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SUPPLYCHAIN MANAGEMENT REVIEW®

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Culture Matters

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The Culture Infusion

It is said that companies compete on the basis of their supply chains. Perhaps tomorrow, supply chains will compete on the basis of their cultures. That was one of my thoughts during a presentation by Steven Melnyk, a professor at Michigan State, at last fall's APICS conference.

One of Melnyk's slides included the bullet: "Culture is the future of supply chain." He was referring to how most companies view their relationships with their suppliers and customers, but the reference to culture made me think of top performing companies we are all familiar with, such as Apple and Amazon, that are known as much for their unique culture as their products and services. In fact, their culture is often identified as the force that has allowed innovation to bloom.

Similarly, I recalled an interview I did with The Container Store, a company that not only talks about its employee-focused culture, it walks the talk. At its Texas distribution center, associates on the floor are involved in critical decisions that affect their jobs: Lift truck operators, for instance, help in the selection of a lift truck provider. The DC walls are painted to resemble a Mondrian painting to create an inviting work space.

Fast forward to a presentation I listened to at CSCMP by two executives with LEGACY Supply Chain Services, a New Hampshire-based 3PL that formalized its culture into a "structured system that can be analytically evaluated and improved." One of my notes from that session reads: "We focus on fulfilled workers. We ask: 'How can we engage our workforce to be better engaged?'" Like The Container Store, LEGACY believes that a company that focuses on its employees, customers, and communities will also realize greater performance, efficiencies and, yes, profits.

Bob Trebilcock, Editorial Director
btrebilcock@peerlessmedia.com

It seems that culture is on the minds of many today. Just last month, companies as diverse as Colgate-Palmolive and 3M referenced their unique cultures during presentations at Gartner's annual supply chain conference. In *The Big Pivot*, Andrew S. Winston's new book on business strategies to cope with a "hotter, scarcer, and more open world," the author writes that "culture is an amorphous idea, but it infuses every organization and deeply influences how people act and how they feel about their work."

Fittingly, culture is the theme of this issue. First, we look at the steps taken by LEGACY Supply Chain Services to become a purpose-driven supply chain. Among the questions I asked the LEGACY team was whether their approach is unique to their organization, or whether it can be replicated by other companies—including a publicly traded company.

That article is followed by a look at culture and management by John Hanson and Melnyk. They discuss their research into the role of culture and management. It's a topic that may be amorphous, as Winston writes, or even soft and squishy, but one I think you'll find intriguing.

Is culture top of mind in your supply chain? If not, maybe it should be.

Bob Trebilcock

SUPPLY CHAIN MANAGEMENT REVIEW

Editorial Offices
111 Speen St. (Suite 200),
Framingham, MA 01701-2000
1-800-375-8015

Bob Trebilcock
Editorial Director
btrebilcock@peerlessmedia.com

Frank Quinn
Editorial Advisor

Patrick Burnson
Executive Editor
pburnson@peerlessmedia.com

Sarah Petrie
Managing Editor
spetrie@peerlessmedia.com

Mike Roach
Creative Director
mroach@peerlessmedia.com

Wendy DelCampo
Art Director
wdelcampo@peerlessmedia.com

John Kerr
Special Projects Editor
johnkerr@ergoeditorial.biz

Jeff Berman
Online News Editor
jberman@peerlessmedia.com

Kelly Jones
Production Manager
kjones@peerlessmedia.com

Subscriber Services
scmrsubs@ehpub.com

Brian Ceraolo
President and Group Publisher
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SupplyChain Management Review

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LEGACY Supply Chain Services has made company culture the centerpiece of how it drives innovation, efficiency, and the creation of value for its customers. We look at the steps LEGACY took and ask: Is it a model that others can replicate in their organizations?

20 Culture Eats Strategy... and how to deal with it
Often, best-laid plans are nullified by company culture. While culture is often cast as a source of inertia, it plays an essential role and can be the manager's friend. Authors John Hanson and Steven Melnyk explain why culture and strategy clash and offer techniques for when they do.

27 The New Role for the CPO: Orchestrating the End-To-End Value Chain
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Taken together, Cloud Computing, Big Data, and Mobility have the potential to transform our concept of the supply chain and the supply chain control tower. Accenture's Brooks Bentz examines how with new technologies, companies are broadening the supply chain control tower concept.

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InSIGHTS

BY LARRY LAPIDE

Holiday e-commerce: Innovation Required

With the past Christmas season's shipment delays, how did UPS and FedEx (ironically) get positioned to become among the "Grinches That Stole Christmas?"

Dr. Lapide has extensive experience in the industry as a practitioner, consultant, and software analyst. He is currently a lecturer at the University of Massachusetts' Boston Campus and is an MIT Research Affiliate. He received the inaugural *Lifetime Achievement in Business Forecasting & Planning Award* from the Institute of Business Forecasting & Planning. He welcomes comments on his columns at llapide@mit.edu.

I admire UPS and FedEx for their parcel shipment innovations. They have clearly been two of our supply chain heroes; leaders in creating today's impressive, renowned, and efficient parcel delivery industry. This industry has been a major player in enabling the e-commerce business to grow efficiently and rapidly over the past two decades.

Given the past Christmas season's shipment delays, how did they (ironically) get positioned to become among the "Grinches That Stole Christmas" to parents and children that received gifts after Christmas Day—an unforgiveable sin in their eyes? Parents couldn't blame themselves for being the last-minute shoppers they've always been when shopping at brick-and-mortar retail stores. When the last-minute shopper shopped at a store they could only blame themselves if the gift they wanted to buy was not on the shelf. In contrast, however, when they see a picture of the product on an Internet site, and the site says it's available and can be delivered on time, if it's then delivered late they blame the parcel carrier.

In the weeks following Christmas, pundits speculated as to the factors that led to the fiasco. These included: e-commerce orders that exceeded forecasts; an extended period of bad weather; too many last-minute shoppers; late-discounting by retailers to gin up business; a shortened holiday shopping season; the shifting of orders to air from ground due to retailer delays in processing orders; parcel carrier capacities that were exceeded; the insufficient supply of planes on the day before Christmas Eve; and lastly the parcel carriers' executive leadership.

A Matured e-commerce Business

While these causes sound reasonable, they are not that different from those that carriers experience every day in their next-day, last-mile delivery services, even during winter weather. These carriers are the global gurus in next-day parcel delivery; historically making the parcel services of the USPS look a lot worse than they actually are. They routinely handle mishaps (albeit not at the same volume levels) every day without much fanfare, including all prior holiday seasons.

On-line ordering is now firmly established as a way to purchase goods from pure e-tailers, such as Amazon, as well as brick-and-mortar retailers that have finally gotten their on-line Websites working reasonably well. Parcel carriers have been providing next-day delivery services for retailers for years. However, while a small percentage of late next-day deliveries is tolerable for everyday business, it is not for Christmas Eve deliveries. That small percent is unforgiveable when it comes to packages not delivered in time to put under the Christmas tree. The small percent of the much higher holiday volume represents a lot of disappointed children with angry parents. It also garners substantial media coverage that could tarnish a carrier's brand image in the eyes of the public at large.

I think the major underlying cause of the holiday shipping mishaps is that last-minute shopper expectations were not properly managed by the retailers and the parcel carriers. They needed to, but could not guarantee

100 percent on-time delivery on orders shipped the day before Christmas Eve day.

Holiday Service Innovation Required

So, I believe carrier leadership to be the major underlying cause. Carrier executives allowed their marketing and sales organizations to offer standard everyday services to support the holiday e-commerce needs of retailers. This put their vaunted operational groups in an untenable position should things go awry—unfortunately they did, in multiple ways. Retailers managed to lay the blame for late deliveries squarely on the carrier industry in the minds of retail shoppers.

Generally, sales is responsible for selling what a company has to offer, and marketing is responsible for making sure a company always has something to sell. Carrier marketing failed to realize that the holiday season is now fraught with last-minute shoppers and did not develop offerings tailored to meet their needs. Meanwhile, sales (as is its nature) aggressively sold standard services including the offending next-day deliveries that could not be guaranteed.

While a small percentage of late next-day deliveries is tolerable for everyday business, it is not for Christmas Eve deliveries.

The operational groups took the brunt of the fallout. Yet, if they were complicit, it was only in not convincing executive management before the season began that there was a finite chance of operational failure. It also appears that some brick-and-mortar retailers fell behind in processing orders and were allowed to change some to next-day delivery on the day before Christmas Eve. This exacerbated the problem, yet I suspect the carriers did this for them, gratis. If so, the carriers gave away free emergency service, when the retailers should have rightly compensated the carriers. (See my Insights column, "Free Service—Could It Be a Bad Idea?" November 2007 in which I discuss that free emergency service is generally not a good idea and often fosters "inappropriate" customer behavior.)

What's Next?

A recent newspaper article, "Amazon Tests Own Delivery in Shot at Big Shippers" in the *Wall Street Journal* (4/25/14), discusses Amazon's piloting of its own delivery services in a few major metro markets. The authors state that: "Delivering its own packages will give Amazon, stung by Christmas holiday shipping delays, more control over the shopping experience. It can also contain shipping expenses, which have grown as a percentage of sales each year since 2009." It has for some time been known that Amazon intends to have same-day delivery to continue to garner more business from brick-and-mortar retailers. Because holiday sales make up 40 percent or more of the annual sales for some consumer products, it's no surprise that it might solve the holiday shopping problems by moving to same-day delivery even quicker. Meanwhile, the holiday fiasco was a wake-up call to the parcel carrier industry that innovation is needed to develop more effective and efficient delivery services that better meet holiday shopper delivery requirements.

Cisco Systems was one of the excellent supply chains identified during MIT's Supply Chain 2020 Project. One of its tailored best practices was termed "Service Window Management" in which the company quotes order delivery times that incorporate "room for errors." Illustratively, because Cisco might source an order from multiple global suppliers (possibly 20 or more) it would quote a customer a 12-week lead time when there was a reasonable chance of delivering the order in 8 weeks. The additional 4 weeks, acceptable to the customer, left its operational group with extra time to recover from mishaps along the way, as well as to optimize overall operations.

The parcel carrier business has always been good at Service Window Management as embodied in its bracketed service offerings that charge the most for the shortest lead-time deliveries, more for longer, and the least for the longest. This helps ensure that customers request longer order delivery times reflecting when they actually "need" delivery, rather than shorter ones that reflect when they thought it might be "nice" to get it. It also ensures that sufficient revenue is generated to cover the higher operational costs of delivering sooner. Service Window Management works because it does not saddle an operations organization by putting artificial demand fulfillment constraints on them.

I'm confident that the parcel industry will work with retailers to come up with what needs to be done for future holiday seasons, and I imagine that it will include rethinking delivery brackets. Additionally, there is a lesson to be learned for supply chain managers in other industries. They need to work closely with their marketing and sales teams to ensure they are not put in an untenable position that leads to a significant chance of failure—one that might tarnish the company's brand.

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INNoVATION STRATeGIES

Is Your Supply Chain Strategy Holding Back Innovation?

By Roberto Perez-Franco

Roberto Perez-Franco, Ph.D., is Director of the Supply Chain 2020 Project at the MIT Center for Transportation & Logistics (MIT CTL). He can be reached at roberto@mit.edu.

In early 2011, Lamynix[1], a leading manufacturer of specialty laminates, was approached by one of its major customers with an enticing contract. VideoFlat offered a premium price to buy a protective film that was twice as wide as the usual size for its new generation of high-end flat screen TVs and computer monitors. The catch: In order to be ready for the product launch, the new laminate had to be in production within 12 months.

Lamynix understood that delivering on VideoFlat's proposal within the allotted time would require a significant innovation effort. It also knew that this represented a golden opportunity to capture an emerging and promising segment in the specialty laminates market.

Lamynix and VideoFlat shook hands on a one-year, multi-million dollar contract. Twelve months later, Lamynix had failed to deliver the new product and VideoFlat walked away to look for a supplier that could meet its contractual obligations. What went wrong?

Based on our conversations with Lamynix personnel, the project's failure could be traced back to the unwillingness on the part of individuals within the company to take ownership of the innovation effort. This was paradoxical: What could have been an opportunity to make a name for oneself within the company was instead seen as a hot potato that nobody wanted to hold. Another reason, we were told, was that Lamynix did not make enough cash available to finance the new product's development. This was counter-intuitive, given that successful execution of the project would increase Lamynix's reputation as a leader in the specialty laminates market and open the door to a fast growing and very profitable segment.

Closer examination revealed a deeper cause behind the failure: Lamynix's supply chain strategy impeded the company's ability to be an innovator. Let's take a closer look at what went wrong.

Lamynix's Supply Chain Strategy

As of 2011, Lamynix's supply chain had received awards for excellence and maintained an enviable reputation among its customers. OEMs consistently described the manufacturer's supply chain prowess as a key reason for doing business with Lamynix. The foundation of the company's supply chain was a set of strategic principles and objectives that served as a bridge between Lamynix's competitive strategy and its supply chain decisions.

Lamynix's supply chain strategy was built on three key principles: (1) achieving the lowest product cost; (2) maintaining the best product quality; and (3) operating with the lowest working capital. These principles had been translated into a myriad of supply chain decisions. The most characteristic of them was Lamynix's mantra of manufacturing exclusively in high volume plants in order to exploit economies of scale to the fullest. As a matter of fact, by 2011 Lamynix had finished building the largest laminate extrusion plant in the world.

An Unresolved Yet Central Conflict

This supply chain strategy served Lamynix well during the first decade of the 21st century, especially due to the rising price of oil—the main raw material for laminates—which added currency to the quest for efficiency and cost management. The company's success in keeping costs low, however, may have masked an unresolved three-way conflict at the very center of the supply chain strategy between cost, service, and inventory.

Because of high switch-over costs, high-volume plants need long production runs to reduce product costs. Long runs, in turn, diminish the plant's ability to make as varied an assortment of products as are needed in real time. With an inflexible plant, matching supply and demand required the company to keep sufficient inventory of the finished products on hand. But inventory

costs money, and higher inventory levels, in turn, increase the final cost to the customer.

The manufacturer was juggling these competing goals—exploiting economies of scale through high volume manufacturing, lowering working capital by reducing inventories to the bare minimum, and maintaining the highest levels of customer service—when it was approached by VideoFlat.

Part of the challenge posed by this juggling act was the lack of a clear pecking order among the three strategic principles. Should cost reduction be pursued even if it meant sacrifices in service level, or should service levels be fixed and costs adjusted accordingly? Similarly, should inventory levels be kept low to keep costs low, even if that meant sacrifices in service levels, or should customer service goals dictate the inventory levels, even at the expense of higher costs?

These conflicts were the source of much tension within Lamynix's supply chain function and consumed a lot of attention and energy that should have been focused instead on fulfilling their commitment with VideoFlat.

Innovation as the Cinderella Function

Interviews with Lamynix personnel revealed just how these conflicts played out at ground level to undermine the agreement with VideoFlat. The operational problems also showed how Lamynix's struggle with innovation was symptomatic of a mismatch between its strategy and the implementation of that strategy.

We learned that the manufacturer had been able to create the wider laminate that VideoFlat required, but only in a small pilot plant Lamynix maintained for R&D. When the company tried to recreate this new product in the high-volume plants used for production, a problem arose where the abnormally wide laminate bowed in the middle, causing manufacturing defects. Because the manufacturing equipment in the small pilot plant was not the same as in the high-volume plants, fixing the problem meant either replicating in the pilot plant the equipment from the high-volume plant, or using the high-volume plant to run tests on possible solutions.

As a direct consequence of the large scale of the production plants, either option would be expensive. At the time, Lamynix was under intense pressure from stakeholders to maintain high margins; as a consequence, the company had little appetite for spending money on innovation (even though it invested in manufacturing capabilities in the form of a huge new plant).

This unwillingness to invest in innovation to solve the bowing problem explained why powerful decision-makers within Lamynix—anticipating a futile battle—shied away from taking ownership of the innovation project. Lamynix's own supply chain strategy, which called for using high-volume plants in order to reduce production costs, combined with pressure for high margins, had created an environment hostile to innovation. Nobody wanted to be responsible for the high costs associated with stopping a profitable, humongous plant so that technicians could figure out how to solve an innovation problem.

However, the deeper reason for Lamynix's failure to deliver was that innovation was not one of the organization's top three priorities. Figuratively, innovation didn't even make it to the podium, and in strategy— like in the Olympics—there is no medal for fourth place.

The deeper reason for Lamynix's failure to deliver was that innovation was not one of the organization's top three priorities.

Moreover, Lamynix learned the harsh lesson that its customer did not care much about the internal conflicts that stymied the company's ability to deliver a potentially profitable new product. VideoFlat cared only about results, and had no problem walking away.

Critical Lesson: Innovation Must be a Key Principle

Subsequently, the business went to one of Lamynix's competitors whose supply chain strategy called for flexible production through mid-size plants. Flexible plants allowed this rival to solve the "manufacturing" problem encountered by Lamynix in its own production lines, because smaller plants made it cheaper to try out new things and run all the necessary tests at a reasonable cost. In other words, its supply chain strategy was more welcoming to innovation.

The lessons learned as a result of this episode forced Lamynix to rethink its competitive strategy. A new vision was proposed, with a strong commitment to innovation in profitable market segments. The supply chain strategy was reformulated, to include among its three key principles real, meaningful support for innovation efforts.

It has been said that crafting a strategy is as much about deciding what to do as it is about deciding what not to do. That is true, but there is more to a good strategy than "do" and "don't," the relative priorities between competing objectives should be clearly established, and all functions should be aware of the order of these priorities, because this determines the capabilities and limitations of the resulting supply chain.

Crucially, a company's verbal commitment to innovation is not enough if its supply chain strategy frustrates innovation and key personnel are unwilling to commit the resources that innovation requires.

1 Names, dates, and details on products and processes have been changed.

How They Did it: The Purpose-

LEGACY Supply Chain Services

has made company culture the centerpiece of how it drives innovation, efficiency, and the creation of value for its customers. Is it a model that others should replicate?

By Bob Trebilcock, Editorial Director

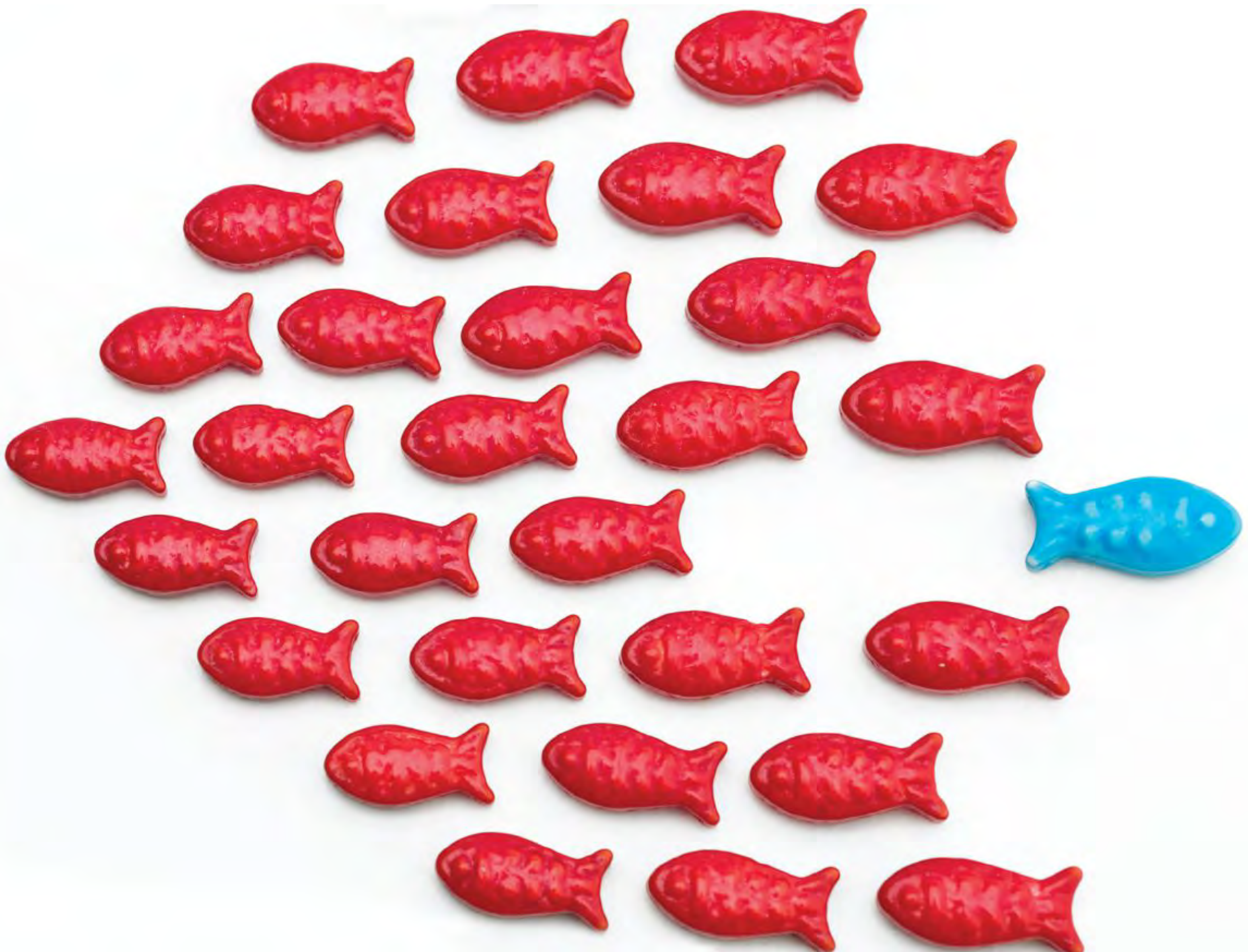
"Today's business leaders cannot leave culture to chance. They must decide what values and beliefs will form the foundation of their company, and they must ensure those values are integrated every day through example, communication, policy, and incentives."

