensuring that products arrive where they are needed, in the quantities they are needed, and when they are needed to facilitate other value-added activities. Importantly, they need to do all of this while realizing transportation cost savings.

The primary opportunities associated with lane operation decisions include inbound/outbound consolidation, temporal consolidation, vehicle consolidation,





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and carrier consolidation. If managers have access to inbound and outbound freight movement plans, they can identify opportunities to combine freight to build volume shipments. An inbound shipment may arrive from a supplier located in Philadelphia, for example, on the same day that a production order destined for a customer in Wilmington, Del., is ready to move. If transportation planners know this information far enough in advance, they can arrange for the inbound carrier to haul the outbound load back to Wilmington—often at a lower negotiated rate.

Similarly, less-than-volume-load (LVL) shipments moving to the same geographic region on consecutive days may be detained until sufficient volume exists to justify a full load on one carrier with multiple stops (temporal consolidation). Multiple, small shipments inbound from suppliers or outbound to customers in the same geographic region scheduled for delivery on the same day may also be combined on one vehicle at full-volume rates, paying stop-off charges but saving on multiple LVL rates. Also, giving more shipping volume to fewer carriers—the core carrier concept—should result in lower per-unit transportation costs and higher priority assigned to your freight.

A third level of transportation decision-making involves the *choice of mode and carrier* for a particular freight transaction. Due to the blurring of service capabilities among traditional transportation modes, options that in the past would not be considered feasible may now emerge as the preferred choice. For example, rail container service may offer a cost-effective alternative to longhaul motor transport while yielding equivalent service. Similarly, package delivery carriers are competing with traditional LTL operators. Truckload carriers, for their part, are increasingly bidding for low-volume shipments as well as for overnight freight movements.

The final set of transportation decisions involves *dock level operations*, such as load planning, routing, and scheduling. These activities encompass the operational execution of the higher-level planning decisions. While the fundamental purpose of shipping docks may not have changed much over the years, the manner in which work is done certainly has. One obvious change relates to advances in IT and decision-support systems. These tools help dock personnel make better use of the transportation vehicle space; to identify the most efficient routes; and to better schedule equipment, facilities, and drivers.

Environmental conditions like fluctuating fuel costs and carrier capacity constraints may tempt managers to depart from the discipline of the decision-making process

at the different levels. Regardless of external pressures, though, managers must encourage their organizations to avoid the temptation of making decisions based mainly on short-term gains. Rather, they need to view the total cost and total value provided by the transportation function—not only in terms of operating expenses, but with respect to customer service and inventory reduction.

Warehousing/DC Operations

From transportation, we move the focus to warehousing, a functional area that has been greatly affected by changing market expectations, technology advancements, and heightened demands for “greener” operations. These factors are converging to evolve the strategy, roles, and responsibilities of warehousing. In fact, “distribution center” (DC) is a more appropriate term for the scope of activities now taking place in these facilities.

For most products (raw materials and manufactured items bought in bulk being exceptions), DCs play a dual value-added role by making supply chains more efficient and more effective. They add efficiency by consolidating products for shipment to customers, reducing transportation costs, and performing a broad range of value-added services—for example, labeling, assembly, packaging, kitting, and reverse logistics. DCs also make the supply chain more effective. The strategic placement of these facilities allows products and services to be positioned close to major markets and customers.

Product type often determines the need for and specific role of DCs in the supply chain. Product types can be identified along the following characteristics:

- seasonality (in either production or consumption)
- demand variability
- manufacturing economics
- marketing and promotional initiatives
- service requirements; and
- customization and product variations.

For products with seasonality variances, for example, DC resources must be able to ramp up and draw down quickly in given geographical areas. Products that have extremely high time-sensitive service requirements (for example, emergency repair parts for aircraft or equipment for hospital emergency rooms) need fast-response facilities with ready access to expedited transportation modes. Similarly, many automotive manufacturers have “inbound” DCs located close to manufacturing plants so that subassemblies and other components can be assembled and placed into the production lines.

In addition to product type, certain other elements need to be carefully addressed to ensure a successful DC operation. These include:

Location. DC location is determined based on the location of major markets and customers, the location of supply points, the volume of product moving to or from supply points and customers, transportation rates, service levels required, and product characteristics. Local conditions—including access to and cost of labor, land and buildings, IT/communications infrastructure, transportation infrastructure, and tax incentives—also play a significant role in determining location.

Design and Operations. The product, how it is received, the nature of customer orders, service levels, and transportation mode are the primary determinants of distribution center design and operations. Product characteristics include weight and dimensions, packaging, shelf life, temperature and lot control requirements, and hazardous material requirements. How the product is received is key to both inbound operations efficiency (dock-to-stock cycle time) and space utilization/storage efficiency.

Information and Technology Requirements. Information is the critical driver for successful DC operations. Short-term forecasts provide information to determine labor and space requirements over a short term planning horizon. Longer term forecasts are used for capacity planning—for example, DC size, workforce, and equipment requirements. Information technology is critical in achieving DC performance. Warehouse Management Systems (WMS) direct where products should be stored and provide the necessary functionality for optimizing receiving, storing, and shipping operations. Most WMS systems also provide real-time information on the inventory status of all items in the DC.

Performance measures. The primary objectives of DCs are to provide the right product, at the right place, right time, and damage free—at a competitive cost. Fundamental to achieving and sustaining these objectives is performance measurement. A January 2010 study conducted by Georgia Southern University and consultancy Supply Chain Visions among readers of *DC Velocity* and members of the Warehousing Education and Research Council (WERC) found that the top three metrics used by respondents are on-time shipment, order filling accuracy, and warehouse capacity utilization. (Exhibit 2 lists the top 10 metrics reported.)

Identifying and analyzing those elements that will help determine how your DC network is structured and executed is a necessary building block of supply chain success—but the effort doesn't stop there. The other essential ingredient is to effectively integrate the DC operations with the other core supply chain functions.

Returns Management

The warehousing and transporting of goods to the end customer does not necessarily mark the end of the supply chain process. In fact, a growing percentage of these products today are reentering the supply chain and must be managed as aggressively as the products moving through the forward supply chain. (There's an after-sales service component to supply chain excellence, too, as described in the accompanying sidebar.)

The first step in effective returns management—often referred to as reverse logistics—is to understand the source and reasons for the returns. Basically, there are two categories of returns: defective returns and no fault found returns.

At the consumer or end-customer level, defective product comes back after purchase and some level of use. Such returns could indicate quality problems that need to be resolved in manufacturing or distribution. It is important to get a handle on these returns as quickly as possible. But many times firms find no defects upon inspection of returned products. These no fault found returns may be indicative of customers not understanding how to use the product appropriately, not being able to properly install the product, or simply finding that the product was not what they were expecting. These returns signal the need to re-engineer the product or communicate more effectively to customers about what to expect and how to use/install the product.



The Service Side of SCM

Service traditionally has been viewed as part of the market offering. By thinking of supply chain management services in this way, however, we focus on service as a noun. We need to think of service as a verb.

How does supply chain management “service?” The verb “to service” basically means to help or to assist. Products and services assist. Consumers purchase products because they assist them in solving problems. These problems may be to repair a deck (so the consumer buys hammers, saws, wood), to ease the suffering of a sick child (so the consumer buys cough medicine), and so forth. Obviously, that notion of assisting or helping holds true for “services” (the noun form) when we think about haircuts, banking, or printing services. And it holds true in business buying—everything from ball bearings, to semiconductors, to transportation, and financial services.

All of this may seem obvious. What’s not so obvious to many managers is that every product and service (noun form) that is “purchased” is servicing a customer. In helping to solve a consumer problem, even a manufactured product is servicing that consumer. In fact, in the act of consuming or using that product, the consumer is taking part in the servicing aspect of the product. That’s how the value is derived from the product or service. Thus, every product and service (nouns) should always be seen as servicing value creation for the customer or consumer. This concept is part of what has become known as a “service dominant logic.”

In thinking about this concept, consider that supply chain managers design processes for and manage the operations of resource flows—the movement of products, people, information, and finances. And in so doing, they facilitate the integration of various resources across multiple organizations. Every one of these “things”—products, people, information and finances—is a resource that gets integrated with other resources as firms build and sell their offerings. In connecting all of these resources, SCM is always about servicing resource integration by managing flows on both the demand and supply side.

At the retail or intermediary level, returns often come back due to slow-moving stock, end-of-season inventory adjustments, or as a means to release capital so customers can buy more from your company. As retailer power in the channel continues to grow, manufacturers are being asked to bear an increased responsibility for taking back unwanted retail-level inventory. This is not necessarily a bad thing, as “fresh” product can command a higher margin than old product, and can be more competitive in the battle for consumer dollars. On the other hand, manufacturers get stuck with old inventory. The key to managing these returns is to try to avoid them by better matching demand and supply in the first place.

With this understanding of the source and reason for returns, companies can work to develop an effective returns management program. These four basics provide a useful guide:

1. Think strategically about returns management within your broader supply chain strategy. Appropriate returns policies can strengthen relationships with key customers. Such policies also can enhance your firm’s profitability by keeping fresh product in the marketplace and by efficiently managing the logistics of handling returns. As part of your strategic focus, remember that returns management is a cross-functional process. Get the right people involved from the start—from marketing and sales, operations, logistics, customer service, accounting, and finance. Firms that recognize the cross-functional nature of returns also are able to more effectively integrate forward and reverse supply chain flows.

2. Develop appropriate gatekeeping, disposition, and avoidance policies. Gatekeeping refers to the screening procedures employed to identify how, and which, products enter the return stream. Effective gatekeeping recognizes that not every product should enter the return flow. When the cost of transporting and processing the return product is greater than the value of the product itself, it’s more cost effective to credit the customer but not require that the product be returned. Ultimately, avoiding returns can resolve many of the gatekeeping and disposition issues, while dramatically controlling costs. Companies struggling with SKU proliferation will find that returns can be avoided by simplifying product lines. Quality control initiatives in the manufacturing and distribution processes also help to minimize returns.

3. Develop operational policies and procedures to handle returns. Returns authorization policies help ensure that effective gatekeeping occurs, that customers are credited promptly, and that inventory visibility is created as early as possible. Inventory visibility also helps to operationally plan staffing and disposition opportunities in a timely manner. Determining disposition as early as possible is important for recapturing as much value in the product as possible. Product that can be resold needs to be re-inserted into the forward supply chain ASAP. In addition, product that requires refurbishment or remanufacturing needs to be identified so as to maxi-

mize value recapture as quickly as possible.

4. Align metrics and performance expectations for returns management across functional areas and with overall supply chain strategy. For example, if marketing/sales people bear no responsibility or accountability for returns, there is no incentive to manage profitable sales. Returned inventory will continue to be a problem. Likewise, if operational people have no value goals or efficiency goals, processing effort will be wasted. Goals regarding processing returns need to be aligned with objectives relating to timing, volume, or value of returns as these goals should drive operational priorities and activity.

In summary, returns management should no longer be considered the ugly step-child of the supply chain. Rather, effective returns management can improve a firm's profitability, enhance customer relationships, and be an essential part of an integrated supply chain management strategy.

Collaboration

By following the basics discussed here and integrating the core elements of the supply chain process, companies can expect to streamline operations, improve efficiency, eliminate waste in time and material, and cut costs. These are all critically important, of course. But companies can accomplish even more if they build on these core competencies to form closer alliances with their supply chain partners. It's called collaboration.

Let's examine why supply chain collaboration means much more than cost and economic efficiencies. Research conducted by the University of Tennessee shows that leading supply chains benefit in many ways from collaboration—even in times of great economic stress. These advantages relate to helping all members of the supply chain meet customer demands, grow markets, and increase market share. The gains are realized in a number of innovative ways over the life of the collaborative relationship—for example, by increasing sales volume from downstream buyers, lowering operational costs within the relationship, word-of-mouth referrals, and product and process innovations borne from the working relationship between trusting partners.

The best supply chains have buyer-supplier relationships that are based on value and consistent delivery of this value. That value can center on services, quality, on-time deliveries, returns management, or some combination of these. It's what makes buyers increase

their percentage of purchases from individual suppliers for the long run. This provides a double-edged benefit for suppliers. So when a buyer increases its purchase of a needed material from 45 percent to 60 percent, this not only enhances the chosen supplier's bottom line, but also negatively affects the competition.

Companies today experience intense pressure to develop new products, which often creates considerable stress on the organization's R&D function. Similarly, increasingly competitive global supply chains place enormous pressures on supply chain managers to develop new processes that enhance both cost efficiencies and customer services. Like new product development, new process development can be extraordinarily expensive... and risky. Yet time and time again, we see long-term collaborative partnerships as the most innovative way to develop processes that both reduce costs and add value for the partners.

Finally, the longer the relationship, the more indirect costs—operational and otherwise—are reduced as procedures become routinized over the life of the relationship. These cost savings are shared by both buyers and sellers, increasing the mutual benefits. The savings also can be passed on to customers in the form of lower prices, thereby enhancing the supply chain's position in the competitive landscape.

As supply chain relationships extend over time, both partners' share of the benefit pie will grow—though not necessarily at the same rate. Too often, a lack of understanding around this point has caused acrimony between the supply chain partners. This is the problem of absolute versus relative gains, with too many firms focusing on the latter. Instead, supply chain partners should concentrate on the relationship's absolute benefits to their firm—and whether those benefits would be realized if the partnership did not exist. These benefits may not accrue in equal portions to the participants. But as long as the partnership is mutually beneficial and strengthens the competitive position of the supply chain at large, all parties should gain significantly in absolute terms.

It's appropriate to end our discussion on this topic as collaboration exponentially enhances all of the hard work done in putting together a solid logistics and supply chain structure. With collaboration, everybody ends up winning—the company, the customer, the suppliers, the 3PLs and carriers. And when that happens, the supply chain professional firmly establishes himself or herself as a powerful contributor to business success. ☺☺

How Supply Chain

Supply chain finance is an invaluable tool for lengthening a buyer's days purchases outstanding and increasing cash flow. SCF has the powerful potential to improve a supplier's financial viability and reduce a buyer's purchase costs and internal procurement expenses. Here's a quick refresher course for supply chain leaders in every industry who want to drive stronger cash flow.

By Stephen G. Timme and Erik Wanberg

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Business leaders have one big reason to be happy these days. Most are heading up companies that are sitting on historically high cash balances. Research by FinListics Solutions shows that in the United States, companies outside of financial services—retailers, distributors, manufacturers, and telecommunications providers, for example—have accumulated almost \$2 trillion in cash among them. At companies with more than \$1 billion in revenue, cash was equivalent to 8.5 percent of revenue in 2009 compared to 5.2 percent the year before.

Laudable though those numbers may be, they are still not enough to give businesses the long-term resilience they need to sustain growth, let alone to outcompete in today's volatile global economy. That is why many leading companies are focused on initiatives to further improve cash flow and liquidity. One of these is better management of the cash operating cycle, which is the net number of days in inventory, accounts receivable, and accounts payable.

This article explores the use of supply chain finance (SCF) to better manage the cash operating cycle. SCF can lengthen accounts payable without hurting suppliers' financial viability; at the same time, it has the potential to lower direct purchasing costs as well as the costs of the procurement transactions themselves. The concepts are well proven, and the tools and techniques are not new. But they are still not used by supply management teams to the extent that they should be. Given the broad-based hunger for improvements in cash flow, the time is right for a short refresher course on the topic.