—Larry Katzen, author of And You Thought Accountants Were Boring—My Life Inside Arthur Andersen

Corporate culture is much in the news, and not in a good way. Ron Johnson's disastrous tenure as CEO of JCPenney has been described as a clash of cultures between Johnson's lieutenants from Apple and Penney's old guard. More recently, a scathing internal report cited culture as the culprit behind GM's failure to address problems with defective ignition switches that led to more than a dozen deaths. "GM Takes Blame, Vows Culture Shift" read the headline in the *Wall Street Journal*.

Culture is often a convenient boogey man for failure. When a company, or its supply chain, is at the top of its game, management gets the credit. When things go awry, as they did at Penney and GM, culture takes the blame. But what happens if the two are aligned? What happens if management takes the core values and mission statements hanging in every board room to heart? What if management translates those values into demonstrable behaviors that "form the foundation of their company" and are used to measure the performance of its leadership team? Can something as soft, fuzzy, and intangible as culture

Driven Supply Chain



be a force to improve conventional supply chain metrics and deliver a competitive advantage?

The answer to all of those questions is yes, according to LEGACY Supply Chain Services, a privately-held North American 3PL with more than 2,700 employees. Headquartered in Portsmouth, N.H., LEGACY offers a full complement of warehousing, distribution, transportation, and customs brokerage services to companies in a variety of industries. In 2009, LEGACY refocused its mission to place an emphasis on a sustainable and measurable company culture model that serves as the foundation of the company, is the basis for management reviews, and is a force that can be shaped to drive performance (See Exhibit 1). While financial measurement typically drives most organizations, "culture comes first" at LEGACY, according to CEO Ron Cain.

Cain points to one warehouse in the network that processes 13,500 order lines and ships 7,000 packages per day. There, the average cost per line was reduced from $2.60 to $2.35 between 2009 and 2012, while its average order throughput in lines per hour increased from 9.41 to 10.37 (See Exhibit 2). Gains like those have not been limited to just that one warehouse. LEGACY has seen dramatic performance improvements across its network, including a facility that improved overall warehouse safety by 79 percent, increased productivity by 20 percent, and raised customer service levels by 19 percent, while simultaneously driving down the level of involuntary turnover by 10 percent since formalizing its values-based culture (See Exhibit 3).

While Cain says he is an operator at heart, versed in Lean and Six Sigma, the real point of making culture central to the business is a higher purpose: "We want to develop a company and leaders who affect the world around us," he says. Cain says that the company wants to create its own legacy, hence the re-branding in 2012 from TMSi Logistics to LEGACY.

Think of it as the purpose-driven supply chain. Indeed, LEGACY management and employees not only regularly volunteer in the communities where LEGACY does business, the company has launched the LEGACY Center to offer leadership training to other companies. "We are a company with a purpose," says Ruth Lund, LEGACY's Vice President of Organizational Development. "In addition to being the best supply chain services provider, LEGACY is intentional about affecting lives and developing leaders. That's our vision. That's why we're here."

While LEGACY has written extensively about the role of culture in an organization, this story looks at how the company formalized its values in a way that can be measured and shaped.

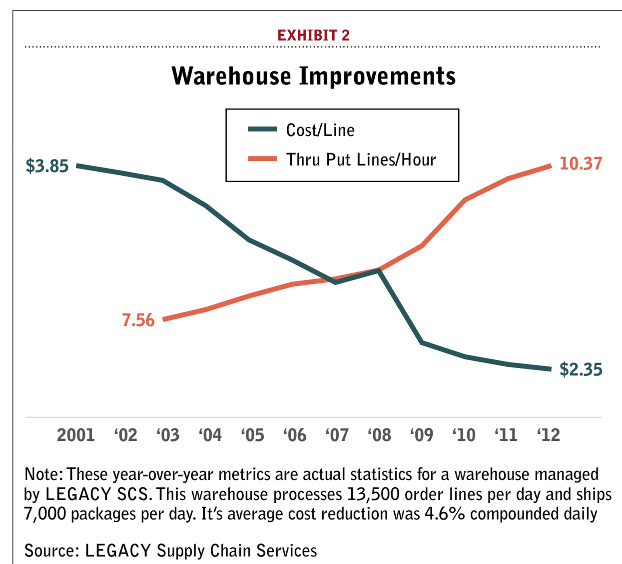
Paying it Forward

The company's roots extend back to 1983 and the founding of Tri-Starr Management, Inc., a professional staffing company. In 1995, the company expanded into the logistics business with the addition of the TMSi Logistics division. Cain joined the company in 1999. By 2006, the logistics network had grown from one to more than 15 locations in North America.

In some respects, company culture was always in the background. "The business had a faith-based foundation," says Cain. "When I joined the business, the founders stressed that we made our decisions around our values and that culture was the way to get world class execution from any type of business."

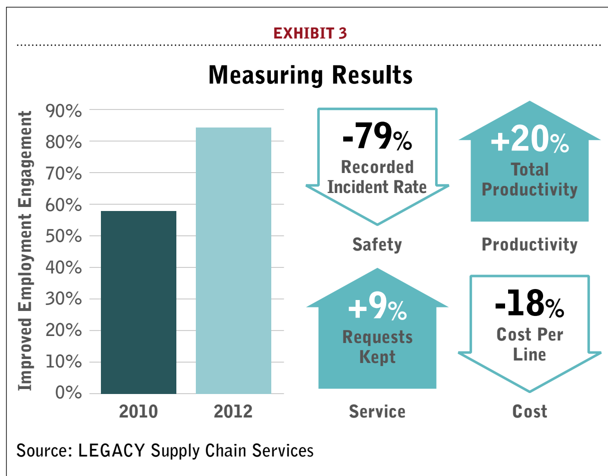
Still, there was not yet a formal program around values. It was more a way of conducting business. "As we developed as a logistics business, we hired people who were attracted to our culture, even if we weren't cognizant of it in the early days," Cain says. "At the same time, we understood that if we took our way of doing business into an under-performing facility, we could turn things around. We were doing it."

The turning point for Cain was a convergence of events that began in 2006, when he became the majority



Note: These year-over-year metrics are actual statistics for a warehouse managed by LEGACY SCS. This warehouse processes 13,500 order lines per day and ships 7,000 packages per day. It's average cost reduction was 4.6% compounded daily

Source: LEGACY Supply Chain Services



Source: LEGACY Supply Chain Services

owner of TMSi Logistics. After the closing, Cain, who was in his mid-forties, went back to the office as if it was any other day. Later, his wife called. She told him that something special had just happened. "You accomplished a life goal, and now, you're on to the next goal," she said.

What happened next was, in effect, a pop culture moment. An acquaintance mailed Cain a copy of *The Purpose Driven Life*. The sub-title of the best-seller by Rick Warren asks readers to answer a simple but challenging question: What on earth am I here for? Soon after, his CFO sent Cain *Pay It Forward*. A box office hit, the movie centers on a young boy who creates for a school project a charitable program based on good deeds: Rather than repaying a favor, anyone who is the recipient pays it forward by doing a favor for three other people.

Cain describes these as a perfect storm that caused him to think differently about TMSi. Like Rick Warren's book, he began to ask what on earth was TMSi here to accomplish. Yes, financial success was important, but the business should have a higher purpose. "I believe the business should be a vehicle to affect our employees, the communities where we work, and the world we in which we live," Cain says. "It isn't about the bank account but serving others as best we can."

The challenge, according to Cain, was how to build on the intrinsic values already in place to make sure those were replicable, predictable, and measurable across the organization. "As I talked about this with our management team, we wanted a structure and process that would measure how culture affected the bottom line," he says. "And, finally, we wanted to share this insight with other companies and organizations."

To answer some of those questions, Cain and his team came across research into values-centered leadership by author Richard Barrett. The researcher presented a scientific approach to culture in the corporation that served as a starting point. "We weren't sure how we were going to get to where we wanted to be, but we now had a path," says Cain.

Values and Behaviors

What followed sounds easy, but represents a process that took nearly two years to bring to fruition.

Cain says it began by putting culture into a context that fit a supply chain organization. "I'm an operator at heart. I believe that if you can't measure it, you can't improve it," he says. "There is research that shows that companies that pay attention to culture out-perform the S&P. So, why couldn't there be a way to measure the impact of culture on outcomes like turnover and ROI?"

The other change was to shift the operational mindset from one focused on processes to people. "Culture just wasn't part of the conversation when it came to what makes a good business tick," says Cain. "You talked about analytics, metrics, processes, and technology. The last thing you talked about is people, but in most companies, two-thirds of the cost of any process is people." Cain also noted that companies recognized for how they treat their employees, such as Pepsi, John Deere, and Apple, saw results flow down into their products and into their supply chains.

At LEGACY, the first step on this journey was to define six core values (see sidebar). That effort was the result of days of discussion among company leaders. Of course, core values are not unique to LEGACY—they can be found on just about every corporate website. LEGACY took the idea of core values one step further and created five to seven demonstrable behaviors for each value that would be exhibited by leaders who were walking the talk—a total of 31 behaviors.

Behavior 28, for instance, asks managers to make sure that their actions match their words. Behavior 31 asks them to say no when things are not aligned with LEGACY's values, instincts, and judgments. Behavior 24, one of Cain's favorites, asks managers to bring their heart to challenges and opportunities, and not just their heads and hands. "A lot of managers can operate from a check list and run an efficient operation," says Cain. "The hard part is demonstrating that they're living our values and that they genuinely care about their people. When we hire someone from the outside, the heart drives a lot of discussion."

Yet, the heart is what drives long-term results. "If you're working for an organization that is performance driven and focused on the next quarterly results, they're going to make decisions without thought of the employee

base," says Cain. "That is not sustainable over the long haul. If you have a feeling for your people—if you bring your heart to work—you're going to develop long-term results that hit the bottom line."

The last key piece was to come up with a way to measure the results. LEGACY focused on employee engagement through a concept known as cultural entropy. Richard Barrett, one of the authors LEGACY turned to during this process, defines cultural entropy in the following way:

"The principal inhibitor of employee engagement is cultural entropy—a measure of the amount of energy in an organization that is consumed in doing unproductive work: work that does not add value. Cultural entropy arises from presence of potentially limiting values such as, bureaucracy, hierarchy, blame, internal competition, etc. … The reason that leaders are interested in what motivates employees is because motivation leads to commitment, commitment leads to engagement, and engagement leads to high performance. If you want to build a high performing organization you need to understand employee motivation and how to provide employees with what they are looking for."

Gallup found that organizations that successfully engage their customers and their employees—organizations that reduce entropy—experience a significant boost in "performance-related business outcomes compared with an organization with neither engaged employees nor engaged customers."

The cost of entropy, or employee disengagement, to business was estimated by Gallup in 2013 at $450 billion to $550 billion per year.

The idea at LEGACY was that if its organizational leaders and facility managers were living out its values through a majority of behaviors—say 80 percent—employees would be more engaged. As an example, Gallup found that organizations that successfully engage their customers and their employees—organizations that reduce entropy—experience a significant boost in "performance-related business outcomes compared with an organization with neither engaged employees nor engaged customers."

To do so, LEGACY established baseline performance measurements for each facility. It then developed a data set to measure the performance in its facilities by leader and by team. Finally, it developed a values survey that asks hourly workers if they see the values represented in their leaders. The surveys and a measurement process result in an entropy number for leaders and for workers that serves as the basis for plans to improve performance. "Every tick of entropy affects performance for our customers, and ultimately the bottom line," says Cain.

The last important piece of this initial process was structural. The company separated out its Organizational Development team from Human Resources as a standalone entity. "As a separate function, OD has a voice at the table," says Cain. "That's been important to the structural strength of being able to do this."

LEGACY's OD team is engaged with every corporate leader and manager at least once a month through group sessions, individual sessions, and online tools. "If we focus on the leadership, the impact will trickle down into the hourly folks and the culture will be established," Cain says. "I've never known a well-run facility that had a bad leader at the top." He adds that LEGACY employs a similar process with any business it considers acquiring—if the potential acquisition isn't a good cultural fit, LEGACY will walk away from the deal.

Culture in Action

What then does a purpose-driven supply chain look like in action? From a management and operational standpoint, it is first and foremost about leadership. Start at the top, and culture will flow down to the hourly associate on the floor.

The process begins during the recruitment and orientation of new leaders to ensure that they understand the importance of LEGACY's values.

Twice a year, the company holds a LEGACY Leader Orientation event in Portsmouth for new leaders. Executive management, including Cain, actively participate in this week-long event. A typical event includes about 35 people and kicks off with one day of service

at a local non-profit. At the most recent leadership session, the group painted, cleaned carpets, and repaired ceilings at The Chase Home For Children, a local non-profit serving at-risk adolescents who can no longer live at home. "We're working shoulder to shoulder as a team," says Lund. That first day is followed by sessions on LEGACY's values-driven approach to business, along with presentations from senior leaders, including Cain. "What they walk away with on Thursday is that this isn't just words on the wall, it's the heart and soul of the company," Lund says.

The next step is an annual cultural assessment that is done at four levels across the company, from a macro to micro level. At the highest level, salaried leaders in the supply chain business are surveyed to create a snapshot of what the business looks like at the top level. That survey serves as the basis for annual strategic planning. "One of the things we do is to identify our top priorities from a cultural perspective," says Lund.

Next, is a process at the facility level known as "Measure, Learn, Plan, and Execute." That begins with an online survey of the hourly workers at each facility. Team members are asked how their managers and team leaders measure up on the 31 behaviors.

The survey generates three reports for every facility that are used in a review process by Lund and her team: an overall facility report, a team report, and a report for each individual manager. That's the measurement phase.

The learning phase begins at the facility level, with the entire facility leadership team reviewing the facility assessment. Next, OD meets both with individual teams and individual leaders to review their reports. "When I sit down with a manager," Lund says, "I can review whether they are sharing information or exhibiting values-based behaviors based on the report."

In the planning phase, management team members develop action plans aligned with the cultural assessment results. The cultural action plans are aligned with operational performance plans, and executed across the entire facility.

What does this look like in action? Lund points to a recent Cultural Assessment that indicated a higher than desired entropy score, and lower than desired engagement scores. With the assistance from their OD partner, HR leadership, and Operations, the facility team developed a plan to strengthen the quality of leadership directly supervising the hourly associates. This required a change in the leadership structure, movement of leaders to positions that better leveraged their skills, and hiring a strong supervisor. The result: In 6 months, a follow up "pulse check" of that location indicated a strong 5 point uptick in engagement levels and a 50 percent reduction in entropy levels. They are clearly on the right path in their quest for greater organizational health and continuing with additional targeted efforts to develop the skills of their floor leadership.

The challenge, according to Cain, was how to build on the intrinsic values already in place to make sure those were replicable, predictable, and measurable across the organization.

LEGACY believes that a strong, aligned leadership group ultimately drives performance. To that end, LEGACY aligns cultural, operational, and process improvement measurements in its performance-based scorecard system that measures how facilities are performing compared to customer and corporate expectations. The scorecard also governs every employee's annual performance. This entire process is the foundation of putting the culture into action at the individual, team, and facility level.

Leaving a Legacy

In 2012, with several years as a values-driven business under its belt, TMSi re-branded itself as LEGACY Supply Chain Services. "As a company, we're not going to wait for someone to define our legacy when we're no longer here," says Cain. "We're going to be active in building our legacy. When someone speaks of us, they're going to speak well of how we've affected our leaders and the world."

So, how does a company make a difference in the world? Cain says the company has a policy of supporting non-profits, charities, and events in the communities where it does business, provided an employee is actively involved. "We will not just be a check writing service," Cain says. Last year, Cain used the money he traditionally spent on holiday gifts for every employee in the business to build five houses for wounded warriors with a debilitating injury or the widow of

a wounded warrior. The company has also begun to communicate what it used to do behind the scenes internally and externally, including through social media. "The reaction to the home building project was so overwhelmingly positive that I realized that it was important to talk about what we're doing," he says. "As a result, we're seeing a broader base of employees take up the torch to do these kinds of things. Now, we have an infrastructure in place to teach it, train it, and reward it."

As a final piece, the organization created the LEGACY Center to provide small- to mid-sized businesses, community organizations, ministries, and non-profits with the cultural alignment tools they need to stimulate positive growth and change in their own organizations as they seek to engage in greater contributions to their local and global communities. "It allows us to go out to other businesses and organizations that want to do more than make a buck," says Cain. "It's goes to the idea of paying it forward."

Is it Replicable?

One of LEGACY's early goals was to create a culture that was replicable across its network. Is it also replicable in publicly-traded companies that have to answer to shareholders? I posed that question to Mike Glodziak, President of LEGACY Supply Chain Services. (Glodziak was previously the president of the supply chain division of publicly traded Vitran). "What makes this work so well at LEGACY is Ron Cain's vision," says Glodziak. "When he says it, it comes off as authentic. Without a leader who believes in culture like Ron, I don't know how you would replicate it." He adds: "We try to have an impact in the communities around us and affect lives. That concept is difficult around the constraints of a publicly traded company."

Prior to the acquisition of Vitran's supply chain division by LEGACY in April 2013, Glodziak and his senior leadership team completed a cultural assessment. "We were clearly an operational fit, but we all wanted to ensure that there was a cultural fit," Glodziak says. "That was my first understanding that they practice this. I believe they would have walked away from the acquisition if we weren't."

Since the closing, he adds, LEGACY has begun the process of introducing its values-based approach to the newly acquired facilities in order to measure entropy and employee engagement.

In the year since the acquisition, one of Glodziak's long-term Fortune 100 customers recognized LEGACY as its number one 3PL provider. "You'd think that with the integration this would've been a turbulent year," Glodziak says. "But we talked to this customer about LEGACY's values. There is no doubt in my mind that we're rounding ourselves out as a supply chain organization and our customers are recognizing us for it."

LEGACY believes that a strong, aligned leadership group ultimately drives performance. To that end, LEGACY aligns cultural, operational, and process improvement measurements in its performance-based scorecard system that measures how facilities are performing compared to customer and corporate expectations.

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RECONNECTING MOBILE PHONE USERS FASTER

UPS integrates eSecuritel warehousing and fulfillment

Mobile phones are an essential part of daily life. For eSecuritel, a company providing wireless device insurance through mobile operators and retailers worldwide, quickly getting a replacement to consumers for a lost, damaged, stolen, or malfunctioning phone has never been more important.

After being acquired by Brightstar, the world's largest specialized wireless distributor, eSecuritel integrated its repair, warehousing, and fulfillment operations with its new parent company in 2011.

eSecuritel inventory was housed and kitted at Brightstar facilities, where the inventory and quality controls were strong. While this provided operational improvements and efficiency gains, the distance between Brightstar and transport facilities added to the time in transit. To improve customer service, eSecuritel wanted to shorten the time between when an insurance or warranty claim is accepted and a replacement phone is delivered. That required tighter supply chain integration.

Expanding opportunities

Transit time wasn't eSecuritel's only consideration. The ability to handle individualized, delivery of replacement handsets to the consumer was essential, as was the recruitment, training, and deployment of a flexible workforce to accommodate surges in demand. In addition, the company was looking for expansion capabilities to respond to its fast-growing distribution needs.

CHALLENGE

As a provider of mobile device insurance and replacements, eSecuritel has seen distribution needs grow tenfold in two years, and expects the same for the next two. To outperform the competition, the company not only has to meet this demand, but also replace broken, lost or stolen devices even faster.

SOLUTION

UPS relocated eSecuritel's warehousing and fulfillment operations to UPS's logistics and distribution campus near its worldwide hub in Louisville, Ky., UPS Worldport®, and now manages inventory from dock to door. eSecuritel can leverage UPS's infrastructure to support growth, while delivering the tightest possible turn time.

Enter UPS

Based on its solid relationship with eSecuritel from years of reliable service, UPS recommended moving the company's inventory to UPS's logistics and distribution campus near its air hub in Louisville, Ky., UPS Worldport®. The move would reduce transit times by providing immediate access to UPS's integrated global network, and UPS would coordinate warehouse staffing and processing. "We knew we wanted to make the delivery time to the consumer as tight as possible, but we weren't willing to risk the quality controls we had in place," said Phil Mitchell, Vice President of eSecuritel Logistics for Brightstar. "Before we made any move, we had to be sure we wouldn't sacrifice any operational efficiencies gained since the Brightstar integration effort."

That required meticulous integration between Brightstar and UPS systems. Teams on both sides carefully defined requirements, mapped process flows, and developed integration points. *"I've integrated ERP systems to third-party logistics providers like this twice before, and each one was a 12- to 18-month integration project. We did this with UPS in 110 days,"* said Mitchell.

Dock-to-door efficiency

UPS now manages the movement of eSecuritel inventory from warehouse to consumer doorstep. When orders come into eSecuritel call centers as late as midnight, EST, UPS team members pick and pack the right stock for delivery early the next morning.

Because UPS already has a world-class physical infrastructure, systems, and process controls in place, eSecuritel is prepared to expand as quickly as needed without a large capital investment. And UPS handles seasonal staffing, warehousing issues and kitting, allowing eSecuritel to focus on the growing opportunities for its business. "By sharing this common link to UPS, we're setting the stage for tighter integration with our customers, both domestically and globally," said Mitchell.

For more information, visit us at ups.com/hightech.

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Culture Eats Strategy … and how to deal with it

By John D. Hanson and Steven A. Melnyk

Consider the following, not too uncommon situations that occur in supply chains all the time. A company had been very successful implementing Lean systems. Its employees had embraced the Lean approach to operations and the results showed in the bottom line. Yet, management was becoming aware that Lean was now a given in the industry. Innovation, it turned out, was becoming the new order winner. Consequently, management worked hard at explaining to the firm's employees the need to change the focus to innovation. It introduced an extensive training program; new measures and metrics were deployed; an innovation grant program was also launched. After over two years, management called in an external group to assess the progress. The results were disheartening: Innovation had not taken root. To the contrary, the employees continued to embrace Lean and rejected innovation as a fad. Management's attempts at implementing a strategy of radical innovation had been subtly transformed by the system into a strategy of incremental innovation—something that was consistent with Lean.

In another case, a firm that had been successful with responsiveness and quality as the foundations of its corporate strategy decided to outsource a major component to a supplier to keep costs under control. The firm selected a supplier with an established reputation for cost leadership. Initially, the relationship worked well and costs fell. But as the relationship continued, tensions appeared. Decisions were made by the supplier that were consistent with its commitment to cost management but were at odds with the way that its customer competed in the marketplace. Over time, the thin initial contract was replaced by an increasingly thicker and more comprehensive contract, until everything in the relationship was subject to evaluation and rules. Ultimately, the relationship was terminated, leaving bitter feelings in both parties.

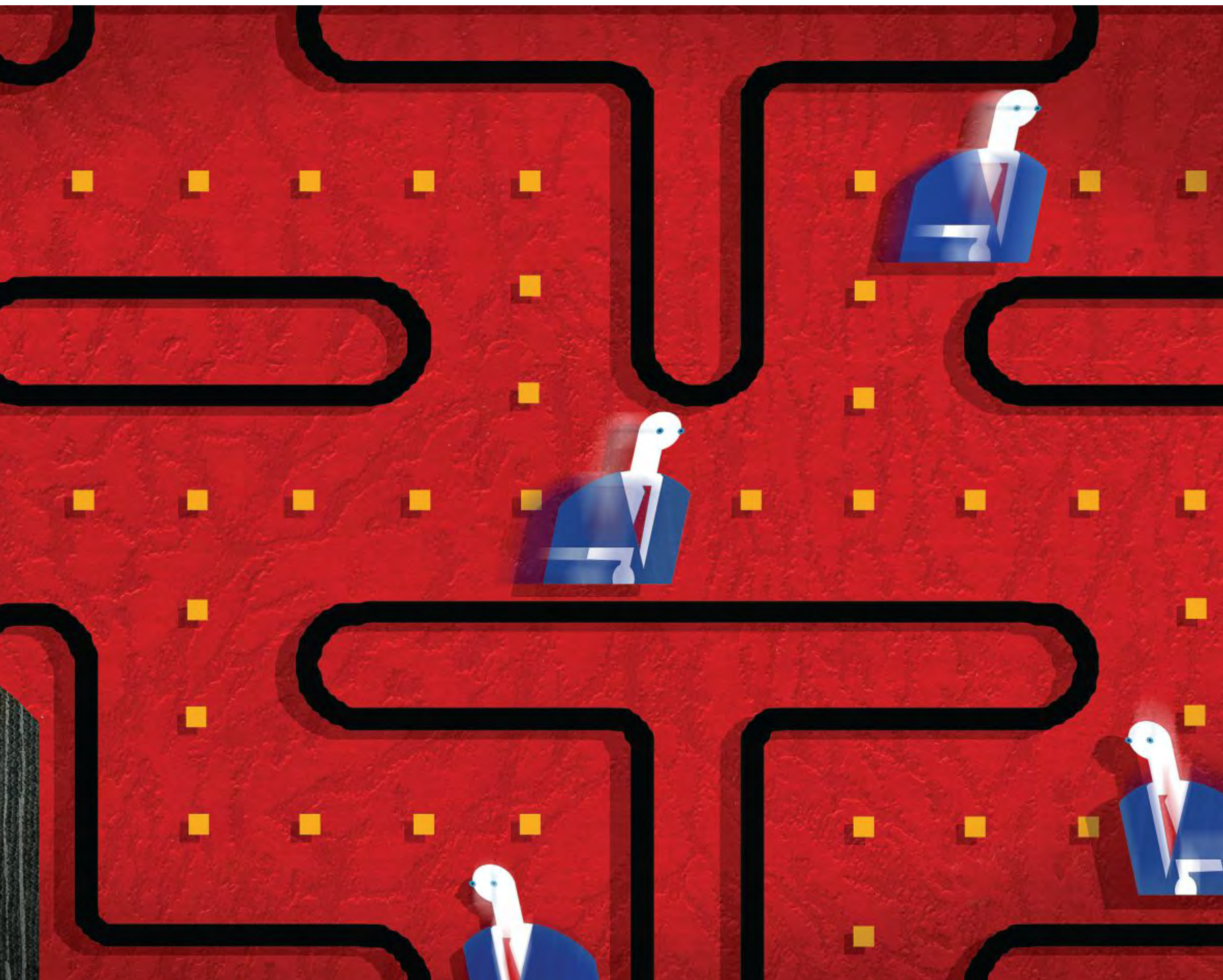
In both of these cases, we see firms seeking to improve their competitive positions, but failing to achieve their desired outcomes. Both organizations conducted post-mortems and identified the same culprit—*culture*.

These experiences are not unique to

John D. Hanson, Ph.D., is an Associate Professor of Supply Chain Management at the University of San Diego. He can be reached at hansonj@sandiego.edu. For more information, visit www.sandiego.edu/scmi.

Steven A. Melnyk, Ph.D., is a Professor of Operations and Supply Chain Management in the Department of Supply Chain Management, Michigan State University. He can be reached at melnyk@msu.edu. For more information, visit http://broad.msu.edu/facultystaff/melnyk.

Too often, best-laid plans are nullified by company culture, a force that supply chain managers do not anticipate nor fully understand. While culture is often cast as a source of inertia and un-thinking rejection of change, it plays an essential role and can—if properly understood and managed—be the manager's friend.



these two organizations. They can be expected to occur whenever organizations try to change their goals, their means of achieving these goals, or both simultaneously. In these cases, organizations can expect to encounter resistance from their cultures, especially if they have been successful in the past. Not surprisingly, management in these organizations tends to see culture as an obstacle and liability—something that is irrational and difficult to deal with. These views are often best summarized with the adage that culture eats strategy for breakfast. This view captures how managers feel when they discover that their best-laid plans are nullified by a force that they did not anticipate nor fully understand. The problem with blaming culture is that this position is often misguided and wrong.

To understand and work with culture in times of change, it is necessary to break with conventional wisdom in many areas and dispel several management myths.

This is a biased view of course, as the role of culture in instances like these is usually being ascribed by those who advocated the change in question in the first place—something has to take the blame and culture is a convenient scapegoat. A more balanced view might see culture as a source of healthy skepticism, a stronger dose of which might have saved some well-known companies from commercial disaster. However, neither of these views fully appreciates the role of culture in a firm, why it is essential, and why it is actually the manager's friend. In this article, we draw on a body of research, two examples of which are described in the sidebar. What we have found in a diverse range of examples is that to understand and work with culture in times of change, it is necessary to break with conventional wisdom in many areas and dispel several management myths.

In this article, we will focus on answering the following three questions:

• What is culture, why is it a potentially valuable asset to the firm and the supply chain, and how is it similar to strategy?

• When do culture and strategy clash and why?

• What options are available to managers when facing by cultural conflict?

Ultimately, we hope that our findings will lead to a better and more balanced view of culture and its role in the firm and the supply chain. Culture can be a powerful asset and force, if properly understood and used correctly.

Understanding Corporate Culture

Corporate culture has been defined in various ways, including "the collective values, beliefs and principles of the corporation," and, more simply: "what people do when the boss is not around." However you define it, corporate culture answers two critical questions: 1) what is important to the organization; and, 2) how employees should most appropriately go about achieving these. These answers are the result of a learning process that develops over time as people see what has and what has not worked. For organizations such as Pixar, the corporate culture informs employees that their goal is telling good stories that they, the people who work for Pixar, would pay to see and that the method, the how, is through leading edge computer animation.

Culture develops over time, gradually, and in ways that are often difficult to see. In the case of Pixar, the critical and financial success of films such as Toy Story, The Incredibles, Finding Nemo, and Ratatouille has served to reinforce the solutions being practiced to the what and how questions. Culture is taught or passed on from existing members to incoming members. It defines the knee-jerk reflex of the organization. That is, when faced by a challenge, culture shapes how the corporate members will respond. It also defines the expectations of the firm and its members. Organizations such as the New England Patriots, the Metropolitan Opera, U.S. Marine Corps, and Pixar expect to do well because they have done well in the past. Culture is potentially a powerful force in a time of change that is, unfortunately, surrounded by some important myths.

Management Myth: Show them a better way and they will embrace it

The following is a situation we observed during the course of our research that is present in many organizations. Top management has determined that the existing ways of doing things are no longer adequate and they find a new and better way. For example, the emphasis on mass production is to be replaced by a focus on Lean. Resources are developed to support this new focus. Extensive education takes place within the organization. The new approaches are demonstrated and shown to be "better." The participants listen politely; they participate in exercises designed to demonstrate the application of the new approach and its impact. Yet, when the trainers and managers go away, the participants don't apply these new approaches consistently. Rather, they apply only what is compatible with the old ways of doing things.

Change may superficially seem to have taken place, but the results are often less than expected. What is going on? The answer lies in the sometimes conflicting, sometimes complementary roles of strategy and culture.

For people to act, they must know the how (to do the task) but also the what (the purpose of the task or the desired outcome). The participants in the above example knew how to apply the new techniques. However, they lacked the second component—the what, or the belief that those techniques would achieve the right results, as they understood them. Belief is not something that can be easily taught, especially if it conflicts with the lessons of experience and the reinforcement of one's surroundings and peers.

The reality is that people's beliefs are not a good additive. They cannot simply layer different approaches on top of each other. This is very important when the desired outcomes are changed. Under such conditions, people will accept only those practices that are consistent with what they have done in the past (and that they know works). If you want them to totally change how they do things, then an un-learning process must first take place. New and better is not very compelling when the existing state is demonstrably good enough (and when the employees still see adequate opportunities to successfully apply the old ways of doing things). If management wants to replace the old with the new, they must first thoroughly discredit the old approach before the new approach can take root. This can be done in several ways, including a company crisis (the most direct way of showing that the old ways no longer work). Alternatively, we can remove the peer reinforcement that gives legitimacy to existing models. This is one reason that we see firms replace long-time employees with new ones who are not aware of how things were done in the past.

The problem here is that many strategic initiatives are seen by senior management as a "how" problem; simply alternate ways to accomplish the same goal. As a result they expect persuasion and training to be sufficient. However, when these directives are passed down to lower tiers in the firm they become revised goals for different functions and departments. What we found in those situations is that new methods are used selectively, and only to the extent that they support the existing understanding of "what" is to be accomplished.

Management Myth: Culture and strategy are natural enemies

Remember that phrase, culture eats strategy for breakfast? Culture and strategy are often portrayed as natural enemies because strategy requires change and culture often resists it. As a result, management regards culture as a sort of irrational resistance to change. This is a misreading of the situation. At the root of such conflicts is the core fact that both strategy and culture provide a rationale for "what" is to be done: They are both theories of cause and effect that tell us that if we behave in certain ways, good results will follow. When strategy and culture provide different prescriptions, they cannot coexist.

When viewed from this perspective, culture becomes seen as a liability. Yet, this fails to acknowledge the positive aspects and the tremendous value of culture to management. Although organizations can be surprisingly obstinate in rejecting "improvements" that are not consistent with their collective sense of purpose, the same organizations can be just as surprisingly receptive to even radical innovations that are consistent with their purpose. The reference to Pixar in the introduction can be seen of evidence of this at work. This is a powerful effect that managers can make work to their advantage.

If we want change initiatives to be effective we need to understand their characteristics and how these interact with cultural forces. Although it is somewhat simplistic, we can characterize strategic initiatives on a 2 x 2 grid (where the columns deal with the objectives or the "what" and the rows with the processes or "how").

When both the what and the how are unchanged, we are in the green quadrant of incremental improvement. Traditional approaches such as training and use of performance-based incentives work well here.

Things begin to deteriorate when one of the key elements must change, and with strategic change it is often the case that both must change, placing the firm in the red zone. Both conflict and uncertainty are created when employees must adapt to a new sense of purpose and learn new skills at the same time. Not all employees will

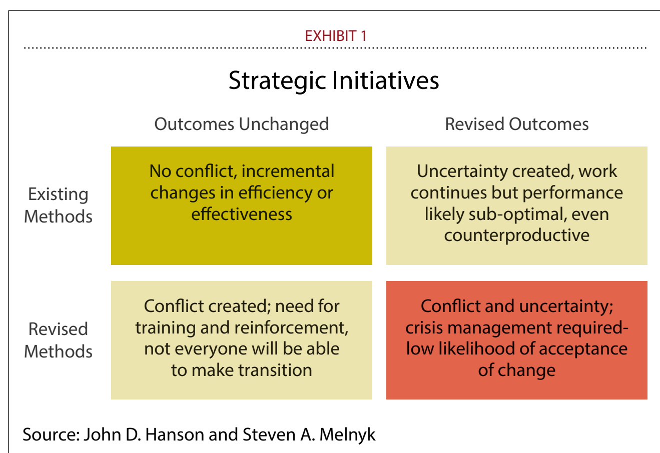


EXHIBIT 1

Strategic Initiatives

	Outcomes Unchanged	Revised Outcomes
Existing Methods	No conflict, incremental changes in efficiency or effectiveness	Uncertainty created, work continues but performance likely sub-optimal, even counterproductive
Revised Methods	Conflict created; need for training and reinforcement, not everyone will be able to make transition	Conflict and uncertainty; crisis management required-low likelihood of acceptance of change

Source: John D. Hanson and Steven A. Melnyk

be able to make the transition; the motivation to abandon what has worked so far, and to adopt new approaches is normally only provided by a serious crisis. It has been suggested that to achieve transformative change it may be necessary to create a crisis for the purpose, and it is not unheard of to fire the key employees most closely associated with the status quo to send the message that business as usual is no longer acceptable.

Culture is absorbed from and reinforced by peer groups so that change cannot take place one convert at a time; it must be across the board.

Interestingly, both of our studies (see sidebar) took place in the red quadrant; ironically management did not recognize this. In the innovation initiative, management thought that only a change of outcomes was needed and that a modification of performance measures would stimulate the appropriate behavior. The changes in the essential purposes of action were overlooked. In the study of Lean process implementation, management assumed that there was no change in purpose and that education in superior methods would be sufficient. There was however a subtle difference in purpose (the difference between the Lean and the Mass Production mindset) that compromised the results. In both cases, management was surprised when they learned that the changes had not taken root—even though the reports indicated success.

Management Myth: Don't tell people how to do their jobs—tell them what you want done and get out of their way

Conventional wisdom tells us that good managers don't tell their employees how to do their jobs. Instead, they communicate what is to be done and let the employees figure out the best way to accomplish it. This can be extremely effective, but relies more heavily than we often realize on organizational culture. Every employee has to make multiple decisions in a day, often requiring tradeoffs in one direction or another. Culture supplies the guidance that tells them to compromise this rather than that. In the absence of culture, managers would have to take on an unbearable level of micromanagement or suffer from an organization of independent actors all working at cross-purposes. In many ways, culture in an organization is like friction in the physical world: a great impediment at times, but you couldn't do anything without it.

Culture plays a key role in guiding behavior. However, in a transition period where culture no longer supplies the "right" rationale, its role in decision-making must be suppressed. This can be accomplished by specifying in detail how the work is to be done—as in dictating the activities to be performed. This change in approach must be accompanied by some unfamiliar and sometimes uncomfortable adjustments. In particular it is no longer appropriate or effective to measure and reward employees for results. They must be rewarded for their effort and compliance, and responsibility for the results must fall to higher-level managers. Not only is this more work than most managers are accustomed to, it comes at a time when management is likely to be fully absorbed by changes in the external environment. Yet, it is necessary until the culture can be brought back into alignment with the changed strategy.

Bringing Culture and Strategy Into Re-alignment

If we want to continue relying on culture to play its valuable role in guiding behavior, and if the old ways of doing things are no longer adequate, then we must change the culture. We must act as leaders. As Edgar Schein, the father of research into corporate culture put it, "managers work within cultures; leaders work on culture."

As we have already stated, there are two key obstacles to changing culture. The first is that it is not sufficient to come up with a "better" strategy; it is necessary to displace the existing one. The more successful the firm has been, and the longer it has been successful, the harder it is going to be to change the culture. Culture takes time to emerge, and it takes time to change. Consider a bonsai tree; when we want a plant to grow in a way that does not come naturally to it, we have to wire every branch and twig in place. Eventually we will be able to remove the wires, but not until the plant has adapted to a changed environment. The same holds true for an organization. A genuine crisis will speed this up enormously: a bankruptcy filing and massive layoffs will generally get the message across that what was good enough before is no longer adequate. However, we would prefer not to let things get to that point, so the art of management is make necessary changes before the crisis hits.

The second obstacle is that culture is absorbed from and reinforced by peer groups so that change cannot take place one convert at a time; it must be across the board.