The Cash Operating Cycle Explained

The cash operating cycle is a key driver of financial performance and is comprised of:

Finance Can DRIVE CASH FLOW



Andy Baker

- Days in inventory (DII)—the number of days of inventory held in raw materials, work-in-process, and finished goods for which a company has ownership
- Days sales outstanding (DSO)—the number of days it takes to collect from customers the revenue from products and services provided
- Days purchases outstanding (DPO)—the number of days it takes to pay suppliers for products and services that have been bought and invoiced

The cash operating cycle is expressed in days to make it easier to analyze changes in a company's performance and compare them to those of other companies. DPO is deducted in the calculation because accounts payable is

financing provided by suppliers. However, accounts payable is not a free source of financing. A company's payables are suppliers' receivables upon which they incur a capital charge. This capital charge is a part of the product purchase cost.

The authors regularly track the median and top-quartile cash operating cycle and its components for a sample of large U.S.-based companies. Our studies show that the median cash operating cycle is 62 days compared to only six days for the top quartile. Examining the cycle's three components provides valuable insights into the big difference between those numbers. The top quartile companies have 22 fewer days invested in DII;

19 fewer days in DSO; and 15 more days in DPO. (See Exhibit 1.)

Table 1 below shows the make-up of the cash operating cycle for some well-known companies. Note that Dell's overall figure is negative 49 days. Dell sells its inventory and collects its receivables before paying its suppliers. Walmart's DPO of 37 days is less than its 41 days DII. The retailer has a publicly stated goal of increasing accounts payable faster than it expands inventory, which will increase DPO relative to DII. It is also interesting to note that P&G's DPO already exceeds DII.

However, it is important to remember that the emphasis must be on financial performance overall not on this or that

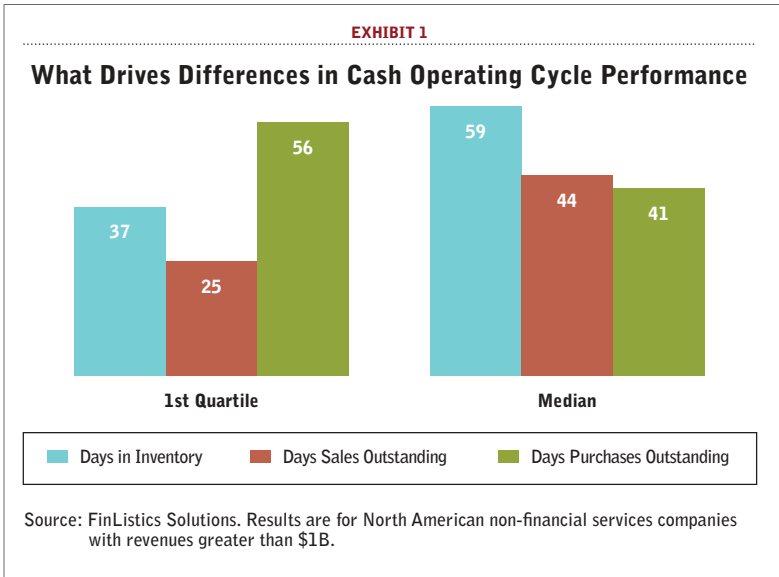


TABLE 1:
Cash Operating Cycle Examples

	Dell	Walmart	Procter & Gamble
DII (Days in inventory)	9	41	67
DSO (Days sales outstanding)	40	4	25
DPO (Days purchases outstanding)	98	37	76
Cash Operating Cycle (DII + DSO – DPO)	-49 days	8 days	16 days

financial metric. Frequently, corporate performance suffers because the appropriate trade-offs between specific metrics are not made. Too often, decisions are not made from an enterprise-wide perspective, often because department or function managers are working with scorecards that optimize primarily the performance of their areas of operation. Nonetheless, experience suggests that differences in financial metrics often indicate significant opportunities for improvement even if the gap—between your company's performance and that of its best-performing competitors, for example—is not completely closed.

Better performing companies typically are more efficient in their use of working capital to support operations, as evidenced by their lower cash operating cycles. Most companies strive to manage working capital by reducing inventory (DII) and improving collection of receivables (DSO). Inventory levels and the speed of collecting receivables are concrete indicators of working capital efficiency and are usually relatively easy to monitor and control.

However, accounts payable—measured as DPO—

is a vital component of the working capital equation. For example, for each \$1,000 million in purchases, a one-day extension in DPO increases accounts payable by about \$3 million (\$1,000 million divided by 365). Closing the 15-day DPO gap shown in Exhibit 1 cuts investment in working capital by \$45 million per \$1,000 million in purchases.

The Overlooked Payables Factor

It is our observation that business leaders overlook or undervalue accounts payable—or see it as a less controllable component. We believe that that perspective has to change.

There is movement in the right direction: More companies are setting goals to extend DPO to meet specific operational targets. For example, retailers often require suppliers to actively participate in the positioning of product on the store shelves, manage in-store promotions, and monitor point-of-sale data for replenishment. Now, some actively require the suppliers to participate in the cash cycle and to accept payment terms based on the retailers' DII. The extreme example: automotive component retailers that typically have DII levels approaching one year because of the slow turnover of automotive parts. Several have successfully moved suppliers out to one-year payment terms using various supply chain finance programs.

All else being the same, a higher DPO is better because it means more funding is provided by suppliers, resulting in a lower investment in the cash operating cycle and a higher return on capital. But, we all know that all else is never the same. The management of DPO involves trade-offs between product purchase costs and supplier financial viability. (Note that these trade-offs do

not include other considerations in the overall supplier selection decision, like internal costs and supplier quality and flexibility.) Let's explore two examples of these trade-offs.

1. DPO vs. Purchase Costs

Take the example of a company that makes annual purchases worth \$1 billion. Its marginal tax rate is 40 percent and its cost of capital is 10 percent. The company provides terms of 2/10 net 30—that is, the buyer takes a 2 percent discount off the purchase price if the invoice is paid in 10 days or less, or the full amount if paid after 10 days. The buyer always pays on day 10 and takes the discount or pays on day 30 if the discount is not taken. Taking the 2 percent discount increases annual net income by \$12 million. (See Table 2.)

Accounts payable are approximately \$82 million if the discount is not taken (DPO 30 days) and \$27 million if the 2 percent discount is taken (DPO 10 days) for a reduction in accounts payable of \$55 million. The \$55 million is a one-time change in the balance sheet whereas the \$12 million increase in net income occurs each year as long as the 2 percent discount is taken.

TABLE 2:
Example of Trade-Off between DPO and Purchase Discount

Change in Cash Flow	Year 1	Years 2...n
Net Income*	\$12M	\$12M
Accounts Payable	-\$55M**	\$0M
Net Cash Flow	-\$43M	\$12M

*\$1,000 purchase cost x 2 percent discount x (100 percent - 40 percent marginal tax rate)
**(\$1,000 purchase costs/365 days) x (10 DPO - 30 DPO)

Table 2 shows that the net cash flow impact the first year is negative \$43 million—that is, a \$12 million increase in net income with a \$55 million reduction in accounts payable. However, in subsequent years the net cash flow benefit is the \$12 million increase in net income from the lower purchase price.

So the trade-off in this example is the \$12 million annual increase in net income versus the one-time \$55 million reduction in accounts payable.

One of the best ways to make a decision when faced with this trade-off is to evaluate the total procurement cost, defined as the after-tax purchase cost less the capital charge avoided from accounts payable.

(Note that this excludes items such as internal procurement expenses and supplier quality and flexibility, which would be included in the overall supplier selection decision.) After-tax purchase cost is defined as the unit price multiplied by the quantity, with that figure multiplied by 100 percent minus the marginal tax rate. The capital charge avoided from accounts payable is the dollar figure derived by multiplying accounts payable by the cost of capital.

In the example mentioned earlier, the change in after-tax purchase costs is \$12 million and the change in the capital charge avoided from accounts payable is negative \$5.5 million (\$55 million reduction in accounts payable multiplied by 10 percent cost of capital). The net change in total procurement costs is \$6.5 million savings (\$12 million less \$5.5 million).

From an economic perspective, it would appear that the 2 percent discount should always be taken because the total purchase cost is lower. However, there are other

Supplier Discounts: Fact or Fiction?

Cash-strapped suppliers often offer early payment discounts in order to get paid in 10 days or less. Interestingly, it is not always the financially weak suppliers that offer such discounts for quick payment. Separating unit cost from payment terms and viewing transparently is also a good method to determine if supplier-offered discounts are in fact real. When 2 percent discounts are offered in exchange for payment in 10 days, many procurement and finance managers feel compelled to take the discounts and reflect the savings as "income" or demonstrable benefits for the procurement department.

However, if the supplier is a highly rated company and always offers the discounts, is the unit cost \$100, or is it really \$98 with 10-day payment terms? If the procurement process is incented by the capture of early payment discount savings, the resulting behavior essentially inflates unit cost in order to obtain discounts. The net results are payment terms of 10 days and use of the company's balance sheet to finance the payments.

One option is to determine the cost of goods and add back in the financing cost under a bank SCF program so the supplier gets paid fast and the buyer gets true cost savings. For example, if the financing cost for a \$100,000 invoice over 60 days is \$329 (see main article), the buyer should be negotiating for a reduction in price of \$1,671—that is, a unit price of \$98,329 with 60-day terms. After discounting with the SCF program, the supplier gets its \$98,000 and the buyer gets a 1.67 percent price reduction and the 60-day payment terms it wants. Overall, a company needs to segment suppliers and determine which are offering true discounts. Only then can it opportunistically take advantage of these discounts against a managed balance sheet while negotiating with other suppliers to lower cost and extend payment terms.

factors to consider. For instance, does the company have sufficient liquidity, alternative funding sources, and financial flexibility to take the discount? Is the 2 percent discount really a 2 percent discount? Has the supplier increased the selling price knowing buyer will take the discount? (For more on whether discounts are real or not, see accompanying sidebar.)

It is essential to understand dynamic financing concepts because the ideas are essential to competitiveness.



2. DPO vs. Supplier's Financial Viability

More and more buyers are demanding that suppliers provide longer payment terms. This increases a buyer's DPO but it requires the supplier to invest in accounts receivable, and thus incur higher capital charges. Securing of longer payment terms is not without a cost. The supplier may increase the purchase cost to compensate for the higher capital charge. Supplier service levels may decline as the supplier focuses on faster-paying buyers. In some cases, the supplier's financial viability may be impaired, which increases performance risk resulting in possible disruptions in the supply chain and ultimately, lost revenue for the purchaser's company.

Let's say that in this example we've been using, the buyer demands a 30-day increase in payment terms from a supplier. The supplier can increase price to offset the increased payment terms. Assume that the supplier's net income margin is 2.5 percent (typical of many Asia-Pacific suppliers). Its cost of capital is 12 percent; its marginal tax is 33 percent.

Let's also assume that the supplier in question accounts for 10 percent of the total \$1 billion spend. With a 2.5 percent margin, net income then amounts to \$2.5 million. Also, in many cases where a buyer can demand longer payment terms, the supplier is smaller and its cost of capital higher. Our supplier in this example is paying 12 percent whereas the buyer pays 10 percent.

The 30-day increase in payment terms requires the supplier to invest roughly \$8.2 million (its \$100 mil-

lion in revenue divided by 365 multiplied by 30) more in accounts receivable. Its capital charge increases by almost \$1 million (\$8.2 million x 12 percent). The supplier would need to increase its sales price by about \$1.5 million (\$1 million increased after-tax capital charge divided by 100 percent minus its 33 percent marginal tax rate) for a 1.5 percent price increase. From an economic perspective, the supplier is made whole because the \$1.5 million price increase offsets the after-tax \$1.0 million increase in capital charge resulting from the \$8.2 million hike in accounts receivable. But from a practical perspective, that rise in receivables may hurt the supplier's financial flexibility, depending on its access to funds.

Now suppose that the supplier cannot increase prices to offset the increased investment in accounts receivable. Its \$1.0 million increase in capital charges (decrease in net income) results in a 1.5 percent net income margin, which equals a 40 percent reduction in net income. This would likely weaken the supplier's financial viability over time and increase the risk of disruptions to the supply chain, which could lead to higher operating costs and a possible loss of sales by both the buyer's organization and the supplier.

Techniques to Combat Payables Challenges

Not surprisingly, buyers often get push-back when they request longer payment terms from suppliers. This is where a well-managed SCF program can pay off. It can help to neutralize supplier constraints such as limited access to cheaper funds.

Supply chain finance programs typically enable suppliers to secure financing at lower costs than they can get on their own since the borrowing rates are based on the buyer's credit rating. In a typical SCF program, the buyer will usually request (or mandate, depending on the size of the buyer's organization or its economic leverage) that payment terms move from 30 days to 60 days, for example. A supplier can choose to provide the terms and self-finance the receivable. But if it needs access to low-cost funding to provide the longer terms, it can opt in to a buyer-sponsored SCF program provided by a bank. (See Exhibit 2.)

In an SCF scenario, the supplier ships the goods and the buyer matches the receipt to the invoice and approves it for payment on the due date (Step 1 in Exhibit 2.). The buyer then sends an electronic copy of the approved invoice to the bank verifying that it

will pay the supplier the net amount on the due date via the bank (Step 2). The bank notifies the supplier of the approved invoices (Step 3), usually on an electronic platform or Web portal, and asks the supplier if it would like to finance the invoice to get paid early. If so, the bank discounts the payment at an agreed interest rate and purchases the invoice from the supplier (Step 4). The supplier is essentially cashed out of the transaction and the bank receives the full payment from the buyer upon due date of the invoice (Step 5).

Let's look at an example of a \$100,000 invoice. Payment terms are 60 days, and the discount rate is LIBOR (London Interbank Offered Rate) currently equaling 0.25 percent plus 1.75 percent for a 2 percent per annum total. So the discount is \$329, calculated at \$100,000 times 60 days times 2 percent divided by 365. The net proceeds, then, are \$99,671.

In this example cited earlier, if a middle-market supplier borrows at the prime rate plus 0.75 percent, currently 4 percent per annum total, the carrying cost of a 30-day \$100,000 invoice is \$329. However, if the invoice is financed through a SCF program at the buyer's credit rating of LIBOR + 1.75 percent, currently 2 percent per annum, the carrying cost is halved so the \$100,000 invoice can be financed for 60 days for the same \$329 cost.

Essentially, the improved visibility of the buyer-approved transactions and netting of deductions and credit memos means that the bank can safely provide 100 percent financing to suppliers. Standard bank financing—without visibility from the buyer—sees banks usually financing only about 80 percent of an invoice's

value, providing a buffer for deductions and offsets.

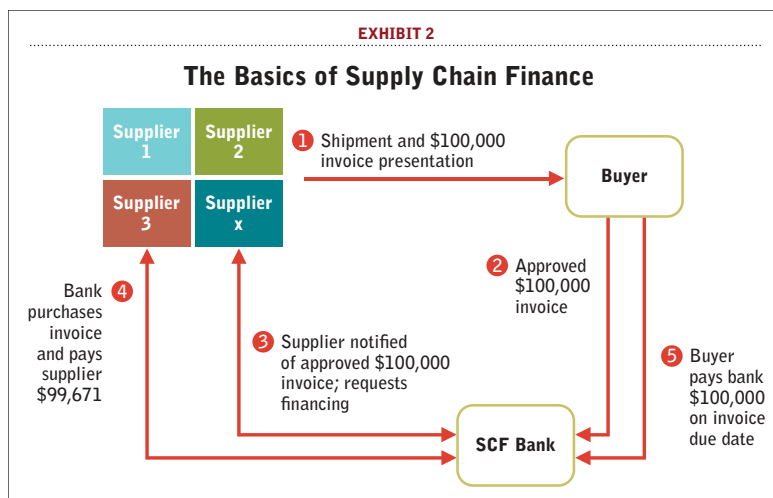
Further Benefits of SCF for Both Sides

As buyer and supplier negotiate the embedded cost and what the precise cost should be, an SCF program has the added benefit of validating the real cost. The benefit here is that when the supplier sells the invoice to the SCF bank, it accelerates its cash flow and reduces

Supply chain finance programs typically enable suppliers to secure financing at lower costs than they can get on their own because the borrowing rates are based on the buyer's credit rating.

its own DSO to improve its working capital—even though the program was sponsored by the buyer to improve its working capital.