One way to accomplish this has already been mentioned; that is to create a sense of crisis by firing key individuals who are not adopting the new approaches. As one of the managers interviewed put it: "There is nothing as useful as an occasional public execution to drive home the point that things are changing." This not only puts the entire organization on alert that things have changed, it also erases part of the culture and removes some of the peer reinforcement that gives it staying power. While effective, this carries costs and risks, so there is interest in working around culture until the necessary changes can take root.

Culture and Strategy in Supply Chain Relationships

Our view of culture to this point has been mostly internal to the firm, but our suppliers and other supply chain partners have cultures of their own. If implementing strategic change within an organization is difficult, we should not expect it to be any easier when it requires the involvement of these partners. Suppliers, and to some extent, customers act as agents in many of the same ways that employees do. Earlier we described culture as what people do when the boss is not around. In supply

Our Research

Our findings derive in large part from two in-depth, multi-year research projects conducted at Michigan State University. The studies were initiated independently and set out to address different questions but converged nicely at the intersection of culture and strategy. In both cases, however, the research questions were motivated by a persistent problem that underlies much of the literature on strategic management: Initiatives that should have improved performance routinely do not, even when local level metrics suggest that they are working.

The first study set out to follow the implementation of a top-down strategy initiative in a corporation made up of multiple, relatively autonomous business units. Senior management had come to the conclusion that their previous focus on cost leadership and operational efficiency was a dead-end strategy in which they would never prevail against global competition. Instead, they decided to focus on value-creating innovation, and set in place new metrics and incentives to move the corporation towards new goals. On the surface, the effort appeared to be a success since the revised goals were being met. However, there was a sense of frustration that these results weren't translating into improved sales or profits. Our study, based on extensive interviews up and down the chain of command, confirmed this.

The second study was designed to study mechanisms of organizational learning and documented the attempts to implement Lean production techniques in a group of affiliated companies through kaizen events. The purpose of the initiative was to provide employees with an expanded toolbox with which they could improve operational efficiency. The goal of the study was to understand how, or if, these enhancements became institutionalized. In what amounts to a mirror image of the previously mentioned study, this situation was apparently in the lower left quadrant, where new techniques were to be learned and used to achieve overall system efficiency. In practice however, few of those involved realized that there was a subtle difference in presumed purpose between those sponsoring the effort and those implementing it. The former were pursuing an approach of system optimization, while the latter were constrained by their situation and experience to pursuing local optimization. As a result, the situation was more appropriately placed in the lower right quadrant, with similar issues to those already described.

What we observed along the way was very similar to what we saw in the first study. Impressive results were reported on measures such as set-up time reduction and reduction in cycle stock through pull systems, yet there was no measurable effect on bottom line measures. What was happening was that shop-floor level employees were working at cross purposes with the strategic intent. As an illustration, set-up time reduction was pursued because it was seen as a way to reduce indirect labor hours, not as a way to reduce batch sizes. When the possibility was raised of further reducing setup time by increasing indirect labor hours (double-teaming for example) the idea was rejected because it was inconsistent with the perceived purpose of the exercise. The effect was similar to giving someone a screwdriver and seeing them use it as a chisel; something was lost in translation.

In the end, both studies showed examples of the typically paradoxical results observed in business. The reported metrics showed positive progress, but deeper analysis showed that both initiatives were, in fact, failures in the sense that they did not result in meaningful or sustainable changes in how employees actually worked. Both of these failures could be cited as examples of resistance to change, or of culture defeating strategy, but that is a limited view of what is going on. We feel it would be more accurate to say that they failed because management failed to appreciate the true nature of the changes they were trying to implement (bottom right quadrant) and failed to manage appropriately.

chain relationships, the "boss" is rarely around, so in the case of our partners, we are even more dependent on culture to guide day-to-day activities.

This creates an additional set of criteria for selecting supply chain partners. Most partner selection efforts are devoted to ensuring interoperability: the capabilities must match, the systems must communicate, we must be able to read each other's data. We now have to recognize that a cultural match is also an important criterion for selection. Otherwise the organization will be burdened by high transaction costs as it tries to micro-manage its partners. This was the case in the introductory example where the chosen supplier did not share the customer's bias towards quality and responsiveness.

In times of strategic change, it is just as necessary to manage the culture change in the supply chain as it is within the firm.

In the past, we have selected partners on the basis of economics, capacity, and capability considerations. To these factors, we must include culture. It can be argued that the longer the desired relationship and the more important the outcomes to be generated by the relationship, then the more important the culture card becomes. Selecting partners on the basis of a cultural match is not easy as we don't have any sort of personality type indicator for companies. A meeting of the minds of the top executives is a good start. It is important to consider the historical strengths of a potential partner as those will most surely be the basis of its culture—regardless of what its management is currently saying. It will also be useful to consider whether the potential partner has a history of success in working with other companies, as culture tends to foster a sense of "us versus them" that may have to be overcome for a partnership to be effective.

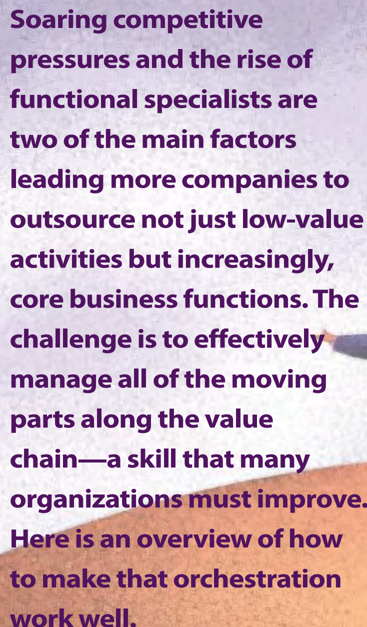
In times of strategic change, it is just as necessary to manage the culture change in the supply chain as it is within the firm. In some ways it is easier to change partners than to change employees, and it may sometimes be necessary to "fire" a supplier if they don't get it, even though they may be good performers otherwise. This will no doubt be noticed by other partners and may serve the same role as firing employees in terms of signaling a crisis and expediting a shift in culture.

Just as with employees, if the choice is to work around a partner's culture until it can change naturally, the approach is to micro-manage them with detailed contracts and close monitoring, accompanied by incentives to persuade them to behave in the right way. However, unless the organizations are driven by a similar purpose, the results are likely to be both surprising and disappointing. For one thing, micro-managing is harder across company boundaries, and for another, most culturally-driven behavior is aimed at ensuring the survival of the community and is unlikely to encourage collaborative behavior with outsiders.

Culture: Bringing Closure

We have drawn from our research studies to identify the origins and nature of organizational culture so that we can understand how it helps or hurts strategic change management. The lessons learned extend to the broader supply chain, so we raise the question of whether the cultural element has been considered as part of plans to reconfigure the supply chain. Our research tells us that resources must be dedicated to either selecting partners on the basis of cultural match, or to working around a potential mismatch. Culture is important but often overlooked. Consequently, we often find that culture does eat strategy for breakfast. However, with the appropriate knowledge and management intervention, we can make culture serve the strategy, rather than eat it.

New Role for the CPO: Orchestrating the End-to-End Value Chain



Soaring competitive pressures and the rise of functional specialists are two of the main factors leading more companies to outsource not just low-value activities but increasingly, core business functions. The challenge is to effectively manage all of the moving parts along the value chain—a skill that many organizations must improve. Here is an overview of how to make that orchestration work well.

By Peter Spiller and Diego Barilla

In more and more industries worldwide, outsourcing to specialists is rapidly becoming a necessity for maintaining a competitive edge.

Companies as varied as Skype, Coca Cola, Procter & Gamble, and Apple are acutely aware that their success no longer depends on doing everything themselves. These companies, and many others like them, have defined the business functions they are truly good at. They focus their internal resources on these functions, while

tightly orchestrating a value chain, which spans functions from market insight and product development to delivery and customer service, and includes many well-managed external partners and suppliers.

"We are in the business of building and creating brands," A. G. Lafley, former chief executive of P&G, said in a 2003 interview in *Bloomberg Businessweek*. Notably, he did not mention manufacturing, distribution, or even product development.

But the bigger question now is whether companies have the skills needed to manage disparate and dynamic mixes of resources—external and internal. Of course, there is nothing new about the vision of a future in which globalization and specialization enable companies to focus on core competencies while sourcing non-core functions from best-in-class third parties. What is new are the rising competitive market pressures that increase the need to streamline corporate value chains, the widening array of offerings to meet this need, and the technologies and new business processes that make such division of competencies much more practical. As such, new kinds of competencies are required.

The Need for an Orchestrator

Over the years, the scope of goods and services sourced externally and the complexities of the related decisions have risen to entirely new levels. Outsourcing of significant, integrated parts of a company's value chain (and not just purely parts and components) to external providers has transitioned from classic outsourcing of time-sharing or low-end processing services to the sourcing of core business processes. Furthermore, the rise of functional specialists (think of Foxconn, the electronics contract manufacturer that builds about 40 percent of all consumer electronics products made globally) and their higher growth rates are clear evidence of the shift to outsourcing. (See Exhibit 1.)

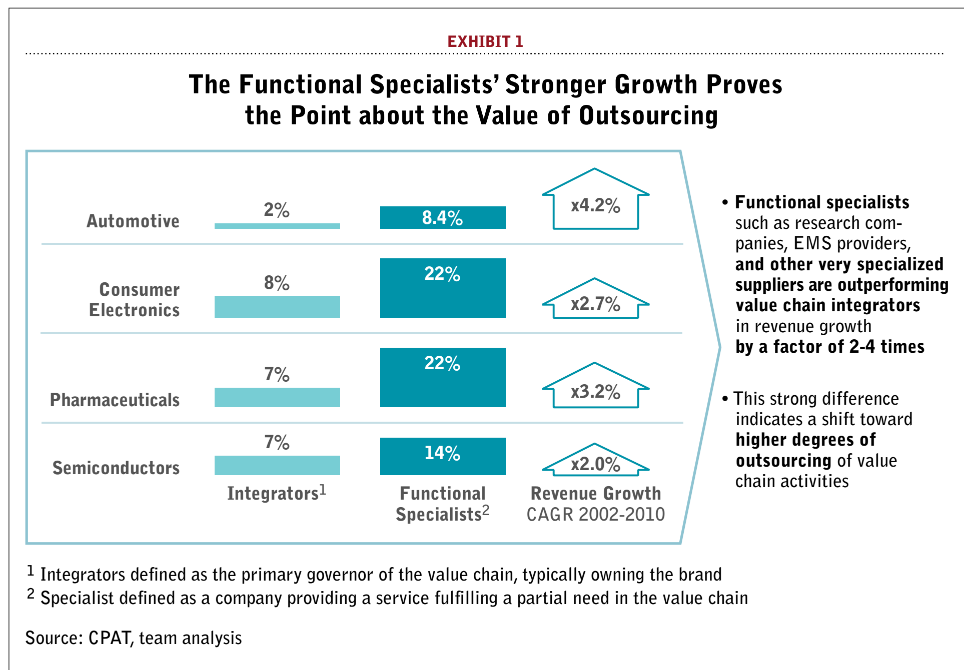
Increasingly, a company's success will be determined largely by its ability to orchestrate all of the contributors to the value chain. Put simply, orchestration involves designing and coordinating the overall value chain, as well as managing the individual contributors (external providers and internal functions) to ensure their effective interfacing and collaboration. (See sidebar: Orchestrator's Checklist.)

The push for greater effectiveness in outsourcing has been identified by experts such as Kathleen Goolsby, writing for the Outsourcing Center, as one of the most pressing business issues over the next five years. McKinsey's GPE data suggests that more professional management of outsourcing yields higher earnings before interest and taxes (EBIT) margins. In the chemical and healthcare sectors, for example, EBIT margins of companies that score low on outsourcing are approximately 4 percentage points lower than those of medium- or high-scoring companies. For financial institutions, the difference is 5 percentage points.*

That said, orchestration itself is far from simple, and there is plenty that can go wrong. One poorly performing function will drag down overall value-chain performance. Handover problems between functions—internally or

EXHIBIT 1

The Functional Specialists' Stronger Growth Proves the Point about the Value of Outsourcing



[1] Integrators defined as the primary governor of the value chain, typically owning the brand
[2] Specialist defined as a company providing a service fulfilling a partial need in the value chain

Source: CPAT, team analysis

** Unless otherwise noted, the data source for this article is McKinsey analysis.*

Peter Spiller is a Partner in the Frankfurt, Germany office of McKinsey & Co. He can be reached at peter_spiller@mckinsey.com.
Diego Barilla is an Associate Principal in McKinsey's London office and can be reached at diego_barilla@mckinsey.com.
For more information, visit www.mckinsey.com.

Orchestrator's Checklist

To address the challenges of value delivery and risk mitigation, an orchestrator must perform several important tasks. Below is a brief overview.

- **Apply external market insights to identify services for which external functional specialists may be superior to internal functions.**
- **Identify and qualify the right external providers, and seamlessly integrate their services into the company's value chain.**
- **Maintain a holistic perspective on all external provider relationships, ensuring they are managed using a common framework.**
- **Ensure that interfaces among and between all internal and external parties are working and any conflicts that arise are being resolved.**

The orchestrator's role has a broad mandate. It includes:

- **Defining the objectives and scope of vendor involvement;**
- **collecting and defining the business requirements;**
- **selecting the vendors;**
- **negotiating the contracts based on detailed service level agreements;**
- **ensuring that mechanisms and capabilities are in place to manage internal demand; and**
- **putting into place rigid performance management systems to regularly review the value delivered from sourcing decisions.**

externally provided—can be a big problem. Functions may not "pass the baton" effectively or promptly, leading to miscommunication and delays, customer dissatisfaction, rework, and funding imbalances.

It is not surprising then that orchestration is a rare skill. Indeed, many companies have yet to master the ability to manage their full range of external providers systematically and effectively. Often, different stakeholders within functional silos manage "their" providers, with no common management approach, service levels, or performance management framework. And standard procedures and best practices are not often codified and applied throughout the organization.

What's more, few organizations take an end-to-end perspective on all internal and external providers with a view to optimizing the performance of the entire value chain, and few can manage the multitude of relationships with that goal in mind. Chief operating officers, who are typically in a position to have an end-to-end perspective, often emphasize the optimization of internal functions over the tight management of external providers. In some cases, they may even be biased toward using internal resources rather than external partners.

It will not be enough just to optimize the relationship between external partners and the corresponding internal functions. Market leadership will require orchestrating the web of interconnected relationships throughout the value chain to achieve seamless, effective performance.

A Natural Role for Procurement

We believe procurement is a natural owner of this orchestrator role. No other function is as close to the external supply market or as well positioned to identify providers that can fulfill the functional requirements of the company's value chain more effectively. Procurement already manages vendors and integrates them with the company's internal functions. And because procurement is typically well connected to all key company functions along the value chain through cross-functional category teams, it is well placed to play an integrating role among the functions and external providers.

At the same time, procurement professionals are able to spot opportunities to create value in internal functions, benchmark them against the external market, and identify suitable providers thanks to their knowledge of what third parties can offer. They also have the capabilities, such as negotiation or vendor management skills, needed to manage external providers for performance. The McKinsey GPE survey showed that companies that already have strong cross-functional collaboration processes in place perform four times better on outsourcing and "make or buy" activities than those that don't.

An Example of Orchestration in Action

Several companies have recognized the need to improve the end-to-end orchestration of their value chains—and have found that procurement is indeed the natural owner of that role.

Qoros is a prime example. This Chinese passenger car start-up has designed its business model on the basis of partnering with best-practice partners such as Magna Steyr or Semcon. While Qoros has yet to demonstrate that this model will bring long-term success, other companies should find the possibilities intriguing.

Founded in 2007 as a joint venture between a local carmaker and a foreign private equity company, Qoros set out to utilize best practices from the fast-moving consumer goods industry. It brought together a world-class management team, each member averaging more than 20 years of experience at leading Western carmakers. Their first move was to define a clear set of differentiating factors for the new brand. These included styling and safety,

which led the company to hire leading European experts from Western carmakers for its in-house staff. In all non-differentiating areas, the company would strive to match international standards but not seek to create unique selling points. In these areas, the focus would be on maximizing the company's efficiency and flexibility by leveraging the know-how of external partners.

For this approach to succeed, the in-house engineers would need to lead the launch of the first product while initiating the development of later models. Most automakers would dedicate separate core teams to each program, which requires duplicating, and often underutilizing, core resources and expertise. The chief procurement officer (CPO), Mark Zhou, was given the mandate to select and develop the entire supply base for the first family of Qoros products, including the external engineering partners. Zhou worked closely with Qoros' lead engineers to create a model that would allow the company to leverage fewer than 200 in-house engineers to develop a full range of products, while relying heavily on external engineering partners.

This meant that effective orchestration was a prerequisite for success. One critical success factor was the sharing of KPIs, and related goals, between the Qoros team and the external partners. In the development contract, Zhou required the engineering partner to create a program organization that mirrored that used by Qoros. Engineers from Qoros and the partner were assigned to each module. The performance of each engineer assigned to a module was measured on the basis of the same deadlines for completing the development of the components, according to the agreed specifications, and the same targets for cost and weight.

The next step involved transforming the weekly program management decision meetings (traditionally internal sessions) into joint working sessions with the engineering partners. In such meetings, the module engineers from Qoros and the partner would jointly present status updates and highlight risks and roadblocks, and they would get guidance from the joint leadership of Qoros and the engineering partner. A senior engineering manager attended these meetings every week.

Despite the robust process and organization set-up, many issues that arose during the development of such a complex effort would naturally require adjustments to the partnership's contract terms. To prevent the program meeting from becoming a negotiation session, Zhou and his engineering partners held separate sessions with their senior counterparts to align on how best to manage these changes.

After the earliest development phase, Zhou began discussions with other engineering providers to minimize the risks of over-dependency on the initial partner. When the development of the second Qoros vehicle began, the collaboration model was stepped up, with different modules assigned to different external partners. The increased complexity would prove a challenge for the Qoros engineering team, which had to ensure consistency among different interfaces that were, in principle, competing with each other. As a result, the partnership contracts had to be adapted to set more prescriptive targets. Full success could only be achieved through the rigorous defining and tracking of targets by Zhou's team, and extensive coaching and guidance of the resources by the Qoros' engineering leadership.

Qoros' effort to leverage external specialists didn't stop with engineering. The company has also started looking for partners to develop its sales and aftersales network. Building on the outstanding partnership Zhou built between the external partners and Qoros' internal resources, this ambitious team launched its first car—a mid-sized sedan designed to compete with VW's popular Golf—in December 2013 and is on track to launch its second vehicle by summer 2014. The successful orchestration of the engineering partnerships has paved the way for Zhou and his colleagues to significantly change how automotive companies operate.

Stepping Up to the Role

So what does it take for a CPO to assume the orchestrator's role? He or she must take responsibility for coordinating the interactions among internal parties and external functional specialists and manage the latter for high performance. The successful orchestrator will build on procurement's existing cross-functional mechanisms, such as cross-functional category teams and strategic category councils in which cross-functional company leaders decide on category strategies.

Procurement functions that already work closely with manufacturing, supply chain, and sales are more successful in managing outsourcing relationships. In fact, companies at which procurement works closely with supply chain, manufacturing, and sales and marketing are 10 times more likely to already successfully involve procurement in leading outsourcing and make-or-buy decisions, according to McKinsey's research.

What else is needed for CPOs to become master orchestrators? They have to pursue these three thrusts in turn outlined below.

1. Secure a mandate from the CEO. The wholehearted backing of the CEO is essential to the CPO's orchestration role. In most industries, the CPO should already have a seat at the table when the relevant business strategies are defined. McKinsey's GPE data also suggests that excellence in outsourcing requires the CPO's involvement in the relevant strategy-definition activities. Procurement organizations that score high on their alignment with company strategy are three times more likely to also perform above average in outsourcing and make-or-buy processes.

Procurement organizations typically earn an expanded mandate through proven successes in classical category and vendor management. McKinsey's GPE survey also found that procurement functions that excel at these more traditional tasks are almost four times more likely to play a significant role in outsourcing management.