Because the supplier has been financed transactionally outside of its bank facility, there is less pressure on the supplier's credit line. Furthermore, SCF programs can sometimes reduce transaction costs by bundling payments or helping foreign suppliers to move away from letters of credit to open account sales. It also means far fewer inquiries to the payables department because all parties have greater visibility of approved invoices and reconciliation results.



However, there are circumstances in which it makes sense to blend SCF programs with dynamic discounting—that is, where buyers take advantage of early payment discounts offered by suppliers. The difference is that the buyer uses its own cash to discount the invoice and pay the supplier early. The advantages of dynamic discounting are that the buyer can lower the cost of goods by paying early and earn more than it would on other available short-term cash investments. The disadvantage? It moves the DPO needle the wrong way and has a high balance sheet cost, thus limiting the scalability of buyer-funded discounts.

For its part, SCF helps reduce investment in working capital and increases cash from operations. However, with SCF sometimes it is harder to see these cost savings because they need to be calculated, whereas a buyer-funded discount is immediately captured and is a concrete saving. The goal should be to balance opportunistic dynamic discounting against a target of self-funded cash discounts with the use of SCF to obtain longer payment terms from a wide base of suppliers in order to achieve the desired DPO benchmark for optimal working capital management.

A Roadmap for Better Managing DPO

Unfortunately, most companies are not good at recognizing the working capital savings of obtaining longer payment terms. Many buyers are not well trained in finance and capital cost theory. So it is essential to provide ongoing education in these concepts so there is widespread understanding of how the results help the company's bottom line—and so that buyers feel comfortable in explaining these financing ideas to suppliers.

In general, it is essential for more procurement departments to understand dynamic financing concepts because the ideas are essential to competitiveness. There is already a substantial gap between the top performers and the rest; those leading companies make longer DPO a core plank of their procurement programs, assigning DPO-linked individual performance goals to procurement managers. Indeed, at these companies, larger DPO numbers become concrete goals across the organization and within specific functions—all reinforced by consistent attention from senior executives. In one recent case, a contract manufacturer set payment terms as a performance goal for its sourcing staff and declared that new contracts with payment terms less than 60 days required the approval of top management.

In fact, some leading organizations set minimum standards for payment terms. If a supply contract has payment terms of less than the standard, the purchase cost savings must exceed the capital cost of the faster payment terms because procurement staff would be tapping the company's balance sheet to pay earlier.

So how should procurement executives respond in future? Three points stand out:

- It is essential to set company-wide goals to optimize

Cash Flowing? Questions to Ask Now


To begin exploring the potential benefits of SCF and better overall management of procurement, it helps to have good answers to the following questions:

1. What is your DPO, and how does it compare to your competitors' DPO numbers?
2. If some of your competitors' DPOs are higher than yours, are you receiving commensurate discounts on purchases from the suppliers you share with those competitors?
3. What is the gross value of a one-day improvement in your DPO—annual purchases divided by 365? What about a 30-day improvement?
4. What is the gross value of increasing your DPO to that of your best competitor's DPO?
5. What are the implicit capital charges in purchase costs being levied on you by each supplier?
6. What is the annual value if your implicit capital charges in purchase costs were reduced by 25 percent? By 50 percent?
7. How would your organization's overall financial performance improve if it could make the improvements implied in these questions?

DPO and regularly track progress within your company. Procurement managers must be trained to analyze the value of extended payment terms when negotiating pricing with suppliers; their individual performance goals should be geared to meeting DPO objectives.

- It has to be communicated to suppliers that payment terms are vital to the financing of the supply chain. They have to hear that total purchasing costs, including payment terms, will be examined in detail during contract negotiations.

- It is important to evaluate supply chain finance programs that can help suppliers to provide the payment terms required in order to improve DPO cost-efficiently.

SCF creates wins for buyers and suppliers. It increases a buyer's days purchases outstanding and frequently reduces purchase costs and internal procurement expenses. The supplier benefits from being paid faster and by being able to finance accounts receivable at lower cost. As such, SCF is a discipline that every supply chain organization must master. 

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Supply Chain SECURITY *in a* High-Risk World

An Interview with Barry Brandman of Danbee Investigations

Supply Chain Management Review interviewed security expert Barry Brandman in our July/August 2003 issue, not long after the creation of the Department of Homeland Security. The threats to the security of supply chains have certainly not abated since that interview; if anything, they have only intensified.

So now seems to be the perfect time to revisit the subject of supply chain security. And, once again, Barry Brandman is the logical go-to guy. Brandman is president of New Jersey-based Danbee Investigations, which provides professional investigative, auditing, and security consulting services to hundreds of major companies.

Brandman has developed a particular expertise in logistics and supply chain management. He's a frequent speaker at industry conferences such as CSCMP and the International Conference on Cargo Security. He also has authored articles on supply chain security for a wide range of publications.

The underlying message in this current interview with Brandman is clear: In a high-risk world, companies must be proactive when it comes to supply chain security; to be otherwise, invites a host of serious and potentially devastating consequences. *SCMR* Editorial Director Francis J. Quinn conducted the interview.



Q. *Since our last interview almost seven years ago, have North American companies become more proactive about supply chain security. Or are they still largely in a reactive mode?*

A. I see companies being more proactive today, especially those that have been victimized in the past. When a company has a major theft, fraud, product tampering incident or other type of security problem, the human and financial resources needed to deal with it are usually quite significant. It's not a good experience and most executives want to do everything possible to avoid having history repeat itself. Being proactive is the best way to do that.

Q. *As supply chains grow larger and more complex, what added pressure does this put on cargo security integrity?*

A. Security today has become a greater challenge because there are more opportunities in a complex supply chain for theft, smuggling, and product tampering. The objective is to develop, introduce, and then diligently maintain asset protection continuity within each link of your supply chain. This isn't easy or simple to do when you're working with a global logistics network.

One major problem in this regard is that many foreign entities don't accurately represent what their supply chain safeguards really are when questioned by American importers. This is sometimes due to language barriers and other times the result of not understanding how to properly implement security safeguards.

One overseas manufacturer, for example, had assured our importer client that the ocean containers they were shipping to the United States were being properly sealed in accordance with the security standards we had designed for them. While conducting a security audit at their site, however, I witnessed shipments leaving the manufacturing facility without a security seal being affixed to the containers. When I questioned the shipping manager, he explained that because Chinese cus-

tom officials occasionally detached the security seals for cargo inspections, the manufacturer simply began handing seals to the drivers and asked them to attach the seals after they passed through China Customs.

While the manufacturer believed that they were adhering to our policy, these shipments were vulnerable to theft and smuggling because drivers had uncontrolled access to the cargo area of every container. Although China Customs only inspected approximately 5 percent of their shipments, this manufacturer completely abandoned the security practice they had previously agreed to follow—instead of consulting with us for a better solution. Consequently, a huge vulnerability existed.

Our client obviously didn't know that truckers were affixing the security seals until they received our audit report. It was no coincidence that shipments from this manufacturer were regularly arriving to U.S. distribution centers with shortages. Not surprisingly, when we changed their sealing practices, the shortages immediately stopped.

PHOTOGRAPHY : GARY PEYTON

Q: *What are the security threats that companies typically overlook or pay insufficient attention to these days: physical theft, cyber theft, product integrity, terrorism?*

A: Today, successful companies are genuinely concerned about all aspects of their security. Theft of property or proprietary information, product tampering, inventory theft, fraud, sabotage, and terrorism can dramatically affect a company's profitability and reputation in the marketplace.

The problem is that executives oftentimes assume that their company is far better protected than it actually is. Unfortunately, only after they've been victimized do many companies learn how vulnerable they actually were.

Q: *What are some warning signs suggesting that a manufacturer, distributor, supplier, or a logistics provider may be vulnerable when it comes to their security practices?*

A: I find that companies experiencing security problems typically have made one or more of these three mistakes.

One: They have security assessments performed by people who are lacking in any meaningful expertise or experience in logistics asset protection. As a result, they fail to detect areas of risk and therefore cannot remedy their vulnerabilities.

Two: Their security audits are conducted using generic checklists. Most security programs look better when viewed from a distance. Prior to Sept. 11, 2001, security at American airports appeared adequate. There were guards, video cameras, metal detectors, and other components in place. However, if you had examined the real effectiveness of these safeguards, you would have exposed a number of weaknesses. These vulnerabilities were exploited then and on several occasions since 9/11.

This appearance versus reality problem exists in the private sector as well. Using checklists to superficially evaluate the effectiveness of a company's security program is not a good practice. And many companies have paid the price for failing to recognize this.

A *third* major trouble signal is a failure to make regular improvements—or even conduct basic reviews—to the company's security program. In such cases, the company is not utilizing the very best security practices, and what safeguards that may be in place are typically ineffective.

Q: *Can you give an example of how these missteps play out in the real world?*

A: A good illustration of how they can get a company into trouble can be seen in the litigation between a third party logistics warehousing company and their cus-



tom. The customer in this case was a major manufacturer that had become aware that its inventory was being sold in large volume on the black market.

The manufacturer conducted a confidential investigation of the situation, without the 3PL's knowledge. It found that the 3PL's general manager was directly involved with the theft of truckloads of inventory from the distribution center he was responsible for. The customer was outraged and subsequently sued the 3PL for the stolen inventory and for the investigative and legal expenses incurred, which totaled seven figures.

The 3PL's legal defense was that they had exercised a reasonable standard of care, noting that they had electronic intrusion detection and video systems in place as well as a guard on premises whenever they were open for business. Plus, they claimed that every time their facility had been audited it had received near-perfect scores for security. On the surface, it appeared that the 3PL had implemented sound protective controls.

The manufacturer's attorneys retained us as their expert witness to objectively analyze the 3PL's security program. What we subsequently found was that their security controls were purely cosmetic and totally ineffective. To begin with, the 3PL's general manager, who was the ring leader, had full control of the intrusion detection and video systems. Because there was no independent inspection of the opening and closing alarm system reports, or independent viewing of archived video

activity at this distribution center, the dishonest GM simply eliminated the evidence of all the thefts that these systems had archived.

The guard service proved to be no deterrent because they reported to the general manager. One of the security officers had suspicions about the GM and reported them to his office. Yet the company providing the guard service did not want to make unsubstantiated accusations because it feared that the GM would terminate the contract if the allegations proved untrue.

With respect to the near-perfect internal audit scores introduced as proof that the 3PL's security controls in place were sound, we had no difficulty undermining their real value. In particular, we pointed out that all of the audits were conducted by quality control personnel with no real security experience or specialized training.

Additionally, their auditors were using checklists that glossed over many of the important functions that should have been examined far more thoroughly during the onsite assessments. For instance, two of the questions on their checklist were, "do you have a working alarm system and "are the alarm system activity reports regularly reviewed?"

Instead of the QC auditors actually knowing how to test the onsite security technology or personally examining the activity reports, which would have revealed that the intrusion detection system had been repeatedly compromised, they simply asked these questions of the GM. Naturally, the GM answered in a less than candid manner. The auditors simply accepted his statements as being truthful and checked off the boxes on their forms.

In short, the audits were nothing more than an exercise in pencil-whipping that gave executives at the 3PL's corporate offices a false sense of security and left their inventory vulnerable to theft.

After the 3PL's attorneys understood the real value of the protective policies and practices that were in place, they decided to make a settlement with the manufacturer rather than risk a verdict in court.

Q. *What technology is available today to accurately track chain of custody and ensure product integrity? How effective is it?*

A. While progress is certainly being made, I've yet to come across an extremely reliable, cost effective solution that can track cargo moving through an international supply chain. However, I think this technology will become a reality in the future.

Until such time that electronically reliable, cost-effective technology is on the market, companies need to make certain that they combine the right equip-

ment with best security practices. No technology acting alone will adequately protect a supply chain—regardless of how sophisticated it may be. I think that executives sometimes wait with anticipation for new technology to surface, hoping that it will be a cure-all for their security concerns. The reality is that high-tech devices will always need to be supported by smart practices and procedures.

Also, you don't need the latest technology in every aspect of your supply chain to keep it secure. As an example, if a company in Hong Kong is shipping an intermodal container via ocean liner, they can still have very tight chain of custody providing they utilize a high-security bolt seal, make certain that there are diligent seal control procedures in place, and have inspections conducted at each point in the transit route. Just because the seal doesn't have an embedded smart chip with RF communication doesn't mean that your shipment has to be vulnerable.

Q. *What about the effectiveness of technology in protecting product at risk in a warehouse or DC?*

A. RFID, bar code scanning, and voice recognition selection software all offer benefits operationally. However, they will not prevent theft, product tampering, or smuggling by insiders. Over the last several years, our undercover investigations have revealed multiple ways in which these technologies can be easily circumvented by dishonest employees, vendors, and contractors.

Q. *What's the connection between supply chain security and customer retention and loyalty?*

A. As a result of several factors, such as compliance with C-TPAT (Customs-Trade Partnership Against Terrorism), the popularity of just-in-time logistics, and the increased risk of theft and terrorism, there is greater emphasis than ever before on protecting a company's supply chain. Today, global logistics is about speed, reliability, product integrity, and cost containment—all of which directly affect profitability and customer retention. The industry leaders have found that having world-class security programs directly benefit all four of these critical areas.

Let's examine what could happen to a company that fails to adequately protect their supply chain. If their security is breached, and law enforcement discovers a large quantity of smuggled narcotics in one of their shipments, this company will likely experience a dramatic increase in the number of government inspections of *all* their imports for an extended period of time. This will not only slow down their supply chain and jeopardize delivery deadlines to customers, but also increase their

operating costs. Additionally, this company will incur considerable time and expense interacting with law enforcement officials in the aftermath of this incident.

On top of all this, the publicity that could be generated in the media over the incident can negatively affect the company's reputation in the marketplace as well as their stock price. (This is a main reason why some corporations often retain public relations and disaster management experts after incidents of this type.) The end result is that current or prospective customers may not be so eager or comfortable doing business with that company.

Conversely, if your supply chain is highly secure, you can confidently offer your customers product integrity, speed, and reliability—all of which are business priorities today. Equally important, you can price your product or service more competitively because you're able to minimize your costs.

Q: *What are the potential supply chain impacts of an attempted or actual terrorist attack on cargo destined for the United States?*

A: Intelligence sources have reported that the commercial supply chain remains a prime target for terrorist organizations because of the volume of shipments sent to the United States as well as the fact that an act of commercial terrorism would have significant consequences.

The last thing any of us want, of course, is another 9/11. The loss of life is obviously everyone's number one concern. However, I believe that an act of terrorism also has the potential to ignite a global financial crisis, especially in these economic times.

To illustrate, let's say the United States government closes our ports for an extended period of time in response to a terrorist act, and imports are kept waiting in limbo on ships, trucks and planes at our borders, as well as at ports throughout the world, because they cannot offload their cargo in the States. This would result in a domino effect that would directly affect foreign manufacturers, consolidators, and carriers as well as U.S. importers, distributors, and retailers. In essence, the supply chain would become frozen and the economic consequences would be felt immediately.

On an individual corporate level, the consequences to the bottom line could be catastrophic to any company whose shipment was involved in an act of terrorism. In fact, there is no guarantee that the company would survive if its supply chain had unknowingly transported a weapon of mass destruction into the United States. Or if their food, beverage, pharmaceuticals, or other consumable products had been deliberately tampered

with and caused widespread illness or fatalities.

Q: *Is mandatory screening on all cargo coming into the United States inevitable?*

A: It's not easy to find the right balance between security, cost, and facilitation. The TSA (Transportation Security Administration) has been attempting to find this balance for the flying public for nearly 10 years and it is still struggling to come up with the right equation. Remember, the U.S. imports over 20 million conveyances each year. Even if we reach the objective of 100 percent cargo screening, the real question becomes how thorough and effective would that screening process actually be?

Q: *Has C-TPAT succeeded in its goal of keeping harmful shipments out of the U.S.?*

A: The C-TPAT program has been extremely successful in two critical areas.

First, there has not been a weapon of mass destruction smuggled into the United States as a result of the commercial supply chain being breached, despite efforts by terrorist organizations that are determined to do so. I think C-TPAT justifiably deserves a good deal of the credit for this accomplishment. Second, because of C-TPAT, thousands of companies have been motivated to re-evaluate their supply chain security programs and continue to seek ways to better protect their goods. This not only safeguards these corporate entities, but also the American public.

C-TPAT offers an array of financial and logistical incentives, which is why 10,000 companies have joined the program to date. C-TPAT's annual conference is sold out within hours of registration being opened and mutual recognition agreements are being signed with other countries who are adopting C-TPAT-like programs.

Very few companies have voluntarily given up their C-TPAT certification and walked away from the program. In fact, most of the firms that are no longer in the program have had their certifications suspended or revoked.

If C-TPAT didn't provide tangible security, logistical and financial benefits, it wouldn't be replicated by so many other countries and embraced by the business community. Remember, C-TPAT is a voluntary program. So 10,000 members in less than 10 years is impressive.

Q: *You have said that employee loyalty has become a greater problem these days. What's the reason for this and how is this related to security?*



A. Most security experts agree that one of the reasons for the spike in both white and blue collar crime over the last two years is the recession. The economic downturn has resulted in wage freezes, reduced shift hours, overtime being eliminated, and layoffs. Stock options are worth less and retirement accounts have lost value. Faced with financial pressure, less income, and the threat of job elimination, company loyalty has been negatively affected.

Some of the dishonest workers (both white collar and blue collar) that Danbee Investigations has apprehended over the last two years had no misgivings whatsoever about stealing from their employers, rationalizing that they were simply taking what they were entitled to. In some cases, there was resentment about the austerity measures that had been put in place, and these employees adopted an “us against them” mentality.

Making matters worse, because of the economy, companies are running leaner, with fewer managers, supervisors, and checkers. One unintended consequence of this is that reduced oversight creates more opportunity for fraud, embezzlement, and collusion to take place. Less risk and increased opportunity, along with the need to make more money, are directly responsible for the increased risk of internal theft.

Q. *What’s the single most important action that companies can take today to improve their security and minimize the threat of supply chain disruption?*

A. I think there are actually two key actions. The first is to become more proactive, rather than being reactive. Don’t wait to be victimized to learn that your security safeguards can be circumvented. The most successful companies today are having comprehensive risk assessments and audits performed to expose their security vulnerabilities before others have the opportunity to exploit them.

Second, I would advise companies to be more realistic in terms of assessing the quality of their existing loss prevention programs. There’s a difference between not being victimized because your security program is very good versus not being victimized simply because you’ve been fortunate. Just because you haven’t had a problem doesn’t necessarily mean that you have an excellent asset protection program. In today’s high risk world, relying on luck is not a smart security strategy.

Q. *What can supply chain managers do to jump start the conversation—and action—about better supply chain security in their organization?*

A. I think that reducing overhead and increasing company profitability are always compelling points to raise in advocating better security. The example I previously gave about the company having their supply chain breached and unknowingly having their shipments used to transport narcotics is an actual case we handled for a large American importer. The costs associated with all the remedial actions they ended up taking—the legal, consulting and investigation expenses as well as the interruption to their supply chain—were all unexpected and unbudgeted. Their bottom line took a hit that fiscal quarter.

Much of the same financial exposure exists if a company’s product is stolen or tampered with. Consequently, companies almost always find that being reactive is much costlier than being proactive. Proactive security equates to risk mitigation, the value of which most executives fully appreciate. No one cancels their fire insurance because none of their facilities have recently burned down. They accept the fact that protecting their company from unexpected risks like fire or flooding is a necessary cost of doing business. When you analyze it, that’s exactly what an excellent supply chain security program does while also allowing a company to operate more profitably and with greater efficiency.

In this competitive business environment, the chances are that one or more of your major competitors already understand this and are taking the needed steps to make sure their assets are well protected. If you want to remain competitive, you’ll need to do the same. ☞☞

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The Promise of Advanced Supply Chain Analytics

By Jerry O'Dwyer and Ryan Renner

Jerry O'Dwyer (jodwyer@deloitte.com) is a principal with Deloitte Consulting LLP, where he leads Deloitte Analytics for the Firm's Strategy & Operations practice, and the U.S. Sourcing and Procurement practice. Ryan Renner is a senior manager with Deloitte Consulting LLP in its Manufacturing Operations practice. He can be reached at (rrenner@deloitte.com).

Most management models have been built to respond to data—what happened in the past. But in today's dynamic environment a more predictive approach is needed, one that gives supply chains the ability to sense and respond to business changes as they happen. This once-unheard of capability is now within reach through a concept called advanced supply chain analytics.

Historical algorithms and supply chain management models based on past demand, supply, and business cycles may prove partially insufficient in today's environment—and completely inadequate tomorrow. For nearly all companies today, regardless of industry, the speed of business is outpacing the level of insight into the supply chain. The fundamental problem with current supply chain visibility and analytical models is that discovering or learning what happened in the past no longer provides a competitive advantage. History lessons may be great for business school students to ponder in case study groups. But they do not equip supply chain professionals to effectively manage the supply chain of today, and most importantly, the critical issues that will decide success and failure tomorrow.

In today's climate, we should turn our attention to modeling and predicting the future, enabling centralized insight coupled with decentralized action. Such a change will allow for the gathering and synthesis—not to mention the analysis—of broader sets of internal and external information, including both structured and unstructured data, at a much more rapid pace. Analytics and the ability to drill into data remain critical. But other considerations need to be taken into account when moving to a real-time environment where data acquisition, synthesis, cleansing, processing, alerting, and visualization play just as critical a role in supply chain analytics.

Speed-to-analysis matters more than ever. Significant currency swings, changing demand forecasts, and supplier-specific challenges have affected nearly every organization—from those with the best managed supply chains to the worst. Even perennial top supply chain performers have faced embarrassing stock-outs during periods of unanticipated demand in recent years.



Dennis Harms

Our analysis indicates that businesses are not going to become any less volatile in the coming 12 months. We should all put the memories of normal demand and supply cycles in the rearview mirror.

Within this climate, companies will continue to face not only greater variability and uncertainty but also rising risk. News headlines from the past few years paint a steady stream of incidents that highlight the behavior of how suppliers—even lower-tier suppliers—can create additional risk throughout the supply chain. Indeed, even companies with largely regional supply chains face rising revenue, brand, customer, legal, and market-based supply chain risks, to name only a handful of exposure areas. Many of the current processes, technologies, and skills are failing to provide adequate visibility to help control risks, capture opportunities and master volatility. Even with the current generation of analytical tools, ranging from Excel and statistical modeling packages to company-wide Business Intelligence (BI) platforms, the speed of analysis is often failing to keep up with the market's momentum.

In our experience what is needed is a new approach and mindset to examine information—a new approach that we call advanced supply chain analytics.

Advanced Analytics Defined

Advanced supply chain analytics represents an operational shift away from management models built on responding to data. Emerging capabilities in this area introduce a proactive management model, equipping supply chain professionals with the ability to continually sense and respond as business changes around them. Moreover, advanced supply chain analytics can help supply chain professionals analyze increasingly larger sets of data using proven analytical and mathematical techniques (for example, regression analysis, stochastic modeling, linear and non-linear optimization), thus allowing them to spot patterns and correlations that may have been missed in the past. This enables companies to look at the business in new, previously unimagined ways. Advanced supply chain analytics is more than applying

“old math” to existing problems. Instead, it applies new techniques and methods to ever-expanding data sets.

Advanced supply chain analytics is moving the industry from historical point-in-time snapshots to real-time data access that pushes analysis and visibility to stakeholders across the organization. The concept of a centralized data warehouse or one-off database will become anomalous in a few short years. Advanced supply chain analytics will increase, by orders of magnitude, the

number of individual data elements and records considered (think billions, not millions). Focus will shift from the internal cross-functional sharing of data—which happens in ideal circumstances today—to greater coordination and shared understanding of the data flows



We should turn our attention to modeling and predicting the future, enabling centralized insight coupled with decentralized action.

across value chain partners. Individual silos within the supply chain, suppliers, procurement, operations, sales, the customer, and consumer will be torn down; instead, a single, broader supply chain will emerge.

The question remains, what are organizations actually doing to tap the power of advanced supply chain analytics? The following case examples provide some insight.

Case Example: Total Cost Visibility and Risk Analysis

This manufacturer's supply base for its relatively short product lifecycle consumer durable item remained entirely offshore, concentrated primarily in China and Southeast Asia. There were few, if any, near-shore options to either manufacture the product or work with suppliers to provide parts and components. Despite the length of the required supply chain for this item, the manufacturer has been able to develop a strategy and view into total landed cost by applying advanced supply chain analytics. This approach not only helped to forecast and manage margin in the near-term, but also helped management react to market changes to ensure available inventory and reduce overall supply risk and

brand exposure, ahead of the competition.

Before applying an advanced analytical approach, the company had a comparatively robust view into cost information. Yet this data remained in silos throughout the organization, with different groups conducting their own disparate analyses, all of which impacted total cost. The impacts were felt in make vs. buy analyses; procurement strategies; ocean and air freight options (and expediting costs); domestic freight approaches; optimal warehousing or distribution models; and, of course, inventory requirements at different points in the supply chain. The company also had made early attempts to identify supply risk factors in its analyses (floods, typhoons, lower-tier supply disruptions, and so forth). As with the rest of the information collected, though, the company found it difficult to bridge the functional gaps to gain a timely view into both current and predicted total cost scenarios.

Advanced supply chain analytics was the breakthrough that enabled this organization to develop a single view into total cost on a continuous basis. By aggregating different internal sources with external third-party data sets on a constant basis, this manufacturer was able to create a truly “live” total cost model that was predictive of margins, revenue exposure and business risk, while optimizing for working capital in the process. Using advanced analytics, team members now know how to better understand and continuously optimize order volumes based on both internal and supplier cost structures, balancing volume price breaks against inventory. The manufacturer then linked this and other information into supply chain forecasting and modeling tools to better understand the ideal way to flow products (for example, direct to store, regional vs. national distribution, third-party distribution) on a month-by-month basis to retailers, while maximizing revenue based on promotions, seasonality, and other factors.

Case Example: Flexibility and Breakthrough S&OP

A consumer packaged goods company has been able to achieve supply chain flexibility and breakthrough S&OP (sales and operations planning) with advanced analytics. This organization attributed significant margin improvement in some of its highest volume-moving SKUs to the competitive edge afforded by advanced supply chain analytics. Before embarking on its advanced analytics journey, the company had moved forward on certain traditional S&OP activities. It did not shy away from value chain analysis and examined the best ways to maximize flexibility based on seasonality, regional order volumes/mix, and overall adjustments to demand forecasts.

Initial cross-functional S&OP planning focused on gathering, integrating, and analyzing basic information, including forecast validation accuracy, in-transit times, inventory levels, tier-one supplier lead-times, and retail sales information. The model integrated these basic fields, tying together sales forecasting, demand planning, and supplier planning/management to align supply and demand, giving full consideration to the financial impact of different scenarios. As in most companies, the S&OP process took many weeks, with the majority of the time spent gathering and bringing together internal and external data from multiple sources.

Despite the early progress made through traditional S&OP, it was advanced supply chain analytics that helped the organization transform its financial performance. By moving to a model that gathered information in a near real-time manner, the company spent far more time analyzing its data and interpreting the insight derived from the analysis as opposed to simply looking for the various data sources. The result united the entire organization with a shared view of data that allowed everyone from the CFO to brand managers to take the pulse of the supply chain as activity flowed through the system. Executives, marketing, sales, manufacturing, and finance were able to work together more closely than ever.

Indeed, the output proved not only an IT and supply chain enabler, but also a transformative model that impacted the entire company. It also directed attention to where the business demanded it most. By moving to an exception-based planning model—which added what some of the workflow experts described as “pre-exception processes”—the organization gained predictive awareness of where it needed to focus efforts weeks or months in advance of previously available warning signs. In addition, the level of granularity of information rippling back from the aisles and shelves helped the organization achieve a constantly evolving view of ideal inventory levels based on the number of shipments required relative to inventory carrying costs. On a broader level, the approach provided a stepping stone to integrated financial planning, aligning financial applications with treasury, procurement, and broader supply chain systems and strategy.

Team members also were able to ask and answer questions as new opportunities and threats presented themselves—or when triggers suggested they had the potential to present themselves. Typical areas of inquiry included:

- What happens when demand falls? How do we preserve margin?
- What happens when we have excess capacity? How do we drive incremental revenue?
- If the business is up and we have a shortfall, what

options/scenarios will maintain SKU profitability while avoiding stock-outs in critical locations?

For this company, the ability to compress S&OP information-gathering cycle times from three to four weeks down to five to seven days meant that far more time could be allotted to addressing these questions and far less time spent gathering data. Yet the impact of this “speed-to-insight” also extended beyond S&OP, creating a truly demand-driven culture. The company developed an enhanced ability to sense and respond to changes based on shifting demand data. With this information, it was able to avoid stock-outs, even during promotions. The company also now could customize promotions based on traditional marketing/customer metrics as well as opportunistic elements in the supply chain such as disruptions that impacted a competitor.

Case Example: **Sourcing and Finance Goals Aligned**

Using advanced supply chain analytics, a tier-one automotive supplier bridged the finance and procurement gap to create shared metrics, develop a common understanding, and set mutual goals. The result: a hybrid strategy that gives equal weight—and visibility—to year-over-year cost savings, working capital improvements (which are not built off the backs of suppliers alone), reduced commodity risk, and a tax-optimized supply chain. Having both procurement and finance at the table with aligned objectives had not been possible previously not only because of information silos, but also because of what many perceived to be conflicting goals between the functions. That is, the sourcing teams focused on unit cost savings while finance concentrated on working capital.

These conflicting goals did more than create a culture of misalignment internally. They also left suppliers out in the cold, as relationships deteriorated in spite of rationalization programs that gave remaining vendors a greater share of spend. Curiously, the procurement/finance/supplier disconnect appeared to get even worse after the company went through a multi-wave strategic sourcing program, an overall procurement transformation, and a source-to-pay systems implementation. Despite the increasing availability of data, there were no means of bringing this information together to jointly align goals and strategy, and to analyze combined data sets to balance the goals of all parties, including suppliers.

The introduction of an advanced supply chain analytics approach helped to quickly create a shared internal understanding of value and spend management, factoring in total cost savings goals and working capital impact. This visibility also enabled a new type of sourc-

ing approach that leveraged commodity risk management techniques to aggregate and manage raw material inputs at multiple levels in the supply chain. With the help of finance and with the visibility into aggregate demand information, the procurement team hired a commodity trading professional to implement and manage a hedging program that leveraged a combination of forward buying strategies and financial instruments (futures, forwards, options, and swaps as well as exchange traded funds).

The next steps taken aimed at optimizing the supply chain tax impact based on the location of resources, facilities, and different buying groups (as well as a small, centralized “buying company” for the organization in Luxembourg). Pooling and analyzing all data highlighted additional tax opportunities—for instance, taking full advantage of transfer pricing opportunities and developing supply risk-driven vertical integration. With the latter, the company found that its rigorous supply risk analytics program enabled prediction of supply failure for a vendor in Ireland based on a combination of supplier performance data and financial data. Using this information with unstructured data gleaned from discussions with the supplier’s executive team, the company decided to purchase the supplier to take advantage of a €20 million euro tax loss—and, in the process, avoid a potential supply disruption.