The broadening of a CPO's mandate may at times overlap with those of other functional leaders. Imagine a company that has distributed most of its value chain to design houses, contract manufacturers, logistics providers, and distributors; the CPO manages these vendors with the procurement team and ensures they work well together. As more operational functions are outsourced and managed by the CPO, he or she will assume more responsibilities that typically have been associated with a COO. Over time, the CPO's role will look more like that of a COO, the key difference being that external parties provide most of the managed operations.

To address these challenges, CPOs should work hard to forge strong ties with the leaders of all internal functions. Because external partners are typically managed in concert with the internal function that employs the provider, CPOs must be close to these stakeholders in, for example, R&D and manufacturing. A good relationship is also critical with the head of corporate strategy, who may be a powerful ally in defining core and non-core parts of the business.

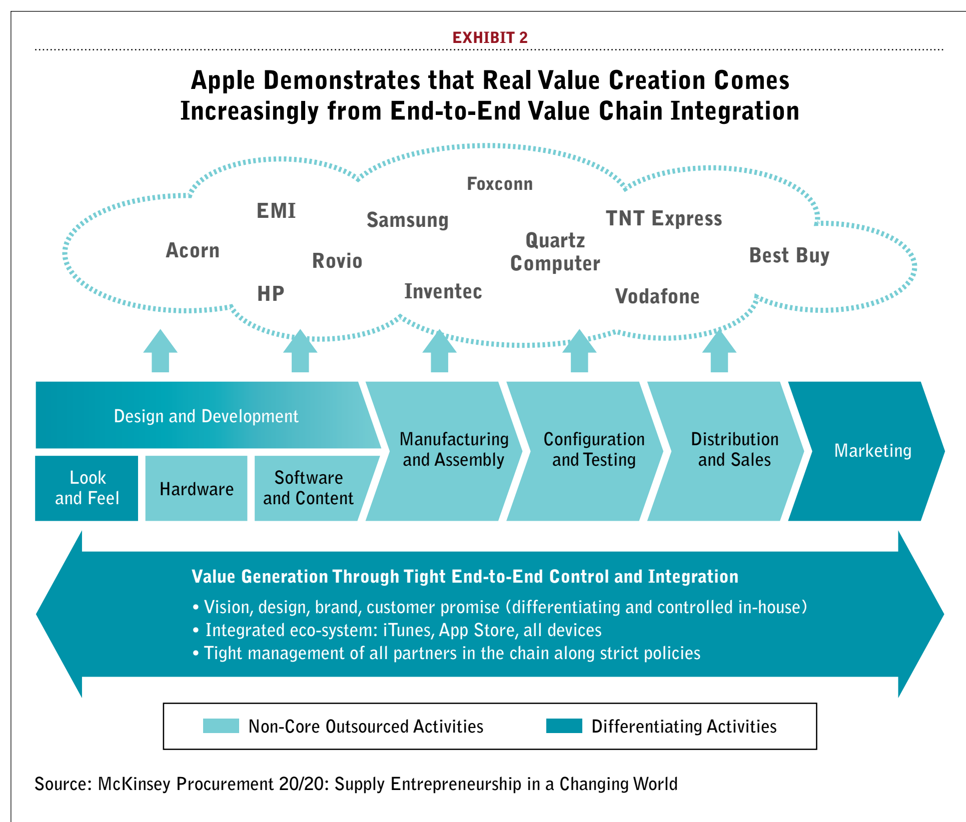
The story of Tim Cook, now CEO of Apple, illustrates the power of receiving the necessary mandate from the CEO. As recounted by Walter Isaacson in *Steve Jobs*, Cook, who had led procurement at Compaq, was hired by Apple cofounder and chairman Steve Jobs to clean up Apple's troubled manufacturing, distribution, and supply functions. As Jobs recalled: "Tim Cook came out of procurement, which is just the right background for what we needed." This mandate gave Cook the authority to completely revamp Apple's value chain, phase out its manufacturing footprint, and develop close relationships with external manufacturers, according to CNN Money. (See Exhibit 2.)

Most prominently, Apple outsourced production to contract manufacturers such as Foxconn, which offered significant savings potential and helped to free up resources and convert fixed costs to variable costs. Apple maintains control over nearly every step along the value chain. It demands detailed cost breakdowns for all purchased components and sends engineers to suppliers to help change processes and get product launches right. Apple also manages vendors' materials choices and its manufacturers' production schedules. Ultimately, Cook's success as an exemplary orchestrator led to his appointment as CEO.

2. Prove value-add to key stakeholders. The mandate from the top needs to be followed by fast and

EXHIBIT 2

Apple Demonstrates that Real Value Creation Comes Increasingly from End-to-End Value Chain Integration



Source: McKinsey Procurement 20/20: Supply Entrepreneurship in a Changing World

visible wins. This is, in turn, can help to strengthen the mandate. Proving value often begins by establishing a track record in better managing classical outsourcing relationships (for example, in call center services or IT), such as by implementing more comprehensive performance management of vendors.

The bigger question now is whether companies have the skills needed to manage disparate and dynamic mixes of resources—external and internal.

Once the procurement organization demonstrates its orchestrating ability, CPOs should strive to assume responsibilities earlier in the outsourcing process (for instance, scoping the specific parts of the business to outsource) as well as later (such as managing transitions to new providers). They should also start proposing new outsourcing ideas, backed by solid facts about potential providers, external benchmarks for the internal functions being considered for outsourcing, and business cases that make clear the benefits and risks. This can extend to helping the corporate strategy function and the board to define the company's core competencies and identify which competencies should be outsourced to functional specialists over time.

The broad scope of these activities highlights the need for a strong mandate from the top. In a virtuous cycle, this mandate will grow with the successful execution of these activities, which will in turn enable the CPO to further expand the scope of the orchestration efforts.

Operationally, CPOs can add value by scouting new vendors and structuring and negotiating deals, and by managing providers on behalf of the business owner. In fact, proper supplier performance management proves to be one of the key factors in excellent outsourcing. The McKinsey GPE data suggests that companies that perform high or very high on supplier performance management are almost three times more likely to be good at outsourcing management.

3. Build new capabilities. Today, very few procurement organizations have what it takes to challenge internal customers with external benchmarks, manage large external service providers, or engage in discussions with the head of strategy to distinguish the company's core and non-core activities. To take on the necessary tasks from outside their comfort zones, CPOs and their teams must reinforce their positions and capabilities in the following areas.

Developing an in-depth understanding of core and support processes and the related provider industries. The orchestrator must take an objective and neutral view of internal functions (core and non-core) and have a good perspective on the relevant supply markets. These insights will help in selecting the areas in which it makes most sense to push for more sourcing from specialists— support processes, non-differentiating core processes, or areas where external vendors have used scale and skill benefits to leap ahead of internal functions in terms of productivity and quality.

Analyzing and benchmarking internal functions and external providers. Internal functions should regularly have to compete directly with external specialists in order to introduce competitive pressures. Often, this will first involve defining the right KPIs and performance management mechanisms for both internal and external functions. Comparing performance of internal functions against external providers requires an indisputable fact base and analytical rigor. In many cases, internal functions will not be favorably disposed toward outsourcing opportunities. Basing the discussion on clear facts and business cases is the only way to obtain unbiased opinions and maintain trust in the relationship.

Identifying and qualifying the right external providers, and seamlessly integrating their services into the company's value chain. This calls for definition of clear interfaces, deliverables, and collaboration mechanisms. Initiatives to drive continuous improvement at the interface are part of it too, as are initiatives to optimize the work and task allocation among internal and external stakeholders.

Maintaining a big picture view of all external provider relationships, ensuring they are managed using a common framework. As the orchestrator, procurement must work with various external vendors simultaneously and maintain a clear view of deliveries, performance, and quality levels, and of provider issues that may affect the company such as new regulations, tier 2 supply shortages, and competitive threats. To do this effectively for a range of providers, orchestrators must be able to develop and establish common management frameworks that guide the management and escalation of issues according to consistent and predefined rules.

Applying skills for networking and relationship and stakeholder management to align parties on objectives and plans.

CPOs should follow the example of successful category managers who use their influence over cross-functional stakeholders to influence areas such as new supplier introduction or product standardization. This capability is becoming more important because many orchestration issues will require aligning different internal and external parties on issues such as priorities, activities, concrete targets, and interfaces. Consequently, orchestrators also have

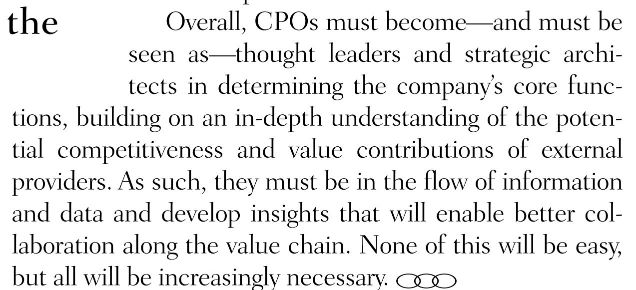
Increasingly, a company's success will be determined largely by its ability to "orchestrate" all of the contributors to the value chain.

a role in identifying and resolving conflicts between value chain participants. The orchestrator serves as a clearinghouse for addressing issues such as faulty deliveries that cause disruptions at downstream providers, or providers that fail to exchange relevant data with other parties in the chain.

Developing skills to manage large-scale, high-value projects. Managing complex vendor relationships and contracts requires levels of project management skills typically expected of category managers. For example, it involves an in-depth understanding of the activities outsourced; the key control points and value levers; all interdependencies with other internal functions or external providers or sub-providers; and contractual details.

CPOs as Thought Leaders

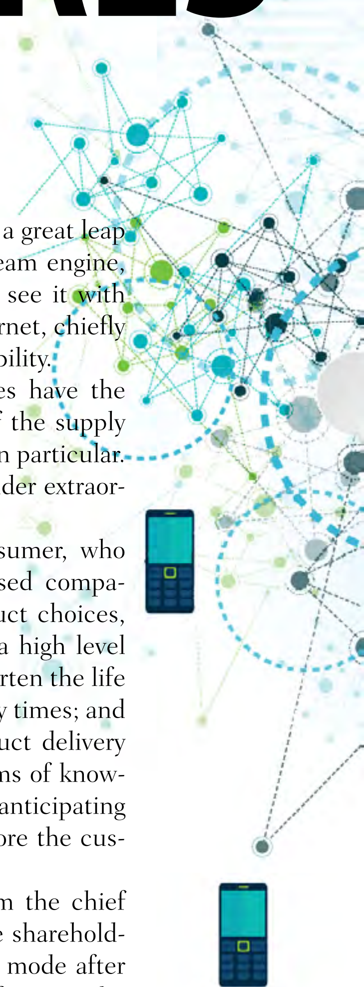
The need to drive innovation and productivity has forced companies to rethink what they are best at, focus their internal work on these areas, and hand over the other parts of the value chain to specialists. For CPOs, this creates significant opportunities to lead increasingly complex sourcing relationships and manage these external relations to maximize value. Procurement must wear several new hats, from that of seamless, end-to-end integrator of internal functions and the external parties, and well-networked scout seeking to identify ways that external parties can create value for the enterprise through to a challenger of internal company functions with respect to their ability to add value and enhance competitiveness relative to external providers.



Overall, CPOs must become—and must be seen as—thought leaders and strategic architects in determining the company's core functions, building on an in-depth understanding of the potential competitiveness and value contributions of external providers. As such, they must be in the flow of information and data and develop insights that will enable better collaboration along the value chain. None of this will be easy, but all will be increasingly necessary.

This article is excerpted from **Procurement 20/20: Supply Entrepreneurship in a Changing World**, *by Peter Spiller, Nicolas Reinecke, Drew Ungerman, and Henrique Teixeira, published by John Wiley & Sons, Inc.*

Supply Chain Control Organizations NEW PRESSURES



By Brooks Bentz

Brooks Bentz is a Managing Director in Accenture Strategy, Operations. He can be reached at brooks.a.bentz@accenture.com. For more information, visit www.accenture.com.

Every once in a while, technology takes a great leap forward. We witnessed it with the steam engine, electricity, and the Internet; now we see it with technologies descended from the Internet, chiefly Cloud Computing, Big Data, and Mobility.

Taken together, these technologies have the potential to transform our concept of the supply chain in general and the Supply Chain Control Tower in particular. That is vitally important, because supply chains are under extraordinary pressure from many fronts.

Much of this pressure comes from the end consumer, who has been conditioned by the success of Internet-based companies such as Amazon to expect a wide range of product choices, an enjoyable, personalized shopping experience, and a high level of service. As a result, companies are scrambling to shorten the life cycle of products; compress manufacturing and delivery times; and get closer to the customer, not just in terms of product delivery (although that remains crucially important) but in terms of knowing the customer's wants and needs, to and including anticipating what the customer may want in the future—even before the customer realizes what they want.

Another source of pressure frequently comes from the chief financial officer's office and, ultimately, from corporate shareholders. And, although companies are returning to growth mode after the contractions that followed the financial crisis of 2008, the emphasis on controlling costs remains; even as companies expand, they are seeking to do so in the most cost effective way possible.

Volatility and a changing risk profile provide additional challenges.

Towers Help Respond to

Cloud Computing, Big Data, and Mobility have the potential to transform our concept of the supply chain in general and the Supply Chain Control Tower in particular.

Geopolitical concerns (including increasing regulatory and security considerations) and natural events ranging from tsunamis, hurricanes, and droughts to severe flooding have caused significant supply chain disruptions, leading organizations to re-think their supply chain strategies and to take steps to increase their resiliency.

The modern supply chain evolved from the move by North American and European companies to shift manufacturing capacity offshore. Lower costs for manufacturing in Asia more than offset the operational issues and higher costs related to an extended supply chain. However, in global supply chain management, delivering a product to an end user can take weeks, not days, and reliable transportation and logistics data related to ocean shipping has been scarce, at least until very recently.

In response to these and other pressures—and to open up new geographies while holding or gaining share in current markets—many companies are seeking new and more effective ways of managing the complete end-to-end (e-2-e) supply chain. While not a new concept, heretofore it has been a very difficult challenge to enable it with the right technologies. The current trend, albeit one still in its infancy, is an organizational structure known as a supply chain control tower. The control tower concept—a centralized, shared service—has been around for some time, but successful implementation that achieves its full promise has frequently been frustrated by issues related to trading partner connectivity: That is, getting all the players linked in an integrated fashion to improve supply chain visibility and performance. The Internet revolution has been the catalyst for realizing the long-sought results.

With the help of new technologies, companies are broadening the supply chain control tower concept to encompass the full span of supply chain activities.

Supply chain control towers bring together the capabilities required to manage complex, end-to-end (e-2-e) supply chains. This helps organizations deal with rising volatility, complexity, and uncertainty. By integrating supply chain processes and tools across previously siloed functions, control towers also enhance coordination and collaboration. Control towers focus on specific business outcomes, including cost reductions, better inventory controls, higher quality, improved customer service, and more optimal asset utilization. Rather than having multiple dashboards in multiple functions, the supply chain control tower views interrelated activities from one perspective, with one "version of the truth." Perhaps one of the most powerful attributes stemming from new technologies and Internet connectivity is that it gives businesses the opportunity to gain stock keeping unit (SKU)-level visibility across the entire supply chain, from the origin supplier to a store shelf. That visibility provides companies with a much better lens through which they can view and manage the inventory in their pipeline. It also furnishes intelligence about bottlenecks in the supply chain, which can inform decisions whether and how to fix or alter operational aspects of the product flow to improve supply chain reliability and predictability, both key elements in reducing safety stock and related costs.

Supply chains today are under extraordinary pressure from many fronts—from the end consumer, who has been conditioned by Internet-based companies such as Amazon to expect a wide range of product choices and services, to the emphasis on controlling costs and a changing risk profile.

This extends to a number of key areas including:

1. Inventory management. A comprehensive, SKU-level view of where everything from spare parts to raw materials to finished goods at any time, when it is supposed to be sent from one location to another, and what potential problems might arise.

2. Supplier management. A global map of all suppliers and, as needed, of their key suppliers, with information about supplier contracts, pricing, reliability, and quality of goods and services delivered.

3. Transportation. How goods are delivered, by what mode, what price, which route, where they are delivered, and when each shipment arrives, what it contains, and where it goes upon arrival—right down to the local delivery level.

4. Data. Awash in data, the control tower helps supply chain managers analyze the data and turn it into actionable insight and, ultimately, make more informed decisions, more quickly with more reliable data

5. Demand. A control tower links operations to demand forecasts, aiding decisions about which products to make and in what quantities for each market.

6. Talent. The control tower helps optimize scarce talent resources and creates new career opportunities for skilled supply chain professionals.

Key Considerations

One of the key considerations in designing an effective control tower structure is the degree of centralization or decentralization inherent in specific functions and who will execute them.

When looking at the e-2-e "Logistics Footprint," the two key questions that need answering are:

1) Where should the work be done? Globally (ocean and air); regionally (trucking and rail); or locally (dock door scheduling and yard management)?

2) Who should do the work (insource, outsource, or hybrid model)?

For example, within the transportation component, some services such as maritime shipping or global air freight are highly centralized and can be readily tracked from a control tower. Others, such as trucking, are more regional and may lend themselves to a hybrid model, with local management taking a greater degree of control. Still others, such as local courier services or functions such as yard management at distribution centers, may be strictly local and best supervised by local management within guidelines provided by the control tower.

Similarly, local managers might take on the responsibility of dock-door scheduling, but the control tower would maintain visibility for each shipment or delivery and would receive alerts, messaging, and reports on any issues that arise.

The common, vital thread running through all of this is that visibility and business intelligence are present at the control tower level, so that all players on the supply chain team are playing off the same scorecard.

Another key question, one that is applicable to all functions supervised by the control tower, is: "Who does the work?" A comprehensive, global view can help determine whether specific activities are undertaken by third-party suppliers; by a mix of supplier and company personnel; or taken completely in-house. Activities that must be performed, but that add little value or differentiation in the customer's mind, might be candidates for near-shoring, off-shoring, or outsourcing.

The Importance of Data

We have reached the point at which major supply chain partners, as well as the companies selling finished products to consumers, now have essential technology in place, including enterprise resource planning (ERP), planning and optimization tools, transportation and warehouse management software, and other key solutions. This technology generates vast quantities of data related to operations along the extended supply chain.

Through the cloud, all of these data sources along the supply chain can now be connected, no matter what the underlying execution platform might be. These technologies are dramatically reducing the cost, complexity, and time-to-value of integration both within enterprises and between companies. At the same time, advances in analytics are allowing organizations to make use of the large amounts of structured and unstructured data collected across the supply chain.

The critical element at the base of the pyramid is a sophisticated master data management capability. This capability supports the advanced analytics systems, which are only as reliable as the data they consume. As most supply chain professionals realize, this is much more easily said than done, particularly in large, global enterprises with multiple instances of ERP systems running in various geographies or business units. At the enterprise level, the analytics system should provide answers to basic questions about what happened (performance management); why it happened (root cause analysis); and what will happen (forecasting and modeling). Root-cause analysis, for example, can review delays in customer orders and examine whether lead times are too long (or too short). It can assist in the study of inventory policy and processes, leading to needed corrections, and can examine variables in the price and supply of goods and services.

Good data—leading to good analytics—also support

effective simulations and "what if" scenarios. By conducting sensitivity analyses for supply chain plans, conducting cost comparisons of build-or-buy inventory decisions, and exploring the scalability and flexibility of current and potential suppliers, organizations can reduce the risk of supply chain disruption, reduce total cost of ownership, and increase the reliability of key suppliers.

Optimizing Network and Inventory

Consider a U.S.-based consumer goods company that supplies products primarily to customers on the east and west coasts. In this instance, the company's costs increased while its revenues remained flat—not an unusual scenario. Control tower reporting showed deteriorating key performance indicators (KPIs) in the company's eastern region, so the control tower analytics team reviewed the situation and developed an action plan.

One of the most powerful attributes stemming from new technologies and Internet connectivity is that it gives businesses the opportunity to gain stock keeping unit (SKU)-level visibility across the entire supply chain, from the origin supplier to a store shelf.