The result of the advanced supply chain analytics program included shared incentives and goals across functions as well as visibility into total cost and working capital requirements for the overall business. The company was able to move into a real-time view of cost information, getting out of the point-in-time paradigm that produced savings in the indirect materials supply chain, but did little for the direct supply chain that operated the business. Using new technologies such as data-hub capabilities that allowed real-time analysis of internal and external supplier-system information combined with unstructured external market information and insights, the organization shifted the technology focus from building systems of records based on retrospective reporting toward analytical tools that drive analysis and outcomes.

Technology Foundation for the Future

As these case examples make clear, a range of technologies will serve as the underpinning that enables the next generation of supply chain analytics. Many of these solutions are beginning to enter the market today or are already used by more innovative companies, albeit in select supply chain areas. The fundamental change is not necessarily to the types of analytics performed, though that will continue to evolve. Rather, the fundamental change is to the quantity, frequency, and types of information analyzed and how it is shared.

Perhaps the most significant emerging and continually evolving relevant technology is a next generation business intelligence and self-structuring data logic that will bring together different data sets, putting data into a context to enable rapid insight. These new business intelligence and self-structuring data logic applications will allow users to ask questions of data all the time, rather than on a weekly, quarterly or yearly basis. So the business users will be asking these questions with their own set of tools rather than the IT department facilitating a data-warehousing-led information hunt. Moving forward, systems-based intelligence will identify patterns in structured data accordingly that allows the users to identify trends, anticipate future events, and draw rapid insight in a near real-time manner.

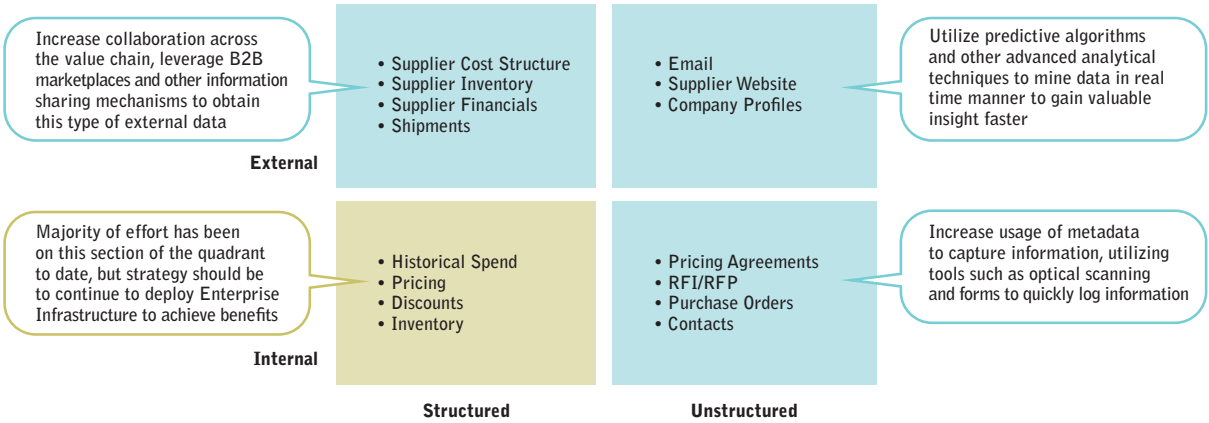
Even though we should assume that future business users in these environments would have at least elementary mathematical and statistical acumen, advanced supply chain analytics tools will mask the complexity of the business rules and underlying algorithms. Indeed, to drive widespread adoption, these tools will need to be as intuitive as a combination of a powerful internet search engine and database software. As important, users will need to quickly combine and analyze different data elements and information (for example, xCBL for trading-partner related document exchange such as purchase orders [POs], Advanced Shipping Notices [ASNs], and invoices). Identifying the types and sources of data necessary to obtain insight is critical and often overlooked. The complexity of this task can be simplified by mapping the type and source of each data element and how it is structured. The EI (External/Internal) Data Matrix in Exhibit 1 gives an illustrative example for indirect procurement and typical strategies for how the data is acquired.

To help make quick business decisions based on these new insights, advanced tools will suggest to the user the most appropriate visualization (for example, 3-D plots, topology charting, heat maps, geospatial mapping) based on data, rather than relying on user-initiated charting approaches. Like a satellite navigation system that re-routes the user dynamically based on traffic patterns, advanced supply chain analytical tools will proactively recommend courses of action based on built-in intelligence that does not require user intervention. Supply chain professionals will shift from collecting data and building disparate analyses to interpreting results and the suggested course of action across multiple parts of the organization.

This level of insight already exists in many markets, often in real-time. For example, certain nationalized healthcare systems and regional healthcare information organizations (RHIOs) can enable a physician or nurse to

EXHIBIT 1

EI Data Matrix (Indirect Procurement)



Source: 2010 Deloitte Development LLC


look-up all relevant patient information during an emergency room visit. In advanced applications, this enterprise master patient index (EMPI) technology may include the ability to query and pull a combination of prescribing details as well as past specialist, internist, and emergency room (ER) visits—even if this information is not integrated into a single patient record. These systems assume the worst when it comes to data quality, correcting on the fly for misspellings, social security numbers, birthdays, and more. Much as the most advanced healthcare systems are delivering new visibility to clinicians today, advanced supply chain analytical tools will focus on delivering similar capabilities built for functional business users.

Unlocking the Value Today

Accomplishing these tasks may seem unreachable in the near term. Yet many of the building blocks and technologies may already exist within your organization to make some of these ideas a reality in the next 12 months, rather than in the next decade. To avoid being left behind, organizations should identify their most critical current and future business issues and prioritize their analytical investment accordingly. Our view is that supply chain, procurement, finance, sales, and IT organizations of any size can start working together to build the capability related to advanced supply chain analytics. To get started quickly, target specific areas including procurement, logistics and sales/demand planning to pilot and discover the types of breakthroughs that are possible.

Companies seeking to develop a competency in advanced supply chain analytics should first evaluate

their current capabilities not only from a supply chain perspective, but also from an IT perspective. With this knowledge, they can plan their own approach for advancement, ensuring that current handicaps—such as a lack of integrated planning systems, different ERP instances, and BI initiatives in functional silos—do not get in the way. Third-parties can help assist in this assessment as well as recommend initial and future steps and initiatives.

From a skills perspective, many supply chain organizations do not possess enough business experts with functional knowledge of different supply chain areas. Finding this diversity and breadth of experience is paramount, as is emphasizing analytical competency and expectation in the hiring and promotion process. In addition, companies should not ignore the IT skills challenge. To best leverage available technology and resources given constrained knowledge, capacity and limited hiring budgets, organizations should consider working with outside specialists that can bring a technical understanding and know-how to making advanced supply chain analytics a reality for the business. 

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When working with suppliers in developing countries, there is a strong case to be made for turning supplier development into a core discipline. The practice can help create competitive advantage by enabling those low-cost suppliers to eventually perform at world-class levels. Here is what it takes to build a highly effective supplier development program.

Bringing Under-Performing Suppliers

By Andreas Gocke, Nikolaus Lang, David Lee, Arvind Pandey, and Stefan Mauerer

What happens when a supplier repeatedly falls short on product quality or delivery deadlines? What if that supplier is important to an emerging market strategy? Or if there simply are no other vendors that can consistently produce to higher standards?

This is the very real world of the supply chain when doing business with vendors in developing countries. Typical problems include parts and components that fail to meet strict specifications in areas such as precision sizing, corrosion protection or rigidity, or an inability to deliver on time. The outputs from sub-standard suppliers are what throw a wrench in production plans, depress quality ratings, add to inventory and rework costs, and generally cause disruptions in production areas and headaches among supply chain managers. “Firefighting makes up two-thirds of the daily work for my team,”

is one verbatim complaint we’ve heard recently.

The challenges are becoming more critical. Globalization puts many more low-quality, low-cost suppliers on procurement sourcing lists. It also heats up competition, urging more innovation in less time—just when more and more corporations are struggling to find the skilled talent they need. And shareholders are looking for far fewer negative surprises and more predictable profit growth based on more reliable data about demand and supply.

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Up to Speed

Those factors combine to explain why there is now more interest in finding systematic, assertive ways to help low-cost suppliers elevate their performance. In this article, the authors describe a range of supplier development initiatives that have demonstrated significant results. Indeed, the same kinds of initiatives can create opportunities as well as respond to challenges. Companies that can improve the performance of relatively immature low-cost suppliers will gain a “best of both worlds” advantage over time.

A Tale of Abysmal Quality Ratings

It wasn't a happy story. On paper, the industrial manufacturer's Chinese subsidiary had the organization design and the processes it needed to ensure steady supplies of high-quality parts. An executive vice-president of purchasing and senior quality executive reported to the subsidiary's chief executive. Their teams worked with their peers in the company's joint ventures.

But the China organization's supplier quality ratings were abysmal. Whereas the parent company's typi-

cal home-country suppliers offered high-quality product—albeit at a cost—and had decades of experience with industry customers and strong capabilities for self-improvement, the subsidiary's Chinese suppliers were newcomers to the industry and had only limited abilities to improve by themselves.

More worrying still: The Chinese organization had no capacity for supplier development despite the lower performance levels of its local suppliers. It wasn't simply a matter of importing supplier quality processes that had worked in the West. The company was hamstrung by systemic challenges that ranged from rivalry between the joint venture partners and lack of clarity about responsibility for supplier quality to limited operating alignment between the purchasing and quality teams and their counterparts at the joint-venture organizations.

The outcomes were distressing. Process audits uncovered serious problems with the quality of locally supplied parts. Capacity took a hit as production bottlenecks appeared unexpectedly—often the result of suppliers' inability to deliver the correct quantities on time.

And compliance challenges of all kinds erupted as suppliers failed to meet specifications. Short-term problems demanded constant firefighting, leaving no time for long-term supplier management, which short-changed suppliers' capabilities. It was a classic example of a vicious circle.

The problem wasn't simply that those Chinese vendors were not yet up to world-class standards for parts supply. It was that the subsidiary lacked the wherewithal to work with its suppliers to enable them to perform as needed. It is a ubiquitous problem—one that dogs companies large and small across most manufacturing industries. And it has become a more pressing problem as original equipment manufacturers (OEMs) have sought out low-cost sources in order to cut their procurement spend without compromising any of the quality of what they sell.

There is now more interest in finding systematic, assertive ways to help suppliers from emerging economies elevate their performance.

The problem has been exacerbated by the suppliers' explosive growth—particularly in China—many of them expanding by as much as 50 percent or more a year. But they are cramming into a few years what it took their counterparts in the West many, many years to practice and perfect. Plenty of the new producers have little experience of “foundation” disciplines such as statistical process control, and they look expectantly to customers to help them build such competencies.

On top of that issue come the cultural complications of working with suppliers whose work styles may seem very foreign.

All of these challenges are particularly acute in sectors with highly complex products or stringent safety requirements. In those sectors, most suppliers in developing economies fall far short of the quality standards and process excellence of suppliers in the developed world—meaning that the risks of using sub-standard inputs far outweigh any potential cost savings.

The typical response of many OEMs is to continue to buy from high-quality, high-cost suppliers that have a deep understanding of their industries. But in doing so, those OEMs miss out on significant cost savings. As global competition heats up, established companies will need to fight harder to maintain market share. The companies that invest in elevating the performance of low-cost suppliers will be establishing an advantage that their competitors will find hard to replicate.

Three Types of Development Programs

The short story is that these days, more and more suppliers require intensive assistance from their customers. Supplier development is in no way a “project” that can be wrapped up in two quarters. It is a long-term play—one that should fit squarely inside a strategic commitment to compete in key regions in certain price bands and at high quality levels. It can take years before a supplier is truly up to speed.

We have identified three types of supplier development programs. (See Exhibit 1.) Each is tailored to the readiness of the suppliers in question to adapt to the changes required. Often the suppliers with the lowest ability to manage change are the ones in emerging nations such as Brazil and India. Yet they generally have the lowest fixed and variable costs—and therefore the most potential for creating competitive advantage. Let's take a look at each program type:

1. The “check and re-check” approach involves visiting target suppliers every six to 12 months, evaluating process and product capabilities for two to three days, and providing assignments or recommendations for improvement. This approach can cover a wide range and number of suppliers—as many as 60 or 80 a year. It works best for motivated suppliers with project management and change management skills, and those that can work independently using continuous improvement disciplines. Typically these will be suppliers in developed countries.

With this approach, the supplier development teams will usually make short “fly in” visits to the supplier's facilities—rarely more than a day at each. About two-thirds of the team's time will be spent defining or communicating key performance indicators (KPIs) for all of their “check and re-check” suppliers or ensuring that KPIs set out the last time have been met. The remainder of their time will be spent at their home offices, reporting back, handling follow-up tasks, and so on.

It is important to note that check and re-check is not especially effective with immature low-cost suppliers—particularly those in developing nations. Quite often they require supplier development efforts in restructuring phases, or programs that remedy excessive emphasis on, say, cost control at the expense of quality. In one case where quality assurance teams visited a Chinese supplier, the approach failed. The visits were not frequent or in-depth enough; worse, the suppliers' employees saw the visits as a “necessary evil,” and hoped that the customer's teams would disappear quickly again.

2. The “SWAT team” approach involves visiting 20 to 30 “problem” suppliers that have specific issues

EXHIBIT 1

Three Proven Approaches to Supplier Development

	Type 1 “Check and Re-Check”	Type 2 “SWAT Team”*	Type 3 “Dedicated Team”
Program Characteristics	<ul style="list-style-type: none"> • Cover wide range of suppliers • Evaluate process and product capabilities • Provide recommendation/ assignments 	<ul style="list-style-type: none"> • Target few problem suppliers • Focus on resolution for specific issues • Jointly develop and agree on implementable improvement plan with suppliers • Agree on improvement timeline/future audit schedule 	<ul style="list-style-type: none"> • Staff dedicated to supplier on extended basis • Root-cause analysis of problems • Hands on implementation support
Typical Team	1-2 generalists/specialists	2-5 subject matter specialists	Average 4 FTE specialists per supplier
Assignment Duration	1-5 days	2-3 weeks	Average 3 months; up to 6 months of stay
Re-Visits	6-12 months	Varies depending on agreement	Follow regular audit frequency
# of Suppliers Per Supplier Developer	50-60 p.a. (regular re-visits necessary)	5-10 p.a. (re-visits necessary)	1-max. 2 p.a agreed

* **SWAT Team:** Special Weapons and Tactics Team. Term originally used to describe well-equipped special police or army teams trained to rescue hostages from buildings in quick, precise and effective action. In Supplier Development context the term is used to describe OEM teams trained for quick analysis and derivation of quality improvement plans during supplier visits. Similar to the original meaning, these visits are well-planned, conducted according to master processes and very short.

Source: Client management and workgroup agreements; BCG analysis

every three to six months for anything from a few days up to two weeks at a time. The customer’s team works with each supplier’s representatives to develop and agree on an improvement plan, timeline, and audit schedule. This approach is suited to suppliers that have significant but specific performance shortfalls, but also have the project management capabilities to implement improvement plans. It is appropriate for suppliers that have not had much exposure to international customers, and that can follow exact improvement roadmaps.