At the macro level, the control tower's logistics dashboard highlighted transportation as the major contributor to increasing overall logistics costs; however, on-time delivery levels had dropped significantly, particularly in the east. Transportation metrics such as cost per mile, load factor, percentage of empty miles traveled, and other indicators suggested poor product flow, ad hoc expediting of shipments, and inefficient network routes in this region.

As the analytics team drilled down, they found that the east had experienced a steady increase in demand, and now had higher overall demand but fewer supply units. The short-term recommendation was to make better use of product flows to reduce overall transportation costs while improving service level performance. Two redundant distribution centers were shut down, leading to immediate and substantial savings.

Longer-term, the analytics team recommended redesigning the network, not only shutting down redundant distribution centers but opening two new distribution centers better matched to changing demand patterns. The combined scenarios led to significant cost reductions and dramatically improved service levels. And, finally, the control tower set up new product flow rules within the ERP system to conform to the new distribution strategy.

Minimizing Disruption

The control tower also supports rapid responses to potential supply chain disruptions. A leading consumer electronics company with distribution operations across North America relied on major manufacturers and suppliers in South Asia. Its supply chain control tower provided it with near real-time information on the status of its global shipments and on any variations in transit time.

When the company received an alert about an expected delay in shipments from suppliers based in South Asia, the control tower staff immediately went to work, analyzing the impact of potential disruption. Was the problem real? What was the potential cost? What were the best alternatives for minimizing the impact?

On a same-day basis, control tower analytics quantified the revenues at risk at nearly $4 million, and identified a likely drop in service levels from 96 percent to 88 percent. The "what if" analysis, performed in seconds, showed that sourcing materials from an alternate supplier with higher cost but a shorter lead time would decrease revenue at risk of more than $2 million; another approach indicated that realigning inventory to match supply with demand during the outage would drop the amount of revenue at risk by nearly $3 million. In a third scenario, closer collaboration with customers would reduce the revenue at risk to $3 million.

The optimization engines evaluated all scenarios, including combinations of multiple scenarios, to determine that a combination of using an alternate supplier and re-aligning global inventory resulted in the lowest revenues at risk, the highest service level, and the lowest impact on margin. Later that day, a new workflow was established, including a tracking functionality to facilitate the approval process. By day's end, new orders were created in the ERP solution for execution. The control tower saved the company millions of dollars while keeping customer service levels high.

The punch line of all of this is that companies with these sorts of capabilities can become proactively involved in serving their customers, rather than reacting after the fact to customer demands for a product

and why it's not where it's supposed to be when it's supposed to be there. This becomes a key differentiator in an increasingly competitive environment.

Different Companies, Different Approaches

Accenture's research and work with clients in a wide range of industries indicates that companies go through a four-stage maturity process in the evolution of their supply chain capabilities. As the organization becomes a demand-driven, end-to-end value network, the role of the control tower changes and grows.

In **Stage One**, companies react to events, and the control tower's primary functions are to provide visibility and to help prevent disruption from unexpected events.

In **Stage Two**, companies begin to undertake balanced, functional tradeoffs, with some integration of processes and IT across silos. In this stage, the control tower sets standards for functional excellence and supports cross-functional decision-making. The tower provides basic analytics and "what if" analysis, and manages KPIs at the function level.

In **Stage Three**, we see the emergence of e-2-e business network tradeoffs, with the control tower moving from managing vertical function silos to horizontal processes. The control tower is responsible for e-2-e process excellence and manages KPIs, not just for functions, but for process outcomes.

In **Stage Four** (which is still an aspirational stage for most companies) the organization's supply chain capabilities embody continuous e-2-e value assessment. The control tower uses complex, sophisticated analytics to optimize value at every step of the supply chain, with a direct effect on business value and profitability.

Depending on the company's level of maturity in this area, the question may become: What steps should companies take to get started on the path to a fully realized supply chain control tower?

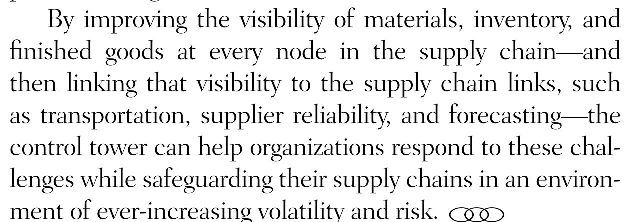
First, the company will want to identify the big issues: Where the supply chain is underperforming and those areas that would benefit from the control tower approach.

Next, the company prioritizes the business outcomes it wants, based on added value. The company then evaluates its own organizational structure and determines which roles should move into the control tower. These range from obvious candidates such as, transportation capacity sourcing, optimization, and management to administrative processes such as freight audit and payment, contract management, and compliance with key issues identified and objectives in place, the next step is the development of a road map that takes the supply chain control tower from initial reactive mode to full e-2-e value optimization. Among other concerns, the road map needs to address basic technology issues; where and when to establish pilot programs; and how to implement the cultural shift necessary for a move to a control tower structure.

The starting point for the road map, in many cases, involves a series of discussions with key participants to identify areas of concern, problems that need to be solved and desired outcomes. With key participants on board, it becomes easier to design pilot programs and to roll the program out to broader stakeholder groups once problems are identified and solved.

The common, vital thread running through all of this is that visibility and business intelligence are present at the control tower level, so that all players on the supply chain team are playing off the same scorecard.

Many supply chain organizations have been asked to take on a number of demanding responsibilities. In addition to traditional roles—managing the profitability of the supply chain and reducing total supply chain costs—they are dealing directly with customer requirements; managing supply chain security and risk; and supporting growth opportunities by improving service levels and enabling entry into new markets or new product categories.



By improving the visibility of materials, inventory, and finished goods at every node in the supply chain—and then linking that visibility to the supply chain links, such as transportation, supplier reliability, and forecasting—the control tower can help organizations respond to these challenges while safeguarding their supply chains in an environment of ever-increasing volatility and risk.

Counterfeiting: An Omnipresent, Critical, and Yet Elusive Supply Chain Issue

By W.L. (Skip) Grenoble, Kusumal Ruamsook, Lauren Bechtel, Christopher Craighead, and Taylor Wilkerson

W.L. (Skip) Grenoble, Ph.D., is the Executive Director and Senior Research Associate at the Center for Supply Chain Research at the Smeal College of Business, Pennsylvania State University. He can be reached at wlg2@psu.edu. For more information, visit www.smeal.psu.edu/cscr.

Kusumal Ruamsook, Ph.D., is a Research Associate at the Center for Supply Chain Research at the Smeal College of Business, Pennsylvania State University. She can be reached at Kusumal@psu.edu.

Lauren Bechtel is the Program Director at the Center for Supply Chain Research at the Smeal College of Business, Pennsylvania State University. She can be reached at lxv106@psu.edu.

Christopher Craighead, Ph.D., is the Director of Research at the Center for Supply Chain Research and the Rothkopf Professor and Associate Professor of Supply Chain Management at the Smeal College of Business, Pennsylvania State University. He can be reached at cwc13@psu.edu.

Taylor Wilkerson is a Program Manager in LMI's Supply Chain Management program, Co-chair of the Supply Chain Risk Leadership Council, and Senior Fellow with the University of Maryland Smith School of Business. He can be reached at twilkerson@lmi.org.

Anyone who has ever been offered a $40 Rolex or a $25 Gucci handbag understands that counterfeit goods are as accessible as hot dog vendors on the streets of any big American city. The problem is so prevalent that there's even a word for it: Fucci, which means fake Gucci.

Counterfeiting activities are no longer limited to easy-to-produce luxury branded consumer goods. Over the last few years, they have evolved from localized activities to a global phenomenon that requires cross-national countermeasures on an industrial scale, at times with dire consequences. Aside from economic detriment, consumer safety is also at risk as counterfeiting activities are encroaching across a wider range of safety-critical products such as pharmaceuticals, electronic components, medical devices, and automotive and aircraft parts that are critical to their safe operation. Recently, *The Wall Street Journal* reported on the largest confiscation of counterfeit medicines in history when customs officials in Luanda, Angola, uncovered 1.4 million packets of counterfeit Coartem, a drug used to treat malaria. Just two years ago, the *New York Times* reported that at least 20 people were killed and dozens of others were seriously injured in the Czech Republic from consuming bootleg rum, vodka, and other spirits they purchased on the cheap at street kiosks. Laced with methanol to make the product stretch farther, the bottles bore fake labels from Czech liquor makers to fool the public.

Counterfeiting is not limited to Eastern Europe and emerging markets. In the United States, a recent report on counterfeit seizures released by U.S. Customs and Border Protection (CBP) indicates that critical technology components, electronic articles, batteries, and transportation parts now join the rank of top ten categories of counterfeit and piracy products seized by CBP in 2011.

From localized small-scale operations to full-blown global enterprises, counterfeiting activities have become a significant threat to contemporary supply chains. Here's how counterfeit goods enter the supply chain today and five important suggestions on how to protect your supply chains from counterfeit goods.

With the negative impacts counterfeiting has had on public safety, national economies, and the integrity of business supply chains, it is not surprising that the FBI labeled counterfeiting: "The organized crime of the 21st century." As one executive points out: "Prior to the last year or two….[The knockoff parts market] has been the traditional fear around counterfeit parts for the customer. Clearly, over the last few years as the truly malicious applications have come to light, there is an expanded set of concerns."

Among the underlying factors that have led to an increase in counterfeiting issues are the complexities accelerated by global supply chains and e-commerce that counterfeiters inconspicuously exploit for their own gains. What's more, supply chains can play a vital role in combating counterfeiting.

Those are among the conclusions drawn from our study on counterfeit parts. Supported by The LMI Research Institute and conducted by the Center for Supply Chain Research (CSCR) at the Smeal College of Business at the Pennsylvania State University, this report describes counterfeiting issues focused on business processes and strategies related to business-to-business (B2B) sourcing of parts and materials. More specifically, by exploring a few key industries, the study objectives are twofold: (1) to investigate the characteristics of contemporary counterfeiting activities, and how and where they affect supply chains; and (2) to explore and report what companies are doing in response to the counterfeit parts challenge.

The objectives were addressed by conducting semi-structured interviews within industries where counterfeiting activities are prevalent, including aviation, automotive, electronics, life science, and defense, and then coalescing these interviews with an extensive examination of secondary sources including extant literature and industry reports.

The Hidden and Visible Impacts

The impacts of counterfeiting permeate the entire supply chain. Not only does it create conflict and undermine relationships among the supply chain members by exploiting the existing networks of legitimate supply chain entities, it inflicts damages in several aspects:

- **End users/consumers.** Users downstream are likely to experience premature product failures that can

increase down time, or worse, endanger users if counterfeit parts get into operations undetected. Even when a counterfeit lot is detected, industrial users can still incur the loss of manufacturing time and output while replacement parts or components are being sourced. In the case of pharmaceuticals, counterfeit items can put the customers' health and even their lives at risk. Consumers can also have their personal information and privacy compromised through counterfeit electronic components.

Counterfeiting activities are no longer limited to easy-to-produce luxury branded consumer goods. Over the last few years, they have evolved from localized activities to a global phenomenon that requires cross-national countermeasures on an industrial scale, at times with dire consequences.

• **Supplying firms.** Further upstream, suppliers who are the trademark owners of products being counterfeited suffer from the erosion of revenue stream and margin, deterioration of their brand value and reputation, lost investment, and reduced innovation. To any suppliers, which may or may not be the trademark owners, counterfeiting can raise failure analysis costs, mainly because it is increasingly difficult to distinguish counterfeit parts from genuine counterparts. Damages to suppliers also arise in the forms of countermeasure costs, fraudulent warranty returns, warranty costs, and the diminishing level of quality associated with their products or companies.

• **Buying firms.** Industrial users or distribution channel entities such as brokers, wholesalers, and distributors are not secure from harms and risks brought on by counterfeiting. On the one hand, suppliers facing counterfeit detriments are compelled to take extensive measures to secure their supply channels, the costs of which may be passed on to buyers through the increased selling price. On the other hand, to minimize the numbers of counterfeits that go into their operations or customers, buyers need to qualify suppliers and invest in additional staff as well as sophisticated equipment to inspect components. These efforts from buyers are vital to prevent legal action, because willful blindness by ignoring the potential for counterfeit items may be legally construed as deliberate intent that could create the risk of prosecution and legal liability, warned the Coalition Against Counterfeiting and Piracy.

A Closer Look

A wide array of activities fall under the umbrella of "counterfeiting." The characteristics of these activities, parties involved, and strategies used to supply counterfeit products continue to evolve. Because various forms of counterfeiting tend to differ by the counterfeiters' roles, their motivation, and the impact on affected parties, the first step in developing countermeasures is to distinguish between the various forms. Our investigation revealed the following five categories of counterfeiting.

1. Gray-market counterfeiting entails the activities of production overrun and parallel trading. Production overrun is an umbrella term for any form of unauthorized production by otherwise authorized contractors. For example, a contract manufacturer may operate an unauthorized additional production shift of a product to sell on the gray market. Parallel trading is a diversion of legitimate products to markets, dealers, or retail outlets without the consent of the right holders.

2. Re-marked/re-packaged counterfeiting involves re-labeling or re-marking of the original products with a newer date code, with a completely different product ID, or as a higher performance, more expensive product. Also in this category are falsified certificates of conformance and safety approval documentation to construe that parts have been tested or screened to a higher standard than is true.

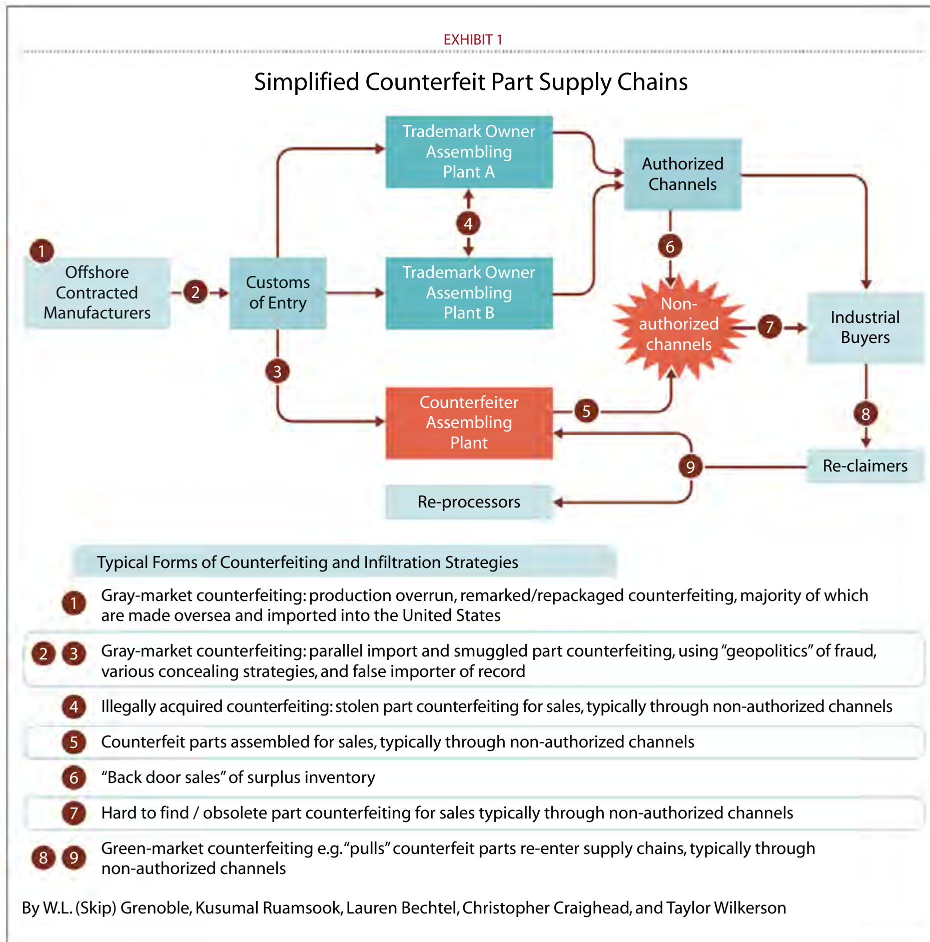
3. Green-market counterfeiting is the misrepresentation of sustainability characteristics (e.g. reduce, re-use, re-work, refurbish, reclaim, recycle, re-manufacture, and reverse logistics).

4. Hard to find and surplus counterfeiting. The former is common for long-life, tailored products or systems (e.g. automobile, defense and aerospace companies, and industrial equipment manufacturers) where out of production critical components or spare parts are highly susceptible to being counterfeited. The latter involves unauthorized "back door sales" of excess inventories to minimize loss from leftover items and inventory cost associated with the excess inventory.

5. Illegally acquired counterfeiting encompasses smuggled and stolen products.

Supply Chains: A Counterfeiter's Playground

How do counterfeits get into the supply chain? Unfortunately, there is not just one "door to shut." Exhibit 1 provides a simplified illustration of typical



counterfeiting activities and points of supply chain infiltration.

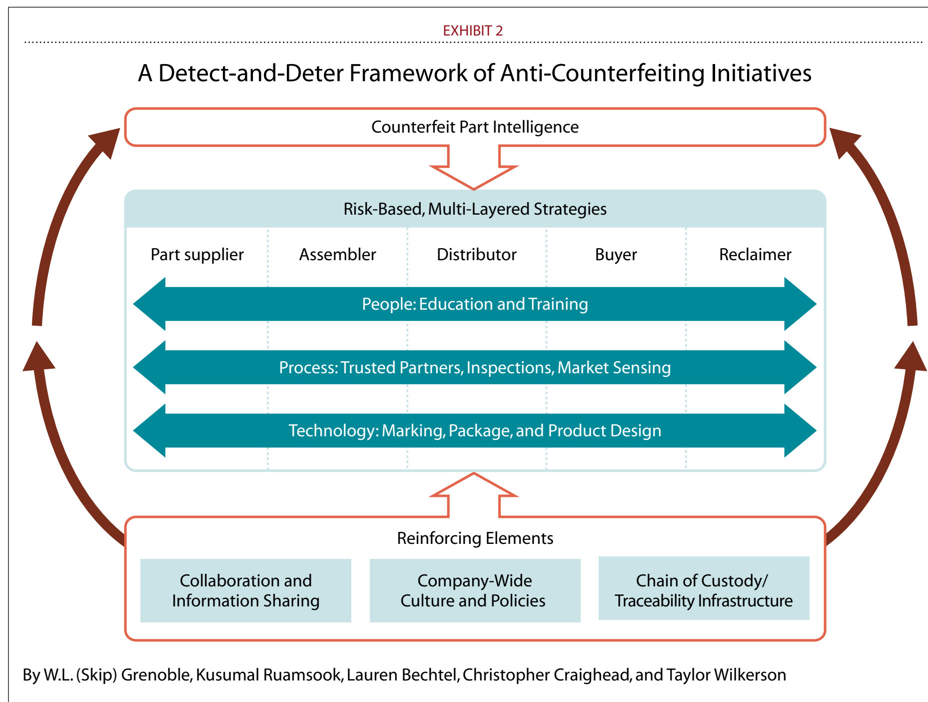
As can be seen in Exhibit 1, counterfeiting issues have become increasingly complex and challenging to overcome, primarily because their supply chains are difficult to distinguish from the genuine supply chains. The underlying reason for this phenomenon is twofold: the complexities of today's global supply chains; and the sophisticated concealing strategies exercised by counterfeiters.

In fact, the growing volume of freight that flows between countries via a complex network of intermodal freight transportation by itself abets counterfeiting. Counterfeit goods are moved via multiple modes of transportation, and are transshipped through various intermediary destinations in several territories. This strategy disguises the origin of the counterfeit products as they traverse along the global supply chain.

Various concealing strategies counterfeiters employ also complicate counterfeit goods identification. According to the United Nations Interregional Crime and Justice Research Institute, counterfeiters' tactics range from mixing counterfeit and legitimate products into the same shipment; shipping parts and subassemblies rather than finished counterfeit products; to stealing the corporate identity of legitimate importers in order to import counterfeit products. It is important to note that the corporate identity theft strategy has become more prevalent. One of the common schemes used is physical address mirroring in which a corporate identity thief closely mirrors the physical address of the unsuspecting target business in order to obtain credit, loans, or order goods and services in the victim business' name. Smaller customs brokers and forwarders are used most often to carry out such a scheme, because unlike more sophisticated operations, they do not have procedures in place to vet new customers, according to *The Journal of Commerce*. All of these concealing strategies not only reduce the risks of seizure upon entry, but also allow counterfeiters to avoid criminal liability if counterfeit goods are detected.