The approach revolves around a temporary office at the supplier’s sites for the time of the assignment. The work kicks off with a structural analysis of the supplier’s capabilities using a pre-defined check list (part standard, part customized to the supplier). Then, it moves to defining the necessary improvement metrics, using a structured, issue-based standard solution registry. Supplier development teams often spend Monday to Thursday at the supplier sites, while Fridays are often spent in the office preparing for the next round of visits and interviewing representatives of the “clover leaf” functions—research and development, quality, purchasing, and manufacturing and logistics—to learn more about their experiences. The SWAT team may stay at a supplier for a few days, not only to point out problems but to collaborate on developing an improvement plan and a regular feedback mechanism to ensure that the work plan is followed.

3. *The “dedicated team” approach* involves

assigning one to four full-time specialists to each supplier for three to six months, along with regular follow-up audits. These small teams analyze the root causes of key issues and provide hands-on support to help correct the problems, using predetermined improvement plans. This approach is widely applicable because it’s faster, leads to more sustainable results, and doesn’t require the supplier to have strong project management skills. But it’s more expensive and, being resource-intensive, it can only address a small number of key suppliers at any time. As such, dedicated teams should only go to suppliers that have a large share of purchasing volume, significant potential to change, and explicit commitment to change from the supplier’s management team.

The dedicated development teams occupy a permanent office at each supplier’s premises. They spend part of the day conducting interviews with workers, team leaders, and top management to identify and communicate potential for improvements. During the rest of the day, the team members may take part in implementation meetings, regularly reporting back to their managers about milestones achieved, challenges still to be overcome, and so on.

Benefits of Supplier Development Done Right

Our experience shows that significant and measurable benefits can be realized in as little as half a year by training suppliers on specific performance targets.

Indeed, many supplier problems can be fixed with a one-time training effort. For example, one supplier had ongoing problems with capacity constraints and manufacturing backlogs, which caused frequent line stops. By training the supplier to analyze and correct bottlenecks, the problem was solved. Two half-day workshops conducted by the company's production planning experts were sufficient.

The potential for improvement can be enormous. At one industrial goods company in Russia, the management of supplier quality was especially challenging because the supply base was fragmented among roughly 1,200 vendors. Indeed, the company was notorious industry wide for its sub-standard product quality; failure rates were measured not in parts per million but parts per hundred. The subsequent introduction of a supplier development program—using the intensive dedicated team approach—promised to properly align the effort with procurement, production, and R&D activities and to quickly remedy the root causes of the problems.

In another instance, at the Far East supplier of one worldwide toy manufacturer, a shop-floor analysis revealed a series of shortcomings: operators had unbalanced workloads and were often absent from their stations; workstations were poorly equipped; operations were often idle during production runs; some inventory

Supplier development is in no way a “project” that can be wrapped up in two quarters. It is a long-term play.

was produced off-line; and materials were poorly managed. A focused supplier development program led to productivity improvements of 25 to 30 percent.

Guidelines for Success

So what does it take to make supplier development efforts work well? In our work and experience with global manufacturers, both in established and emerging countries, these guidelines stand out:

Target a small number of suppliers. Not every supplier should be developed. Development should not happen at all where purchase volumes with a supplier are small and where that supplier lacks change management skills and little commitment to change. There simply isn't a business case for intervention, and those suppliers should be eliminated from the candidate pool. The best choices are key suppliers that provide a high volume of inputs, whose inputs are critical to the quality of the

finished product, that sell very little to the competition, have a high need for development, and cannot handle all the requisite changes themselves.

Focus efforts on what matters most. It is unproductive to try to fix everything at once. Instead, it is best to focus on a supplier's critical problems in the areas of cost, quality or timeliness. For instance, one supplier of exhaust systems took too long to fix sizing problems. A development team observed the supplier's engineers in action and discovered that the remote location and lack of manpower at the supplier's maintenance and tool shops were the root causes of the problem. A new plant layout with a maintenance and tool shop closer to the operations helped improve turnaround times.

Align the organization. The best place for the supplier development group to “live” is usually within purchasing, not the quality function. There are several reasons for this. First, purchasing has more power to motivate suppliers to improve their performance. The threat of losing business is usually a convincing incentive. Second, purchasing must work closely with supplier development teams to ensure that cost savings from supplier performance improvements are translated into price concessions through negotiations with the supplier.

Engage and motivate target suppliers. Suppliers are often worried that if a program yields cost savings of, say, 10 percent, the buyer will demand a 10 percent discount the next time prices are negotiated. Similarly, suppliers are often afraid that the cost transparency of a development program might prevent them from building margins into future price quotes. And their shop-floor managers may be skeptical of any type of change program, so engaging them may be difficult. In China, India and many other rapidly developing economies, most suppliers have never gone through any type of performance improvement program.

So it is important to create incentives and penalties that encourage true commitment and participation, not just lip service. Many companies have found that gain-sharing—such as sharing a portion of cost savings that a supplier identifies—is an effective motivator. Other incentives include giving improved suppliers greater purchasing volume or awarding them a higher rating.

Have a clear roadmap for the improvements required. It's essential to take a structured approach to implementation. We recommend using a disciplined, computer-based reporting system for tracking and monitoring key milestones and accountabilities. Such a system must fulfill five criteria:

- the objectives must be feasible;



- specifics such as measures, timelines, milestones, responsibilities, and key performance indicators must be explicitly established;
- there must be clear consequences for delays or underperformance;
- the system must provide a clear, high-level overview of progress; and
- the plan must be generated and agreed upon by a specific date.

Signed program plans or an agreement ceremony can be an effective way to signify alignment and mutual commitment. However, any pragmatic solution that works well will do the job. For example, one financial services provider used a simple Excel-based tracking tool that linked templates for individual initiatives to summary dashboards at the business unit and corporate levels, allowing for automatic report generation.

Measure and track results. Lack of follow-up is often a major obstacle to success. At one company, the main reason that several development programs failed was because its own staff members neglected to closely track measures and milestones, and failed to take corrective action the moment that suppliers fell short of the commitments outlined in the agreement. Development teams must be held responsible for delivering specific improvements related to quality, cost or volume, and benefits must be tracked over time to truly measure the impact of supplier-development efforts.

The baseline for measurement will be the supplier's current performance. The KPIs used to gauge improvement will typically center on cost and quality metrics, and must be tailored to individual suppliers and their specific problems. For instance, if a supplier's inventory carrying costs are too high, the KPIs should be geared to track improvements in that area. But the results of these improvement measures must be meticulously tracked. This high transparency—along with monthly check-ins with the head of purchasing—puts pressure on development teams to deliver results.

Build in well-defined report-back loops. Reporting back to headquarters is of the utmost importance in any of the three approaches discussed above. The OEM's management team wants to measure the success and cost savings of supplier development. Second, reporting helps supplier-development teams to maintain the right focus (rather than getting caught up in details, such as which paint is the cheapest for emergency lines in the assembly shop). Third, reporting motivates the supplier ("If you don't agree that we need to improve the tool shop, I have to report this back to the head of purchasing...").

So the central job of the intervention team leader is to monitor KPI development to ensure the success

of the development initiative. Her secondary tasks include: defining development proposals for suppliers; allocating team members to suppliers; ensuring best-practice interchange; mediating between interface functions (especially between the "clover leaf" functions); and reporting.

Who's on the Supplier Development Team?

Even though the development team may "live" within the procurement organization, that does not mean it should be staffed with purchasing professionals. The team should be cross-functional, drawing from the "clover leaf" of quality, R&D, engineering, and purchasing. Also, it should have access to the right resources for the right circumstances.

The development team must be led by someone with the authority and skills to mediate among the often-conflicting biases of the team members. And it goes without saying that any supplier development initiative will be impaired if it lacks support from the OEM's most senior leaders.

Interestingly, the development team will probably not draw from the established supplier relationship group. Although there must clearly be interaction between them, the role of the latter—largely relationship-based—is not a match for what is needed for development, which can often involve detailed technical expertise and discussions.

Importantly, the development team must lead with respect rather than threats and bluffs. The more the supplier holds the OEM's competence and experience in high regard, and the wider the OEM's portfolio of proven solutions, the more successful the development effort will be. At many Japanese companies, for example, senior members of development teams are former plant leaders or business-unit presidents in the "third age" of their career—individuals who are highly regarded and even renowned within the company. Implicit in this idea is the importance of staffing development teams with people who are good listeners as well as technically proficient.

Strategic decisions about how to approach a supplier-development program are best made centrally to ensure consistency and gain alignment. Examples of centralized decisions and activities typically include choosing the type of development program, training approach and

tools to be used; monitoring performance; and communicating to suppliers, service providers, and the media. But tactical execution should be decentralized so that local branches can take ownership of the development program and adjust it as needed in consideration of local differences.

Confronting the Real World Obstacles

For most companies, the idea of developing local suppliers—particularly in emerging economies—is a daunting one. A key concern is that once trained, the suppliers will use their new skills to work with competitors that then benefit without making the needed investment. Also, many companies see development programs as too time-consuming and costly to undertake. They feel that the results are difficult to evaluate or too long-term, especially if their focus is on meeting quarterly-report earnings targets.

Moreover, many companies believe they lack the skills and resources needed for supplier development, preferring instead to use their engineering capacity for R&D or quality management within their own plants. OEMs that have long been dependent on suppliers for specific component and subassembly designs may no longer have the specialized know-how needed to advise on production of that part. However, they do have the expertise in process management—for example, in total quality management principles or kaizen disciplines. Additionally, third-party supplier development agencies with industry-specific experience can help solve such resource bottlenecks.

Furthermore, many suppliers can be resistant to being developed—at least to begin with. It is not uncommon for early efforts to follow a pattern: outright hostility to intervention, followed by passive resistance until the development team departs—at which point the supplier's people resume their old ways. They may view the OEM's developers as policemen. They may feel they have no choice but to adopt the developer's proposals because they have to, not because the recommendations make sense.

Suppliers may also suspect that development efforts are a ploy that will reduce their margins. If development is aimed primarily at taking costs out so the buyer can demand price cuts, the supplier will never be interested in supporting it. Development must provide tangible, recognizable benefits for both sides. That said, supplier development can lead to significant price reductions—typically in the range of 2 to 5 percent but as much as 10 percent. But the discussions about price and cost must be explicit at the outset, and throughout the development process.

In our experience, suppliers often hide things from

developer teams by not granting access to “sensitive” areas, for instance, or by not letting them speak to certain staff members. The latter is especially critical to developers, because discussions with operations staff (such as tool shop workers) often provide value and unfiltered inputs. Suppliers that prevent this exchange of information should be eliminated. On the other hand, many promising suppliers are aware of the potential for improvement and make preemptive moves before the supplier developers arrive—reducing finished-goods inventory, for example.

In other cases, though, supplier development teams can be “co-opted” by eager suppliers, used to help tackle other problems. In Russia, for instance, it is not uncommon for developers to arrive thinking they know what their agendas are, and then to find that the supplier's managers insist on having their help with additional or completely different challenges.

Supplier Development: A Core Discipline

In today's fiercely competitive global economy, business leaders have a responsibility to their shareholders to work with “problem suppliers” whose performance clashes with the OEM's own performance objectives. In fact, they have an opportunity to work with less mature, low-cost suppliers to steadily overcome quality issues, production delays, and inability to meet product specifications.

As such, supplier development must be viewed as a core discipline. Clearly there is a cost to developing and supporting the discipline. But it is one that can yield impressive, quick wins as well as substantial long-term advantage in terms of a robust supplier network that can help drive next generation product development as well as holding down costs and upholding quality and delivery standards.

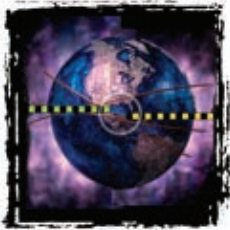
The three approaches we have described are not the only possible approaches, of course. Nor are our guidelines set in stone. There are thousands of other factors to be evaluated. For example, the “check and re-check approach” may be best for an emerging-nation supplier that has never worked with international customers. Or a poor performer in Italy or Japan may benefit most from a dedicated team approach. But the ideas we are proposing comprise a pragmatic subset that experience proves can add value in many circumstances.

The overarching concept should be to apply the simplest possible development initiatives that will deliver the maximum benefits. Done right, a focused supplier development program can deliver results quickly—and provide enormous returns on investment. ☺☺

Toward Excellence in Compliance Management

The best procurement compliance programs combine people, process, and technology to gain proactive end user compliance across the organization.

By Carrie Ericson and Falyne Chave



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Compliance to procurement policies and contracts is critical to driving the benefits of sourcing work to the bottom line and achieving year-over-year improvement goals. But in some industries compliance is mainly a matter of protecting against audits or following governmental and other regulations. To help discover how companies are approaching procurement-related compliance, A.T. Kearney undertook a benchmarking study of 15 Global 500 companies. The survey instrument was supplemented by follow-up interviews with executives that helped to provide context to the responses.

Procurement compliance occurs both within and outside the company. Internally, companies to varying degrees implement programs geared toward enforcing compliance to the sourcing process, the buying process, contracts, and preferred suppliers. Supplier invoices are also monitored to ensure that they hold true to contracted prices.

While survey respondents were classified along four stages of excellence for sourcing and procurement compliance (see Exhibit 1), not every company will strive to reach the highest stage. Instead, each should create pragmatic programs that are right for the organization in terms of need and ability to invest in compliance. Companies with center-led or centralized procurement functions tended to place in Stages

3 and 4, as did those in the consumer packaged goods and pharmaceutical industries.

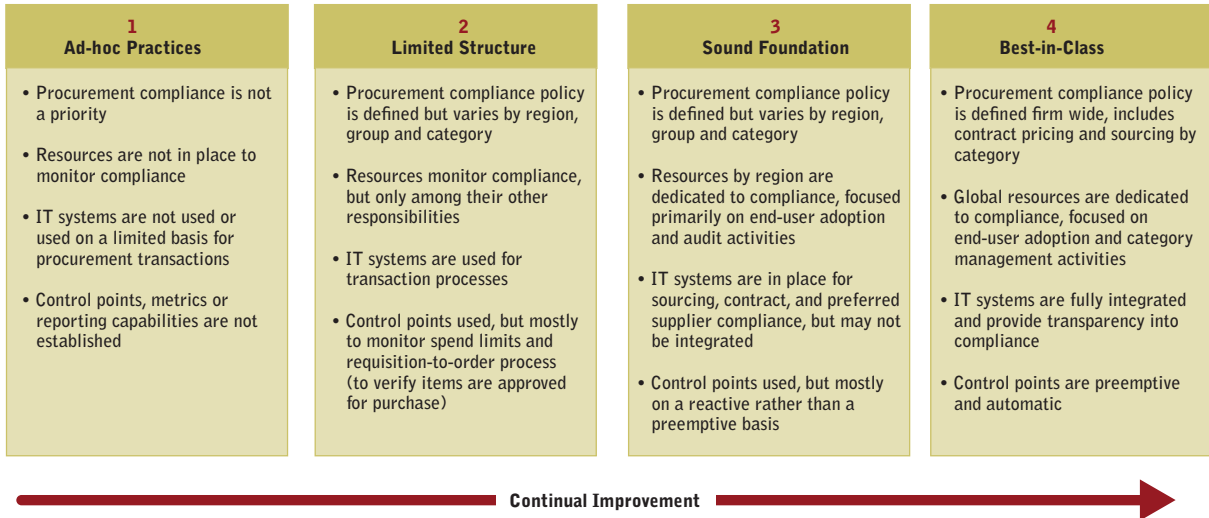
Relative to the amount of effort required, study participants indicated that demand management and compliance to contracts brought the highest anticipated return among eight different types of procurement programs. Strategic sourcing and process compliance were also highly regarded in terms of anticipated benefit. Companies will not simply go after the highest potential benefit first; where a company is in its evolution, how it views cost avoidance and the importance it places on opportunity cost are a few of the factors that lead companies down different paths.