Countermeasures to Combat Counterfeiting

Companies are executing various anti-counterfeiting initiatives that address different points in the supply chain network, shown in Exhibit 1. These initiatives can be broadly described as detect-and-deter approaches designed to improve detection of counterfeit parts and institute barriers to deter counterfeiters. The goal of these approaches is to prevent counterfeit parts from getting into the operations or in the hands of customers, as well as minimize the counterfeiter's opportunities to infiltrate the legitimate supply chains. Exhibit 2 provides a snapshot of current proactive anti-counterfeiting initiatives as found in our research. Based on this framework we discuss seven countermeasures.



Countermeasure 1: Focus on Counterfeit Part Intelligence

"One thing about the counterfeit world you hear a lot of clichés . . . and the biggest one is 'we don't know what we don't know,'" Vice President of Global Brand Protection, Life Science Manufacturer.

Because data on counterfeit incidents have not been systematically collected or evaluated, companies have been forced to rely on fragmented and anecdotal information to develop anti-counterfeiting programs, noted the U.S. Government Accountability Office. As a result, proactive companies are now focusing on developing counterfeiting intelligence to fill these information gaps and create more effective anti-counterfeiting programs.

Creating a robust database that is continuously maintained is the first step for intelligence building. The database contains information on counterfeit incidents gathered via various avenues, ranging from internal reporting of counterfeit parts detected, conducting supplier site assessments, collecting customer input, to engaging in the investigation and prosecution of counterfeiters. With this information, tools such as supply chain mapping and network analysis assist in a risk assessment. Focuses of the analysis are on identifying at-risk procurements, most likely points of infiltration or unintended dispersion of counterfeit parts, the parties involved, and the nature of the risks and impact of counterfeit parts. Intelligence developed, in turn, provides actionable inputs for devising risk-based anti-counterfeiting strategies.

Countermeasure 2: Use Risk-Based, Multi-Layered Approaches

"There is always a trade-off between combating counterfeit items being introduced and the subsequent cost of doing that combating," Director of DoD Supply Chain Solutions, Defense Consulting.

Risk-based anti-counterfeiting strategies are based not only on potential associated risks, but also the propensity for particular parts or products to be counterfeited. Some red flag characteristics that spur counterfeiting are the difficulty of counterfeit detection, obsolescence or out of production, high value, and high demand volume. Driven by high potential revenue gains, products with high value and/or high demand volume are often susceptible to being counterfeited. Revenue-driven counterfeiting is further propelled when products are low-tech, easy to imitate, have no harmful effects that will raise suspicions, or involve resource-intensive verification owing to difficulty of counterfeiting detection. The lack of supply for obsolescence or out of production products from authorized channels with established relationships and audit trails necessitate buyers to seek the supply elsewhere, opening opportunities for counterfeiters.

Another key feature of risk-based strategies is that they span across forward and backward supply chain processes, and employ multi-layered measures of people, process, and technology. The constituent elements of these multi-layered strategies include the emphases placed on trusted/distrusted parties, authentication technology applications, and internal line of defense through robust inspection, market sensing and reporting procedures.

Countermeasure 3: Identify Trusted/ Distrusted Parties

"What you want to do is make sure that you got trusted partners who are audited on regular basis . . . you have to get your suppliers committed with the same rigor that you have as a company," Vice President of Global Brand

Combating Counterfeiting in the Supply Chain: Five Pieces of Advice

The issue of counterfeit parts and products is widely recognized today as a matter of corporate, government, and public concern. In this article we describe counterfeit part supply chains and infiltration strategies that counterfeiters use in the global trade environment. The complexities of counterfeit challenges gauged from this exercise accentuate the need for proactive countermeasures. In conclusion, we offer the following five "quick fixes" for practitioners in developing and implementing anti-counterfeiting measures:

1. Cultivate counterfeiting intelligence. Start with developing intelligence on the issues and build a robust database over time to reduce the "we don't know what we don't know."

2. Keep in mind that not all counterfeit parts are created equally. Anti-counterfeiting efforts should be proportionate to the propensity of counterfeit incidents and potential risks involved by parts or products, by channel of trade, and by geography.

3. Know your supply chain partners. Make sure that your supply chain partners not only steer clear of counterfeiting activities, but also actively deter counterfeiters from infiltrating the supply chains.

4. Look out and look around. Bring in external reinforcements to build a better protective supply chain through participations in anti-counterfeiting coalitions and taskforces that facilitate communications and collaborations on regulations around anti-counterfeiting measures, protocols written based on these regulations, technological standards, and best practices.

5. Strengthen from within. Bring in internal reinforcements through organization-wide culture and policies, and cross-functional actors who are trained and equipped with appropriate tools.

Protection, Life Science Manufacturer .

One of the most important rules in anti-conterfeiting is to source directly from authorized sources that are often listed and made available via the trademark owners' websites and industry associations' websites. These sources can be the manufacturer of the parts/products, or a distributor, reseller, and aftermarket manufacturer contractually authorized by the trademark owners to produce, or resell its parts/products.

However, authorized sources are only part of the emphasis on trusted/distrusted parties. Proactive anti-counterfeiting initiatives also focus on identifying and keeping abreast of trustworthiness of supply chain parties and even third-party organizations that are engaged more actively in the inspection, testing, auditing, certification, and other conformity assessment. A variety of measures are used in trusted partner programs including:

- assessing the partner's reputation and history;
- obtaining references from the partner's customers;
- looking for certifications/accreditations;
- assessing the partner's supply sources and quality processes;
- developing an auditing and site-visit scheme; and
- making an audit requirement part of contractual obligations.

Countermeasure 4: Employ Authentication Technology Applications

"Anything you do to increase visibility and control of your supply chain, it's going to be better for protection against counterfeit . . . Technologies with authentication, track and trace, wireless technologies are very important," Vice President of Global Brand Protection , Life Science Manufacturer.

Various authentication technologies are implemented to enhance counterfeit detection, part/product authentication, and return verification. The majority of current technological responses involve the use of primitive, relatively inexpensive marking options such as serial numbers, holograms, and micro-printing. More advanced marking technologies such as chemical or artificial DNA sequence markings are also used, but to a more limited extent.

While users perceive some gains from these detection technology applications, it is to protective traceability technologies that proactive anti-counterfeiting programs aspire. RFID-enabled technologies in particular have gained attention in anti-counterfeiting efforts. However, they remain relatively limited in use, primarily because of the high cost and lack of technological standards. This combination inhibits system-wide implementation of traceability technologies for the sole purpose of anti-counterfeiting.

Countermeasure 5: Strengthen the Internal Line of Defense

"What you want is a continuous inspection of product, where not only is the quality inspected, but there is inspection around the compliance, the volume, quality, delivery schedules, and packaging. All the evidence you can find on

a shipment coming from a supplier would match what you would expect," Vice President of Global Brand Protection, Life Science Manufacturer.

Robust inspection procedures are a vital element of keeping counterfeit parts from entering a firm's operations. Emphasis needs to be placed not only on processes for physical inspection of parts, but also for accompanying documents. Like forward flows, reverse flows of returns, disposal, and surplus items should also be focused on because some products/parts that should be disposed of or processed during the return process increasingly end up in the counterfeit supply chain.

Also important in the internal line of defense are specific procedures for handling counterfeit parts and reporting detection of counterfeit parts, as well as marketplace sensing for counterfeiting activities, such as through complaint handling (to pinpoint parts failure trends, or suspicious changes in failure rates), sales and inventory monitoring (to identify sudden spikes in orders that could indicate illicit trades), and Internet monitoring (to identify unauthorized trades).

Employees should be trained and equipped with appropriate tools (e.g. authentication technologies described previously) to enhance their abilities to detect, identify, and sense counterfeiting parts. The information gathered, in turn, will assist in developing counterfeit part intelligence, provide feedback to customers, and assist government agencies in addressing the counterfeit issues.

Countermeasure 6: Capitalize on External Reinforcement Through Collaboration and Information Sharing

"We need to act together as an industry to make sure that what we see collectively is properly communicated . . . around anti-counterfeiting measures, around technology on tracking and tracing to try to homogenize the industry [and] to share what has been successful . . . to build better protective measures to supply chains," Vice President of Global Brand Protection, Life Science Manufacturer.

Because counterfeiting is a relatively "immature" issue, collaboration among private companies, government and non-government agencies, and industry groups is imperative to develop industry insights and keep abreast of accepted standards and protocols. Companies with effective, proactive anti-counterfeiting efforts actively participate in a growing number of associations, both industry-specific and cross-sector, that are established to promote information sharing and working dialogue in the effort to fight against counterfeiting. Examples pertaining to industries where counterfeiting activities are prevalent are Brand Protection Council (the motor and equipment industry), Rx-360 consortium (the pharmaceutical industry), Government-Industry Data Exchange Program (the defense industry), and Alliance for Gray Market and Counterfeit Abatement (AGMA) (the high-tech industry).

Countermeasure 7: Achieve Internal Reinforcement Through Organization-Wide Culture and Policies

"We won't tell the business area this is exactly how you do it [approach counterfeit] because every business is different, and their businesses are different, but they will have to follow the same basic approach and come up with the same results as everyone else in the corporation,"AIT Manager, Aerospace Manufacturer.

This article underscores a company's established, unifying stance toward counterfeiting. High level and broad reinforcement is important, not only to facilitate the counterfeit part intelligence efforts, but also to effectuate the implementation of risk-based anti-counterfeiting strategies.

Because anti-counterfeiting initiatives described earlier have a direct bearing on supply chain processes, they must be accompanied by appropriate education and training programs not only with employees, but also with supply chain partners, consumers, and government officials. These programs aim to raise awareness of counterfeiting risks and the countermeasures being put in place in terms of the general policies, the specific procedures, and the governing rules, among others.

More to Be Done

What then can be done? Counterfeiters are aggressive and creative in their endeavors—companies must match these efforts in the same manner (see Five Pieces of Simple Advice). Some of that work is already under way: As the risks of counterfeiting have intensified, an increasing number of companies are initiating various anti-counterfeiting programs. However, until recent years, counterfeiting issues have been conversed passively among supply chain managers, often as a small part of risk management and security issues. That needs to change. While different functional areas need to be involved, we believe supply chain should lead the charge as that is where many counterfeiting activities occur. At minimum, supply chain needs to be the "start of the conversation" within many firms, a conversation that either is long overdue or should become louder.

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Supplier Energy: The Next Wave in Procurement

Just as marketing leaders have tapped into "customer energy" to shape the brand promise, procurement is tapping into "supplier energy" to improve and sustain its longer-term competitive advantage.

By Mike Hales, Yves Thill, and John Piatek

Mike Hales is a partner in A.T. Kearney's Chicago office and can be reached at mike.hales@atkearney.com.

Yves Thill is a partner in A.T. Kearney's Atlanta office and can be reached at yves.thill@atkearney.com. John Piatek is a consultant in A.T. Kearney's Chicago office. For more information, visit www.atkearney.com.

Saying that today's business environment is increasingly complex is an understatement. People want and need more of everything—products, services, information—in faster time and through more channels than ever before. Worldwide demand for water, food, and energy is soaring, depleting natural resources are putting pressure on preservation and sustainability. Add in more financial volatility from global capital imbalances and geopolitical volatility and you're talking about real challenges.

So it is no surprise that procurement organizations are becoming more complex and difficult to manage. C-suite executives expect more from procurement. Procurement must continue to do its "day job" and drive cost reductions while simultaneously becoming more strategic by delivering value beyond cost to the organization. This value is derived from innovation and growth, risk management, capital optimization, as well as speed, agility, sustainability, quality, and service.

Just as marketing leaders have tapped into "customer energy" to help shape the brand promise, procurement is tapping into "supplier energy" to improve and sustain its longer-term competitive advantage. The key is for procurement teams to go beyond a sole focus on sourcing.

What is Supplier Energy?

Broadly defined, supplier energy is the ability to identify and access the vast resources of the supply base—resources that can be channeled for longer-term competitive advantage. It is the level of expertise, resources, and capacity that suppliers put forward to help buyers achieve their broader strategic objectives. Procurement is the interface between the organization and the outside supply base that unleashes and channels this energy potential. It augments supplier energy and energizes its internal capabilities.

For procurement organizations that want to lead the way, here are four lessons. Each moves the procurement function to the next level in order to meet its new business imperatives.

Lesson 1: Go beyond cost reduction to address a broader set of business objectives. Procurement's traditional focus on cost reduction is a barrier to unleashing supplier energy. Measuring and "incentivizing" procurement primarily on the basis of cost benefits—and particularly with a short-term horizon—undercuts the ability to engage differently with the supply base and tap into supplier energy. Why would a supplier invest resources, capital, and ideas to support a customer's agenda if the relationship is short-lived and the supplier is squeezed on margins each year?

At this point, it's important for procurement to make fact-based rather than anecdotal decisions. One way to accomplish this is by developing supply-award scenarios to assess trade-offs that are determined across a multi-dimensional, balanced scorecard. The scorecard is tailored for each company based on its competitive environment and strategic imperatives.

Lesson 2: Create an integrated operating model to unleash supplier energy. Business needs and requirements are the starting point to determine which spend categories are essential and

have the biggest potential impact on your long-term competitive advantage, and which dimensions of the balanced scorecard—sustainability, supplier risk management, customer service, and costs—are essential. Within these spend categories, qualified suppliers are grouped into clusters, which helps concentrate scarce resources on those with the highest value potential. Most suppliers are competed, while prioritized suppliers receive tailored treatment, with the aim of building relationships based on trust as the basis for generating long-term value. Performance management is employed to monitor the value delivered, minimize value leakage, and improve relationships across the entire supplier portfolio. Throughout, the supplier portfolio is actively managed to identify alternatives and discontinue poor performers as necessary.

Lesson 3: Develop SRM skill sets beyond traditional procurement skills. Unleashing supplier energy requires proficiencies and abilities beyond traditional procurement skills—from business acumen and aptitude, to problem solving. In this way, procurement is better able to collaborate with functional stakeholders and suppliers to develop new solutions. For example, engaging a brand manager to consolidate agencies often calls for the right vocabulary (to balance brand impact and efficiency) and a keen understanding of organizational dynamics and emotional intelligence. Clearly then, winning the war for talent is critical to fully leverage supplier energy. It requires taking more proactive and aggressive steps to recruit, develop, and retain top talent with both left-brain and right-brain skill sets.

A typical procurement professional has most of the prerequisite left-brain skills: he or she is analytical, logical, precise, and organized. A right-brain person, by contrast, is creative, imaginative, conceptual, and business savvy. These people are not typically recruited by procurement organizations. Yet to unleash supplier energy, right-brain people have to be part of the mix. Procurement needs left-brain thinkers to deploy advanced analytics and right-brain thinkers to engage on supplier energy, effectively lead cross-functional teams, and embed communication and change management into the process.

Lesson 4: Segment suppliers based on performance and future potential. Many procurement teams fail to effectively manage their supply base because they are too broad in their definition of strategic suppliers. Our research shows that companies often take a process-based approach to supplier segmentation. This approach can take six months or longer, is usually overly complicated and results in too many "strategic" suppliers (at least one per spend category) with unclear prioritization across spend categories.

Success comes from a more focused approach—assessing suppliers based on their historic performance and future potential. This can be done through a series of working sessions with internal stakeholders supported by available supplier performance information, which can be done in weeks instead of months (see Exhibit 1).

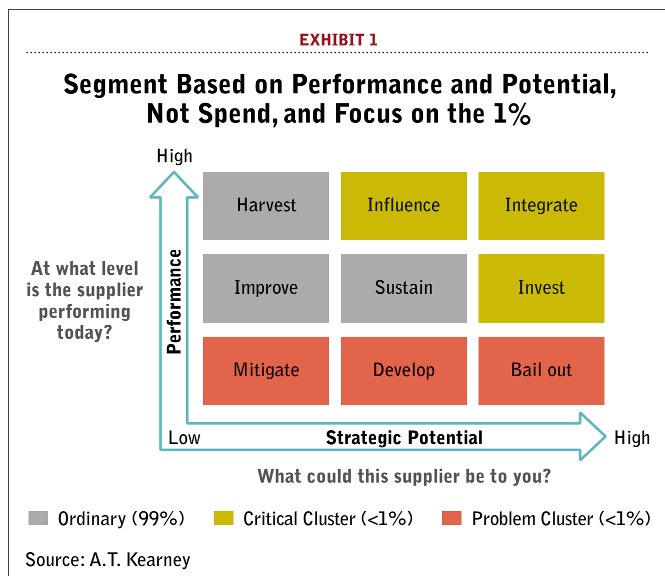
The key is to focus on the most important suppliers—the 1 percent that fall into the critical (influence, integrate, and invest) cluster and the problem (mitigate, develop, bail out) cluster. Problem suppliers must be monitored to ensure performance, while critical suppliers require close collaboration to gain competitive advantage. Tips for successfully managing these relationships include defining expectations upfront and evaluating the opportunities thoroughly internally before approaching the supplier. When there is a compelling rationale to collaborate, engage the supplier and test their commitment. Other notable success factors include creating win-wins for both organizations, building trust through transparency, and defining gain sharing parameters so both partners understand the rules and the benefits early on.

Suppliers are the Solution

The journey to unleash supplier energy takes time. It requires changing how procurement engages and collaborates with the functions and the business, realigning the procurement team, injecting new capabilities, and segmenting your categories and suppliers in a new way. And while everyone will need to be engaged in the effort, it is usually less complex and more self-funding than improvement efforts focused solely on internal resources. Isn't it time to view your suppliers as the solution to capturing additional, sustainable value, and unleashing their energy potential?

EXHIBIT 1

Segment Based on Performance and Potential, Not Spend, and Focus on the 1%



Source: A.T. Kearney

Finding a Healthy Balance

Finding the right third-party logistics provider (3PL) always involves considerable due diligence, contend industry experts. But it may also mean leaving an existing partner for a set of collaborators that can deliver on the promise of a seamless global network.

By Patrick Burnson, Executive Editor

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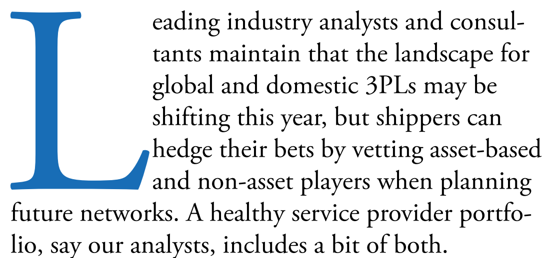

Leading industry analysts and consultants maintain that the landscape for global and domestic 3PLs may be shifting this year, but shippers can hedge their bets by vetting asset-based and non-asset players when planning future networks. A healthy service provider portfolio, say our analysts, includes a bit of both.

In fact, this year's list of Top 50 Global 3PLs, compiled by market consultancy Armstrong & Associates, validates the observation that shippers need a variety of options when it comes to moving freight this year.

"Shippers would prefer to work with a few providers, but the performance scale of operations often requires them to hire several 3PLs in order to optimize global procurement," says Evan Armstrong, the consultancy's president. "In the domestic arena, it's more centralized."

On the domestic front, both Coyote Logistics and XPO Logistics have broken the $2 billion revenue barrier through acquisition, creating two "mega" freight brokers to rival 3PL domestic transportation management (DTM) market segment leader C.H. Robinson Worldwide. "With other major competitors such as Total Quality Logistics and Echo Global Logistics growing rapidly as well, this intense competition will continue to heat up," says Armstrong. "In the end, it will mean increased operational performance levels for shippers and further consolidation within the small freight broker ranks."

While the 3.5 percent year-over-year U.S. 3PL market growth in 2013 was sluggish, mirroring the overall economy, DTM led all 3PL market segments again in 2013, according to Armstrong's research. Gross revenues were up, as was the cost of purchasing transportation capacity. However, the ongoing driver shortage continues to pressure DTM gross margins and net revenue growth.