Not surprisingly, companies generally expect all employees affected by compliance guidelines (internal end users and procurement staff) to follow them—and most also expect suppliers and internal business partners to do so as well.

The survey results indicated that the survey participants have put their strongest efforts into ensuring compliance to the sourcing and buying processes, with compliance to contract pricing by supplier and compliance to contracts and preferred suppliers receiving less attention. Those that are achieving compliance to preferred suppliers are doing so through the use of technology tools that force compliance. While most companies emphasize the need to comply with the sourcing process, they also typically establish a spend threshold for engaging their limited sourcing resources in order to maximize return on

EXHIBIT 1

Stages of Excellence for Procurement Compliance



Source: A.T. Kearney, Achievement of Excellence In Procurement (AEP) study, 2008.

investment. Most roundtable participants noted that their own companies employ computerized training modules to teach employees about compliance.

Resource constraints and a lack of tools for end users were cited as the two greatest challenges around driving compliance. Overcoming these challenges may well push many Stage 3 organizations up to Stage 4—Best in Class.

On average, companies dedicate fewer than three total FTEs to deploying and managing compliance efforts. Category managers most frequently have this among their duties, which is not surprising in light of the skin they have in the game around actual savings realization. Simplified contracts can make compliance easier. Third-party services can be used to monitor supplier compliance to contract terms; some work on a contingency basis that awards them some percentage of any monies rebated by suppliers as a result of their work.

Compliance tools are generally reactive, such as after-the-fact reporting that shows spend outside of the preferred suppliers. Less than half of the companies in the study have successfully implemented tools to manage compliance. While few companies have gone this route, one way to proactively enforce compliance is to have a requisitioner verify whether a vendor is a preferred supplier before a purchase is approved.

More than half of the companies surveyed do not bring

notable repercussions for non-compliance; those that do typically employ multiple courses of corrective action. Because non-compliance typically occurs when an employee chooses to take a short-term action to benefit his or her particular function or business unit, the most common repercussion is reporting of the incident to senior management outside of procurement in order to reinforce the fact that compliance is about the mutual benefit of the entire enterprise.

Survey respondents indicated that control points and metrics are most frequently employed to drive compliance to procurement. Stage 3 and 4 companies typically use control points instead of monitoring. Some executives feel that human feedback regarding compliance brings a greater influence on people than simply having a technology-driven purchasing system deny an action.

Ultimately it is up to each company to reexamine its compliance program to verify whether it fits with corporate goals. Efforts need to be focused to ensure that they are driving value. Programs need to be assessed to determine their value add; those that are retained or implemented need to be properly marketed to gain buy-in from internal stakeholders. Policies and tools that promote proactive end user compliance by all employees, not just procurement and sourcing staff, drive superior compliance.

SRM Leaders Outpace Peers On Lead Times, Other Key Metrics

SCMR introduces our new “Benchmarks” column from APQC. This first installment shows that companies with well-developed Supplier Relationship Management (SRM) programs enjoy big advantages over competitors.



By Rob Spiegel,
APQC

Organizations without formal supplier relationship management (SRM) programs stunningly report 233 percent longer supplier lead times than those with such programs. (See Exhibit 1). Reducing lead times from suppliers can get inventory in and out the door faster, freeing up cash and ultimately satisfying customers.

This is a key takeaway derived from data collected in APQC's Open Standards Benchmarking in Procurement (www.apqc.org/pro) initiative. The data shows that organizations with SRM programs are significantly more efficient. The shorter lead times translate to efficiency savings, a cleaner balance sheet, and improved customer service.

Companies using SRM also demonstrated a higher mix of strategic suppliers in their total supply base. This was true at the 25th percentile, median, and 75th percentile of the sample. (See Exhibit 2.)

Supplier relationship management is a collection of programs and initiatives aimed at maximizing the value of key supplier relationships. The goal is to improve supply chain effectiveness and dependability through close collaboration and communication with critical suppliers. Ultimately, effective SRM can drive down costs, improve customer service, and make an organization more competitive.

Without an effective SRM strategy, organiza-

tions may encounter problems such as:

- greater difficulty in competing globally,
- higher sourcing costs,
- higher material pricing,
- inconsistencies in quality and supply,
- constant adversarial battles with suppliers,
- continued inability to retain good suppliers, and
- more dissatisfied customers.

To identify the best practices that comprise effective SRM initiatives—and put some context around the data from our benchmarking research—APQC conducted a study of successful companies to see how they designed and established win-win relationships with their supply chain partners. We studied well-known industry leaders such as Cessna Aircraft Company, H.J. Heinz Company, and Anheuser-Busch as well as organizations such as Stryker Instruments, a medical device manufacturer, and Vectren Corporation, a producer of electricity and natural gas.

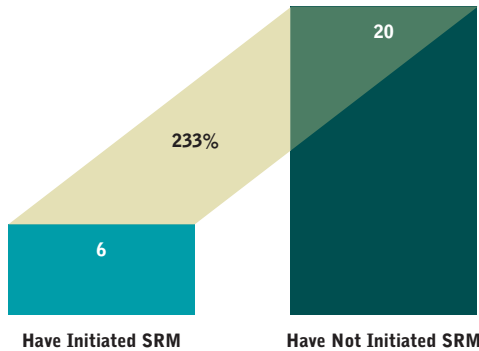
One of the goals was to identify excellence in supplier management that would apply equally to \$50 billion organizations as well as to \$50 million companies. Researchers studied how these companies designed a supplier relationship methodology, established a collaborative environment to synchronize the supply chain, used tools and technology, and measured success while providing for continuous improvement.

The APQC study team identified 10 patterns or best practices of SRM excellence that were consistent across the companies in four areas: methodology, collaboration, technology, and measurement.

EXHIBIT 1

Impact of SRM on Supplier Lead Times

Supplier Lead Time (Days)



Source: APQC's Open Standards Benchmarking in Procurement

SRM Methodology: Integrate Suppliers

The first three SRM best practices fall under methodology. These practices include partnering, aligning supplier relationships with corporate goals, and organizational support. The companies in the study developed methodologies to establish partnerships with suppliers and also encouraged internal and external stakeholders to work together to achieve common goals.

The partnering best practice focused on integrating SRM into strategic sourcing initiatives to improve both supply chain and customer service. In 1996, Stryker began a streak of 23 percent annual net earnings growth. To continue this level of growth, however, the company knew that it needed to improve its supply chain. "We kept raising the bar with our performance," explained Mark Lincoln, Stryker's vice president and plant manager. "We did very well internally, but we did not do it very well with our supply chain." The company leaders turned to SRM, enlisting their suppliers for help in streamlining supply processes to make the supply chain more reactive and responsive to customer demand.

The best practice that aligns SRM with corporate goals is to bring cross-functional teams into supplier relationships. Cessna's sourcing group noted that one of its top three SRM critical success factors was attaining enterprise-wide strategic alignment that links back to customers and stakeholders. To achieve this, the company formed cross-functional commodity teams from engineering, quality, finance, aftermarket, and supply chain. Suppliers were rationalized into the categories of growth, provisional, and phase-out. The process aligned the supply base with overall corporate goals.

Organizational support is critical to effective SRM; the entire organization must recognize and support the impor-

tance of supplier relationships. This support can take the form of senior management commitment to the effort, clear and consistent communication regarding the value of the SRM program, and strong performance measurement initiatives. A well-developed corporate mentality for SRM policy enforcement will discourage maverick buying practices. The best-practice partners in the study indicated lower percentages of maverick purchasing.

Collaboration: Synchronize the Supply Chain

The next three best practices come under collaboration and synchronization. They include building strategic relationships, rationalizing the supply base, and developing mutual capabilities. Strategic supplier relationships are built through communication and collaboration between the company and its suppliers to minimize conflict or resistance and to develop trust and respect.

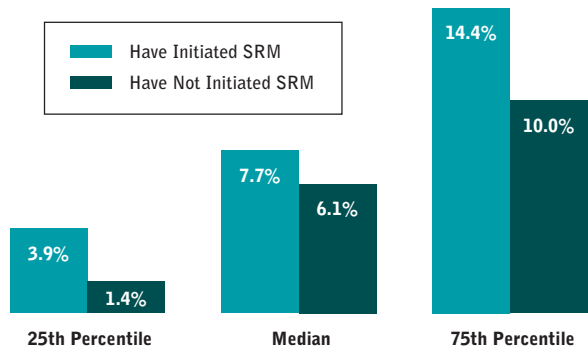
Building strategic relationships requires time, trust, mutual understanding, and regular and consistent communication. It also calls for mutual commitment to establish a long-term relationship. Cessna and its suppliers integrate processes and resources in a relationship driven by the mutual motivation to work together to improve quality, reliability, delivery, and service. The company and its suppliers joined forces to address the cost pressures of raw materials, crude oil, and health care. They also collaborated to meet customer expectations of faster, better, and cheaper delivery.

The best practice of rationalizing the supply base is a matter of utilizing the right number of suppliers as well as the right suppliers. For most companies, this means cleaning up a sprawling collection of suppliers that have accumulated over years (sometimes even decades) into an incoherent mishmash of semi-maverick spend. Cessna sought

EXHIBIT 2

Impact of SRM on Strategic Supplier Mix

(Strategic Suppliers as % of all Suppliers)



Source: APQC's Open Standards Benchmarking in Procurement

to reduce its supply base by 75 percent in a four-phase program of define, align, improve, and integrate. The company reduced its supply base from 3,500 to 840 over five to six years.

The best practice of developing mutual capabilities means working with suppliers to develop capabilities and strengths that can continuously improve supply chain effectiveness and, ultimately, customer service. Stryker developed two key initiatives to establish a collaborative environment—a supplier advisory board and supplier roundtables. The company convenes quarterly advisory board meetings to review performance data for the previous quarter and discuss what went right and wrong. The process has helped Stryker move to the next level of performance and create true partnerships with suppliers.

Technology: Tools and Processes

Two best practices fall under technology and process improvement: establishing standards and collaborating on technology. The best-practice partners in this study work collaboratively with their suppliers to determine the features and functionality of tools and technology necessary to support an integrated supply chain that enables continuous improvement.

Setting standards is critical for executing an efficient and effective supply flow. This process includes designing a system of sourcing and spending practices with attached accountability. The Heinz North American supply chain, for instance, interacts with its suppliers through global sourcing teams organized by category. Over a two-year period, the company's supply chain group conducted planning and review sessions on four strategic imperatives: driving profitable growth, simplifying business, measuring performance, and reducing cost. The group found that all four imperatives work in conjunction with one another.

The best practice of working with suppliers to identify and implement tools, technology, and proven processes is a collaborative foundation for continuous improvement. Cessna's sourcing organization performs an annual gap analysis to identify opportunities for adopting enabling tools and technologies. The gap analysis begins with the customers and stakeholders and ends with continuous improvement and results. The company shares its successful processes and tools with suppliers to reduce the total cost of acquisition.

Measurement: Metrics to Improve Results

The final two best practices identified fall in the measurement category. These include creating effective metrics and developing measurements and rewards to support the metrics. The goal is to improve mutual capabilities and performance. Importantly, performance objectives need to be measured and reinforced with a rewards system.

The best practice of developing effective metrics involves collaborating with suppliers and stakeholders to ensure the metrics are realistic and promote buy-in. Vectren created standard performance measures like supplier lead time, supplier fill rate, and on-time deliveries. The company then collaborated with strategic suppliers to determine applicable key performance indicators aligned to meet strategic goals. The metrics are reviewed quarterly and adjusted to ensure that the measurement system is helping to obtain desired results.

The best practice of developing measurement and rewards works to ensure program success while driving results. At Heinz, the procurement group instituted reviews that have two important attributes: a quantitative, data-driven scorecard and the inclusion of senior management from both Heinz and the supplier. The reviews have become essential to the company's successful supplier relationships.

The Message: SRM Fuels Efficiencies

APQC used its Open Standards Benchmarking research to see how well the best-practice partners in the SRM study ranked against average and top-performing companies. In all the benchmarked supply-chain metrics—from on-time delivery to perfect orders and order fill rates—the companies with well-developed SRM programs were among the top performers. The qualitative study APQC conducted with the group of industry leaders showed how SRM was being put into practice. The research identified specific best practices that delivered real value for these organizations and their supply partners.

The bottom line: The benefits of SRM are real. They fuel greater supply chain efficiencies for all of the participants.

Rob Spiegel is Knowledge Specialist—Supply Chain for APQC.

APQC is a member-based nonprofit founded in 1977. APQC is the leading resource for performance analytics, best practices, process improvement, and knowledge management. For more information, visit www.apqc.org or call 713-681-4020.

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Taking a **GLOBAL** Approach to **EDUCATION**

To succeed in an increasingly global environment, supply chain professionals need to broaden their horizons beyond the domestic scene. Education holds the key.

By Bridget McCrea

The days when supply chain managers could go about their business focused solely on their domestic market are long gone. With technology shrinking geographical boundaries down to size, and even the smallest of firms trading and partnering with foreign companies, logistics and supply chain professionals that don't understand the inner workings of the global supply chain are finding themselves behind the eight ball.

Combine those factors with an economy that's slowly improving and promising business and trade upswings over the next few years, and the need for solid global supply chain expertise becomes even greater. "Global business is first and foremost on everyone's mind right now," says David Widdifield, a professor at The Ohio

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State University's Fisher College of Business in Columbus.

At a recent Fisher focus session, for example, a small group of domestic and international supply chain executives brainstormed and bounced ideas off of one another. When the topic of global business came up, Widdifield notes that the "education of existing and incoming supply chain executives" was cited as a key concern by more than one attendee.

"We've been doing these focus groups (for the school's Career Patterns in Logistics survey) for 38 years, and this is the first time we were able to look so closely at the challenges that global firms are dealing with," says Widdifield. The 2010 survey also revealed a high level of global activity among respondent firms, whose overseas connections ranged from activities in just one or two countries all the way up to 50 or more countries.

On those companies' wish lists right now, according to Widdifield, are supply chain managers who are not only excellent tacticians that are good with numbers, but also are skilled at offering and executing solutions in a fast-paced, international environment. Soft skills, including those centered on communication and presentation, are also in high demand, he adds, as is the ability to function in a team atmosphere.

"The companies that participated in our focus group also talked a lot about the need for these skills and experience, and the importance of building relationships on both the peer and customer sides of the equation," says Widdifield, who has been working with Fisher's faculty and staff to develop curricula that addresses these new demands—particularly those that help enhance communication and relationship-building skills.

"Four years ago, everyone wanted supply chain managers who could work with numbers, be tactical and develop solutions," says Widdifield, adding that the economic downturn and supply chain integration have shifted those needs. "More focus is now being put on a professional's ability to work with counterparts across departments, state lines, and international borders."

No Professional Left Behind

In October, John Vande Vate, executive director for Georgia Tech's Executive Masters International Logistics and Supply Chain Strategy (EMIL-SCS) program, served as the opening speaker at The International Logistics & Supply Chain Strategy Summit. Later the same day, Vande Vate moderated "Around the Globe" discussions highlighting Latin American and European supply chain trends.

The annual event was just one of several globally focused supply chain summits that Vande Vate and his team participate in. At the gatherings, they listen to a broad range of firms that are doing more business with overseas



"Global business is first and foremost on everyone's mind right now."

—David Widdifield, professor at Ohio State University's Fisher College of Business in Columbus

partners. These companies expressed a desire for experienced, knowledgeable supply chain managers to handle those transactions and interactions. In fact, he says that over 50 percent of Fortune 500 firms are earning more than half of their revenues from international business—a fact that only underscores the need for such professionals.

"Global is where it's at right now," says Vande Vate. "Even companies that work primarily with domestic customers are manufacturing many of their products internationally." That can pose challenges for the supply chain professional who is accustomed to dealing only with American business partners, and who literally overnight is directed to source products from Asia, Europe, or South America.

"Usually the first step in moving toward globalization is working with international suppliers," says Greg Andrews, the EMIL-SCS managing director. The situation gets more complicated when manufacturing operations are moved overseas. This not only extends the flow of raw materials and finished goods, but also introduces issues such as customs, valuations, currency, and labor management. "It doesn't matter if you're a one-man department or a 20-person team," says Andrews. "There is a litany of landmines to get through before you can achieve success."

Navigating the Waters

The fact that supply chain managers are expected to do more these days probably comes as no surprise to the seasoned professional who has watched his or her job responsibilities expand over the last decade. As more firms reach overseas to procure materials, sell products, and create partnerships, the number of global supply chains has increased exponentially.

The question is, how does a supply chain professional keep up with the educational and job requirements of the global environment? Many are looking to the array of programs—online, executive education, full-time, and more—being developed by universities and professional organizations that are focused on supply chain executive education. From short seminars to intensive, week-long programs, the number of offerings centered on the global supply chain is plentiful.

To cite one example, Penn State's Executive Program and the Center for Supply Chain Research offer a four-day Global Supply Chain Strategies course to introduce senior-level supply chain managers to "contemporary factors and issues associated with international business and extended supply chains." The course covers techniques and strategies to help students master global trade management, transportation, supply chain risks, and regional supply chain issues. It also examines how to build effective teams across geographies and cultures.

At Ohio State, the Fisher College has a global education lineup that includes both online courses and open enrollment options. "These courses allow executives to come in and sharpen their finance, accounting, general management, leadership, and international industry partnering skills," says Widdifield. A leadership course, for example, helps students develop coaching, mentoring, negotiation, and conflict management skills; another track covers brand building, and customer and supplier relation-



ship management within a global context.

To ensure a well-rounded education experience, the executive development program at Michigan State's Broad College of Business offers a multi-pronged approach that includes seminars, online learning, international job assignments, networking sessions, and college executive education coursework. Simple steps like participating in group sessions that include a mix of national and interna-

tional companies can be particularly effective, says David Frayer, the program's director. "The experiences allow you to network and learn from one another from both a formal and informal standpoint," Frayer says.

Also offered are degree programs that focus on international business, says Frayer, pointing to the Global MBA as a viable option for the supply chain manager who is willing to put the time and effort into the program. "Students go out to multiple locations worldwide and gain experience from each of them," he says. For those professionals who aren't interested in the complete

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Global MBA program, he says, job rotations and international assignments can serve as a good substitute.

Ultimately, Frayer says the more varied the global education, the better. "There really isn't just one thing that supply chain managers can do to learn the ins and outs of the international business world," he says. "It doesn't matter where you're at in your career. The best bet is to just take conscious steps to prepare yourself to deal in the global economy, or risk being left behind."

Global Emphasis to Intensify

As the domestic economy continues its slow rebound, expect to see even more firms reaching overseas to create ties with international partners, suppliers, and customers. Smart supply chain managers will gain global expertise through executive education and other development programs as well as hands-on experience. Such experiences will work in tandem to create well-rounded supply chain managers who can tackle the challenges placed in front of them by both the global and domestic business environment.

Now is the time to act, says Michigan State's Frayer, who sees roadblocks ahead for supply chain professionals


who ignore the global aspect of their jobs. "Going forward, the need for international expertise is going to be greater and greater," he says. "It's not going away anytime soon." What also isn't going away is the domestic recovery's "jobless" component. The meaning: current supply chain professionals will likely be called upon to take on more international business responsibilities.

"Right now, we're not seeing a lot of firms out there talking about launching global initiatives and hiring hundreds of people to run those initiatives," says Frayer. "Instead, they're talking about growing globally in 2011, and leveraging existing resources to help them get there."

Education is certainly key to keeping pace in this dynamic global environment. As we've noted here, the educational options around global logistics and supply chain management are growing fast. The university listings following this article give a good representation of what's out there.

Bridget McCrea is a freelance writer specializing in logistics and supply chain management. She can be reached at bridgetmc@earthlink.net.





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Auburn University

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Marriott School
<http://marriottschool.byu.edu>

University offers a BS in Global Supply Chain Management. Coursework is designed to prepare students for managerial positions in manufacturing and service industries in the areas of purchasing, operations, logistics, customer service and supply chain management.



Cranfield University

School of Management
44-011-1234-758102
www.cranfieldmsc.biz/log

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Georgia Institute of Technology

Executive Masters in International Logistics (EMIL)
404-385-7306
<http://www.emil.gatech.edu/>

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Golden Gate University

Edward S. Ageno School of Business
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Golden Gate University offers undergraduate and graduate certifications in operations and supply chain management.

Indiana University

Kelley School of Business
877-785-4713
www.kd.iu.edu

Kelley Direct at Indiana University offers an MS in Global Supply Chain Management. This online graduate program can be completed in 15 months.

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CTL also regularly partners with organizations to provide customized executive education experiences to individual enterprises and consortia. Custom courses give organizations the opportunity to direct intensive efforts at specific issues crucial to company goals, including business continuity strategy, scenario planning, and competitive alignment.

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North Carolina State University

College of Management
919-515-5560

www.mgt.ncsu.edu

N.C. State offers undergraduate studies in Operations & Supply Chain concentration. The university's Supply Chain Resource Cooperative also provides a wealth of educational resources.

Northeastern University

College of Business Administration
866-890-0347 x3510

www.cba.neu.edu

Northeastern offers an MBA degree with supply chain concentration, plus a Certificate program in SCM. Also offers an online MBA degree program with an emphasis in Operations and Supply Chain Management (via five specialized, elective courses).

Northwestern University

Kellogg School of Management
847-467-7020

www.kellogg.northwestern.edu/execed

Northwestern offers the Supply Chain Management–Strategy and Planning for Effective Operations program on: February 15-18, 2011 and June 5-8, 2011.

The Ohio State University

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614-292-0331

<http://fisher.osu.edu/centers/scm>

Fisher College of Business offers undergraduate, masters and Ph.D. programs in logistics. Fisher College also offers a week-long executive education program in supply chain management. The program is based on the eight essential business processes that comprise the Global Supply Chain Forum (GSCF) Supply Chain Management framework. These processes must be implemented cross-functionally and with key customers and suppliers in order to create the maximum value for customers, suppliers, shareholders and other stakeholders. It also includes a session on the GSCF partnership model that is being used by major corporations to structure relationships with key customers and suppliers. Visit our website for more information.

Upcoming sessions in 2011:

March 14-18, 2011, Ponte Vedra Beach, FL

May 16-20, 2011, Cranfield, England

October 10-14, 2011, Cranfield, England

October 31 – Nov 4, 2011, Columbus, OH

Penn State University

Smeal College of Business
814-865-3435

www.smeal.psu.edu/psep

Upcoming supply chain executive education programs include:

Applying Lean Principles Across the Supply Chain
June 6-10, 2011

Designing and Leading Competitive Supply Chains
March 13-18, 2011

Essentials of Supply Chain Management
April 11-15, 2011

Processes and Tools for Supply Chain Success
May 23-27, 2011

Achieving Supply Chain Transformation
March 21-25, 2011
June 13-17, 2011

Developing World-Class Supply Chain Collaboration
May 9-12, 2011

Building Global Supply Chains for Competitive Advantage
April 18-21, 2011

Rutgers University

Rutgers Business School
973-353-5226

www.business.rutgers.edu/scmms

The Department of Supply Chain Management and Marketing Sciences (SCMMS) at Rutgers Business School offers a range of academic programs including a PhD in SCMMS, a MBA Concentration in Supply Chain Management, and an undergraduate major in SCMMS. Rutgers also offers executive education programs based on current topics and trends. Also offered is a Supply Chain Management Certification Program for business professionals.

Stanford University

Graduate School of Business
650-724-6301

www.gsb.stanford.edu/exed

The Graduate School of Business is offering a new program "Strategies and Leadership in Supply Chains". Program is designed for executives who have strategic responsibilities for SCM, manufacturing, operations, logistics, distribution or procurement.

Syracuse University

Whitman School of Management
315-443-3751

www.whitman.syr.edu/scm

The Whitman School offers B.S., MBA, and PhD programs in Supply Chain Management. Focus areas: demand management, inventory control, risk sharing, supply chain planning, information flows, transportation, production management and global b-to-b marketing. Six Sigma training also offered.

Texas A&M University

Mays Business School
979-845-1616
www.business.tamu.edu
The Mays Business School offers a Supply Chain Management major as part of its BBA in Information & Operations Management.

The World Academy

908-354-7746
www.theworldacademy.com
The Academy provides training programs and seminars in all phases of export/import logistics, hazardous materials (HAZMAT), letters of credit, communications, harmonized tariff schedules and INCO terms.

University of Arkansas

Sam M. Walton College of Business
479-575-6142
www.waltoncollege.uark.edu
The Marketing and Logistics Department at Walton College offers a B.S. in Business Administration (Transportation and Logistics Major) and a B.S. in International Business (Logistics Concentration). Also operates the SCM Research Center and RFID Research Center.

University of Denver

303-871-4702
www.du.edu/transportation
The ITI (International Transportation Management) Executive Masters Program from the University of Denver offers a rigorous curriculum and a hands-on approach for developing advanced management skills for transportation and supply chain professionals. This is an 18-month program with five, one-week Denver residencies and a travel seminar to an internal location. Applications are being accepted for classes beginning in September 2011.

University of Maryland

R.H. Smith College of Business
301-405-2189
www.rhsmith.umd.edu
The R.H. Smith College of Business offers executive education programs through the Supply Chain Management Center.

University of Michigan

Ross School of Business
734-763-7804
http://execed.bus.umich.edu/
The Ross School offers a one-year Master

in Supply Chain Management degree. Also offers an executive education course in Supply Chain Design and Execution for Global Markets.

www.pe.gatech.edu/scl-scmr

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Outreach Programs Industry Outreach Programs Industry Outreach Programs
Global Research Centers Innovative Global Research Centers Innovative

Georgia Tech Supply Chain & Logistics Institute offers a comprehensive curriculum in Lean Supply Chain Operations, Warehousing, and Transportation. Courses are taught by world-renowned Georgia Tech faculty in the Global Learning Center, a state-of-the-art facility in Atlanta.

2011 Lean Supply Chain Series Courses

- Building the Lean Supply Chain Problem Solver
February 1-3 | June 14-16 | August 9-11
- Building the Lean Supply Chain Professional
March 15-17 | June 28-30 | September 20-22
- Building the Lean Supply Chain Leader
April 12-14 | July 12-14 | October 18-20

2011 Supply Chain Management Series Courses

- Warehouse Planning and Management
March 8-10
- Inventory Planning and Management
May 3-5
- Demand-Driven Supply Chain Strategy
June 21-24
- Transportation/Distribution Planning and Management
July 19-21
- Warehouse/Distribution Center Layout
November 2-4



For more information or to register, visit
www.pe.gatech.edu/scl-scmr or call 404-894-2343

University of San Diego

Supply Chain Management Institute
619-260-4600

www.sandiego.edu/scmi

Program emphasizes a community of learners, limits class size and incorporates company-related projects to give participants an educational experience relevant to their specific career objectives. Classes for this 36-unit program cover SCM and Logistics, Supply Chain Systems, Global SCM and World Class Supply Management. Offerings include a Master of Science in Supply Chain Management (MS-SCM) and a Graduate Certificate in Supply Chain Management (GC-SCM).

University of San Francisco

800-609-4196

www.usanfranonline.com/ism

USF offers an online interactive Master Certificate program for Supply Chain Management.

University of Tennessee

College of Business Administration
865-974-5001

<http://supplychain.utk.edu>

The school's Integrated Supply Chain Management Program helps participants develop a better understanding of the complexities and interrelationships among the supply chain areas of demand planning, customer relationship management, operations, logistics, lean management and resource/financial management. The program is composed of six, two-and-one-half day courses. Taught by UT's internationally renowned faculty, these courses consistently have been ranked among the best in the field. Courses are offered up to twice per year. The school also offers graduate and undergraduate degrees in supply chain management.

University of Wisconsin-Madison

Executive Education Center
608-441-7357

<http://exed.wisc.edu/supplychain>

Supply Chain Leadership
March 28-30, 2011
June 20-22, 2011

Supply Chain Optimization
March 31-April 1, 2011

Supply Chain Collaboration
May 23-25, 2011

Walden University

866-492-5336

www.waldenu.edu

The University offers online management programs including a PhD in Applied Management and Decision Science, an MBA, M.S. and B.S. in Information Systems and a B.S. in Business Administration.

PROFESSIONAL ASSOCIATIONS

APICS

800-444-2742

www.apics.org

APICS offers two certification programs, national and regional conferences, online events and self-study programs.

AST&L (American Society of Transportation & Logistics)

202-580-7270

www.astl.org

AST&L offers the CTL (Certification in Transportation and Logistics) program as well as the Professional Designation in Logistics and Supply Chain Management (PLS).

CSCMP (Council of Supply Chain Management Professionals)

630-574-0985

<http://cscmp.org/>

CSCMP's global conference brings together thousands of supply chain professionals from all over the world to exchange ideas and share knowledge. Also conducts local roundtables across the country and the globe, and offers a variety of supply chain Webinars. CSCMP's Online University offers members and potential members easy access to the latest in logistics and supply chain management. Upcoming events include:

Strategic Supply Chain Management Workshop
Lombard, Illinois
April 12-13, 2011

Fundamentals of Supply Chain Management Workshop
Lombard, Illinois
March 21-22, 2011
June 27-28, 2011

ISM (Institute for Supply Management)

480-752-6276

<http://www.ism.ws/>

ISM offers certification programs, seminars, professional development services and online courses for the supply management professional. Features an annual Conference and Educational Exhibit. Also provides in-depth research on supply management topics through affiliation with CAPS Research.

NITL (National Industrial Transportation League)

703-524-5011

<http://www.nitl.org/>

The League represents shippers in their dealings with various regulatory bodies. Provides educational forums, annual conferences and industry exhibitions through an annual Transcom event.

SIG (Sourcing Interests Group)

530- 582-8600

<http://www.sourcinginterests.org>

SIG provides summits, global regional conferences and web-based learning to enable members to network and build relationships.

Supply Chain Council

202-962-0440

<http://www.supply-chain.org/>

Through the Supply Chain World conference, the Council provides a forum for supply chain and business executives to identify opportunities to improve financial and supply chain performance. Presents a benchmarking database by which companies can compare their supply chain performance to others; also offers training in the SCOR model.

TRB (Transportation Research Board)

202-334-2000

<http://www.trb.org>

TRB is one of six major divisions of the National Research Council. This agency offers conferences, workshops, research and e-sessions to the transportation community.

VICS

(609) 620-4590

www.vics.org

Organization provides online education, workshops and a 3-day certification program. Collaborative Planning, Forecasting and Replenishment (CPFR) is an initiative that highlights the importance of collaboration and the benefits of a demand driven supply chain. An Introduction to CPFR e-Education is designed to introduce students to CPFR concepts and demonstrate the benefits and synergy of CPFR with other company initiatives such as category management and sales and operating planning.

WERC (Warehousing Education & Research Council)

630-990-0001

<https://www.werc.org>

WERC is a professional organization focused on warehouse management and its role in the supply chain. WERC offers seminar, conference sessions, e-learning opportunities and webcasts.

PRIVATE FIRMS

Accenture

Supply Chain Academy

www.supplychainacademy.com

The Supply Chain Academy offers over 400 online courses across many of the functional areas of the supply chain. Classes are delivered via online self-study, virtual classroom sessions or through instructor-led delivery.

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- Innovation and Technology Management
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➤ Learn more: www.bus.msu.edu/supplychain/msscm