"International transportation management (ITM) saw another slow-growth year. Expeditors International, Kuehne + Nagel, and Panalpina all had year-over-year revenue gains of 2.9 percent or less," Armstrong observes. He also notes that more focus in Asia has been on building reliable regional value-added warehousing and distribution (VAWD) networks versus export activity.

"This has benefited Kerry Logistics and Toll Holdings who have significant operating networks in China and Southeast Asia," says Armstrong. "As a sign of this shift, Kerry Logistics, the leading VAWD 3PL in Greater China, was spun off from its parent Kerry Properties Limited via an initial public offering in December 2013."

"Amazon Effect"

Since 2011, Armstrong and his team have been monitoring the "Amazon effect" on the third-party logistics market as part of its strategy consulting work.

They're finding that it's becoming increasingly important for value-added warehousing and distribution-centric 3PLs with significant business in the retailing industry to anticipate continued growth by Amazon and position—or reposition—their companies within the market as more business shifts from brick-and-motor stores to Internet order fulfillment operations.

Armstrong says that while the Internet services and retailing 3PL market sub-segment is only a small portion of the F*ortune 1000* domestic spend with 3PLs, it has grown 140 percent from 2007 to 2013.

"Amazon is the 800-pound gorilla in the e-retail market, and as it deploys its own local delivery fleets and continues to expand its value-added warehousing and distribution network, it will drive strategic change," says Armstrong. "Those 3PLs that could be most affected include DHL Supply Chain & Global Forwarding, FedEx SupplyChain, GENCO, OHL, UPS Supply Chain Solutions, and the smaller e-commerce fulfillment niche players like eBay Enterprise (formerly GSI Commerce) and Innotrac."

While Amazon outsources very few functions to 3PLs, Menlo Worldwide Logistics has been a key beneficiary from Amazon's growth, having significant portions of business awarded to it in 2013, he adds. "It's this kind of resiliency that will be a key differentiator in the 3PL marketplace moving forward."

Balancing Act

Resiliency and balance are not mutually exclusive qualities, maintains John Langley Jr., Ph.D., at the Pennsylvania State University. Indeed he argues that the Armstrong rankings reflect more global diversity of gross revenue, thereby challenging the "80-20 Rule." Also known as "The Pareto principle," it states that roughly 80 percent of the effects

Continued on page S58

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Armstrong & Associates Top 50 Global 3PLs

Rank	Third-Party Logistics Provider	2013 Gross Logistics Revenue (USD Millions)*
1	DHL Supply Chain & Global Forwarding	31,432
2	Kuehne + Nagel	22,587
3	DB Schenker Logistics	19,732
4	Nippon Express	17,317
5	C.H. Robinson Worldwide	12,752
6	CEVA Logistics	8,517
7	DSV	8,140
8	Sinotrans	7,738
9	Panalpina	7,293
10	SDV (Bolloré Group)	7,263
11	DACHSER	6,627
12	Toll Holdings	6,266
13	Expeditors International of Washington	6,080
14	Geodis	5,828
15	UPS Supply Chain Solutions	5,492
16	GEFCO	5,300
17	J.B. Hunt (JBI, DCS & ICS)	5,224
18	UTi Worldwide	4,441
19	Agility	4,415
20	Yusen Logistics	4,042
21	IMPERIAL Logistics	3,923
22	Hellmann Worldwide Logistics	3,433
23	Unyson Logistics	3,374
24	Damco	3,212
25	Burris Logistics	3,119
26	Schneider Logistics & Dedicated	2,850
27	Norbert Dentressangle	2,782
28	Kintetsu World Express	2,718
29	Kerry Logistics	2,575
30	Pantos Logistics	2,546
31	Sankyu	2,293
32	Ryder Supply Chain Solutions	2,280
33	FIEGE Group	2,090
34**	Coyote Logistics	2,000
34**	XPO Logistics	2,000
35	BDP International	1,900
36	NNR Global Logistics	1,745
37	Wincanton	1,695
38	Total Quality Logistics	1,621
39	Logwin	1,620
40	Nissin Corporation/Nissin Group	1,611
41	APL Logistics	1,586
42	Americold	1,580
43	Menlo Worldwide Logistics	1,540
44	GENCO	1,509
45	BLG Logistics Group	1,470
46	Transplace	1,400
47	FedEx SupplyChain/FedEx Trade Networks	1,387
48	Landstar	1,301
49	OHL	1,290

*Revenues are company reported or Armstrong & Associates, Inc. estimates and have been converted to USD using the average exchange rate in order to make non-currency related growth comparisons. **Tie

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Armstrong & Associates Top 50 U.S. Domestic 3PLs

Rank	Third-Party Logistics Provider	2013 Gross Logistics Revenue (USD Millions)*
1	C.H. Robinson Worldwide	12,752
2	Expeditors International of Washington	6,080
3	UPS Supply Chain Solutions	5,492
4	J.B. Hunt (JBI, DCS & ICS)	5,224
5	Kuehne + Nagel (The Americas)	5,046
6	Exel (DHL Supply Chain - Americas)	4,600
7	UTi Worldwide	4,441
8	Unyson Logistics	3,374
9	Burris Logistics	3,119
10	Schneider Logistics & Dedicated	2,850
11	DB Schenker Logistics (The Americas)	2,838
12	CEVA Logistics (The Americas)	2,641
13	Ryder Supply Chain Solutions	2,280
14	Panalpina (The Americas)	2,188
15	Coyote Logistics	2,000
15	XPO Logistics	2,000
16	BDP International	1,900
17	Total Quality Logistics	1,621
18	Americold	1,580
19	Menlo Worldwide Logistics	1,540
20	GENCO	1,509
21	Transplace	1,400
22	FedEx SupplyChain/FedEx Trade Networks	1,387
23	Landstar	1,301
24	OHL	1,290
25	Cardinal Logistics Management	1,200
26	Swift Transportation	1,189
27	Werner Enterprises Dedicated & Logistics	1,138
28	NFI	1,091
29	Damco (The Americas)	1,007
30	syncreon	1,000
31	APL Logistics (The Americas)	993
32	Penske Logistics	968
33	Echo Global Logistics	884
34	Yusen Logistics (Americas)	821
35	Ruan	807
36	Transportation Insight	803
37**	Jacobson Companies	800
37**	Neovia Logistics Services	800
38	England Logistics	798
39	Agility (The Americas)	795
40	ModusLink Global Solutions	755
41	Ingram Micro Logistics	734
42	Hellmann Worldwide Logistics (The Americas)	721
43	New Breed Logistics	648
44	U.S. Xpress Enterprises	615
45	Kenco Logistic Services	580
46**	Crane Worldwide Logistics	574
46**	Freightquote.com	574
47	DSV (The Americas)	570

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come from 20 percent of the causes.

"This translates into the way the economy is functioning now, with non-asset based 3PLs having much greater leverage for buying asset-based services," says Langley.

He also observes that domestic trucking supply and demand drives a lot of pricing pressure these days, which encourages logistics managers to spread their business around. "Asset-based providers are having a resurgence," says Langely. "At the end of the day, someone has to own the assets, and we see them now dealing more directly with retail and *Fortune 500* shippers."

Adrian Gonzalez, the founder and president of Adelante SCM, a peer-to-peer networking community for logistics professionals, agrees that a balanced transport portfolio is ideal. "Logistics managers are trying to mitigate risk by using asset-based carriers for dedicated fleet control operations," he says. "This is not only true in the truckload segment, but also in intermodal. Shippers have to weigh the benefits of flexibility against the advantages of having predictable routes."

Non-asset based players resemble "technology providers," more than ever, Gonzalez adds, noting that increased focus on customer relationship management is redefining the 3PL arena.

"Not just regionally, or domestically, but all around the world", he says. "While someone has to own the physical assets, many 3PLs are becoming much more reliant on cloud computing to provide seamless transparency for the shipper. Asset-based giants are also realizing the advantages of adapting to new IT technologies."

Gonzalez maintains that through the years, service providers and software vendors have "busted out of their boxes" via mergers and acquisitions, new business models, and new product development to

What's the ROI on a Managed Transportation Services Relationship?

Steve Banker, director of supply chain solutions at ARC Advisory Group, feels that measuring the return on a managed transportation service (MTS) relationship will become increasingly important to shippers.

In an MTS arrangement, a shipper contracts with a third party to plan and execute their moves for them. "In other words, instead of having internal planners orchestrate and execute moves, those planners are in the employ of the MTS provider, but work on behalf of the shipper," says Banker.

While there's much fine research on logistics service providers (LSP) and their overall relationships with their clients, there is a scarcity of research focused on specific LSP service lines such as warehousing, freight forwarding, and MTS. A recent survey done in conjunction with Peerless Research Group (PRG), the research division affiliated with *Logistics Management*, was recently conducted to correct this. Results will be shared in a joint webcast to take place on July 10 (**logisticsmgmt.com/3pl14**).

"Our goal was to determine the ROI of MTS arrangements, to develop criteria that would sort respondents into a top and bottom performers category, and then to look at what top performers were doing differently from other respondents," says Banker. "This allows shippers engaged in MTS relationships to benchmark their performance."

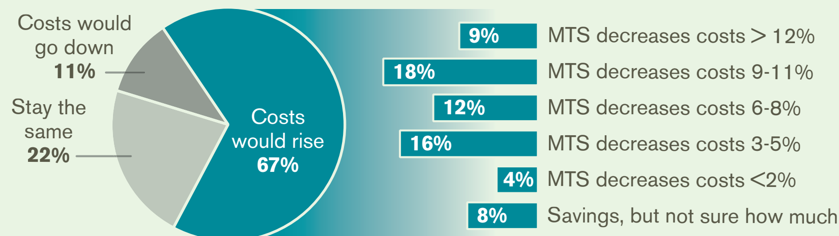
Banker has plenty of company in the 3PL analyst community when it comes to measuring the wants and needs of shippers. "It's really quite simple," he concludes. "All shippers want is sterling service. In the end, it doesn't matter how few or how many players are involved."

Steve Banker will be joining our 3PL analyst panel in the State of the 3PL Market Webcast on Thursday, July 10, to share the findings of this new study.

Shippers with managed transportation services (MTS) relationship

Freight costs if not working with MTS provider

Freight savings among those that achieved savings



Source: ARC Advisory Group/Peerless Research Group (PRG)

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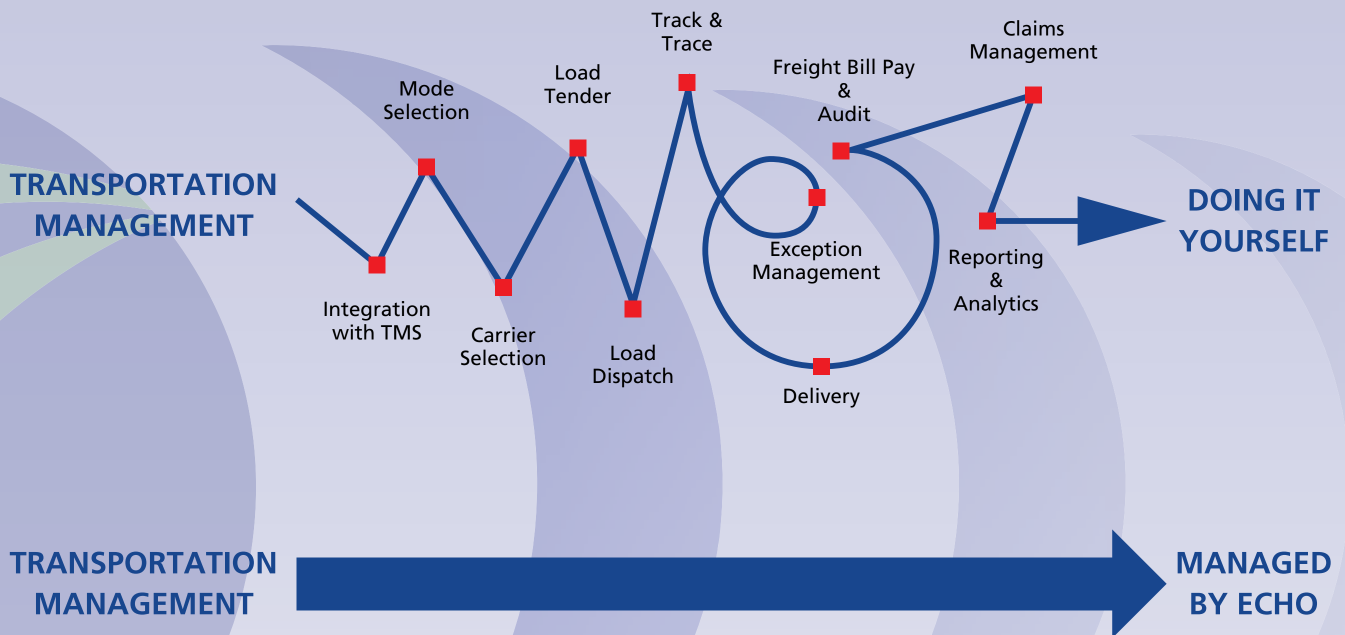

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pursue new growth opportunities, and to provide manufacturers and retailers with more complete "end-to-end" supply chain solutions.

"In the past, you had a box for freight forwarder, a box for broker, a box for warehouse operator, and so on," Gonzalez says. "At the same time, logistics managers had a box for parcel shipping solution, a box for fleet management application, and a box for outbound transportation solution." Today, he says, the boxes and labels of yesterday are giving way to a single amorphous category: providers of supply chain software and services.

"A logistics service provider can offer its own transportation management system while still being a 3PL and software vendor," says Gonzalez. "It can also be a B2B connectivity service that facilitates the exchange of data, documents, and other information with carriers and other trading partners."

Those distinctions, he argues, are becoming less important. For Gonzalez, the only question that still matters is the first one manufacturers and retailers must ask themselves when defining their supply chain strategies and initiatives: What are our desired outcomes?

Magic Quadrant

Analysts for The Gartner Group are more concrete when it comes to defining the role of the 3PL. For them, the logistics service provider (LSP) predominantly operates a business that moves, stores, or manages products or materials on behalf of a shipper without ever taking ownership of such products or materials.

In its annual *Magic Quadrant for Global Third-Party Logistics* report, Gartner considers 3PLs and LSPs to be synonymous. "Increasingly, 3PLs have extended their services beyond the basics, providing opportunities to increase their value and resolve additional customer supply chain challenges," says Greg Aimi, Gartner's director of supply chain research and *Magic Quadrant* co-author.

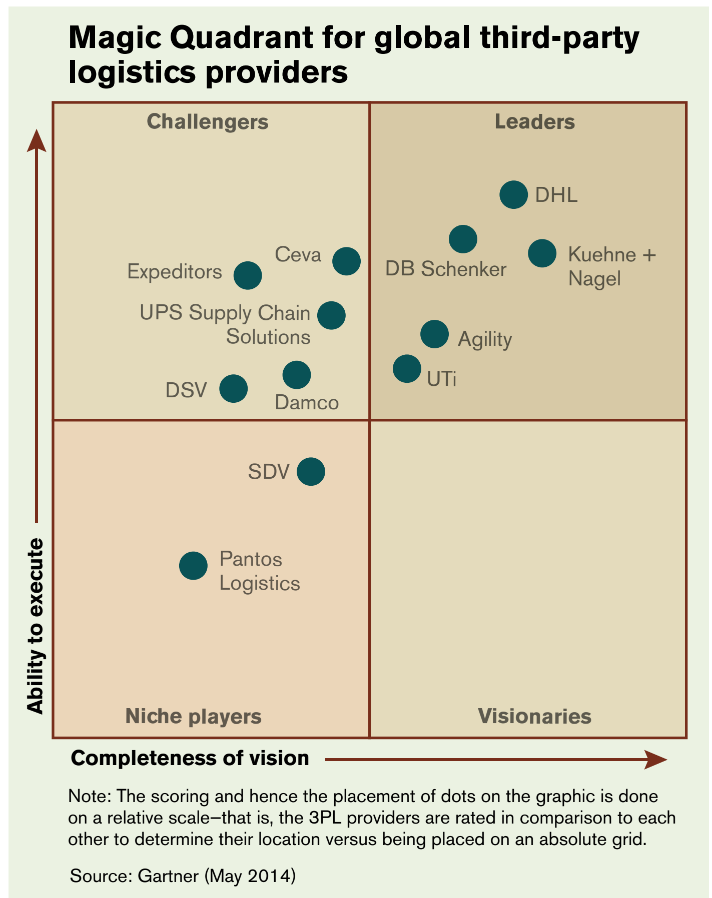
For example, these services include returns and repair processing, assembly and kitting, packaging, postponement, shipment consolidation, and cross-docking. In some cases, 3PLs also offer fourth-party logistics provider (4PL) or lead logistics provider (LLP) services. Customers use 4PL/LLP as a single management team to oversee and coordinate other 3PLs and carriers on their behalf.

"Large multinational and global manufacturers, distributors, and retailers are requiring their 3PLs to offer a broader set of consistent and reliable services across more and more countries, and to integrate those services across end-to-end business processes so that they might be able to use them as a global preferred provider," explains Aimi.

As a consequence, adds Aimi, the 3PL industry is progressing along a "maturity spectrum" in accordance with these new customer requirements, through a combination of acquisition and organic growth strategies.

"This Magic Quadrant is intended to chart the evolution of the largest 3PLs as they improve their ability to become a global preferred provider for

Magic Quadrant for global third-party logistics providers



Note: The scoring and hence the placement of dots on the graphic is done on a relative scale–that is, the 3PL providers are rated in comparison to each other to determine their location versus being placed on an absolute grid.

Source: Gartner (May 2014)

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their customers," says Aimi. "Logistics and supply chain executives can use this research to better understand 3PLs and their capabilities when evaluating and selecting the right set of providers to meet their global logistics needs."

Above the Radar

Aimi's words of advice should resonate with the world's largest logistics provider, DHL, which has just published the second edition of its *Logistics Trend Radar.*

The current report builds on the recent developments already identified in 2013, introduces new trends, and then sketches a future landscape for logistics professionals and the challenges they will face, but also outlines solutions that are underway—especially multi-channel retailing and predictive purchasing.

Some of the new trends the report highlights include omni-channel logistics, or the integration of different offline and online shopping channels; anticipatory logistics, or the application of big data analysis of customer product searches in order to send a shipment before the customer places an order; and crypto payment, the universal payment systems that allow global cross-currency payments to clear in seconds.

According to researchers, the *Trend Radar* report serves as a panoramic 360 degree view across the whole breadth of the logistics landscape. Based on this overview, the DHL research team will further explore selected trends in a "deep dive" format, based on research in cooperation with customers, research institutes, and industry experts.

"We combine our expertise with input from academia and other partners," says Markus Kuckelhaus, DHL's director of trend research, adding that the *Trend Radar* is a good starting point for logistics professionals wanting to prepare their logistics network for future challenges.

3PLs Must Make Adjustments in China

Beyond just export and freight forwarding services, third-party logistics providers (3PLs) in China are now offering pick-and-pack services for direct-to-customer shipments in the U.S. and Europe, observes Rosemary Coates, president of Blue Silk Consulting and author of *Rules for Sourcing and Manufacturing in China.*

"3PLs will prepare individual shipments for end customers, then overpack and consolidate to take advantage of bulk shipping to a U.S. or European distribution hub," says Coates. "For example, Nike has a web store (Nike ID) where you can design your own shoes for color and style. The shoes are then manufactured in Shenzhen and shipped to U.S. customers via UPS consolidation to the UPS Louisville hub."

Incoming containers are broken down and individual pairs of shoes are sent on their final route to customers via UPS domestic delivery. No inventory is kept in any part of the supply chain, as the shoes are manufactured on demand.

"Smaller 3PLs and freight forwarders without global networks, processes, and IT systems cannot compete with the larger, more sophisticated global companies," says Coates. "This is key. Without global IT systems, the ability to serve customers in China or any region of the world is limited."

According to Coates, as supply chains become more global and more complicated, IT systems become the backbone to supplying critical supply chain information. Other key observations include:

- Operations people need to know where supplies are and how they are moving to support production.
- Customers want to know where their orders are and when they will arrive.
- Customs authorities are getting more sophisticated and require advance electronic information for clearance and collection of duty.

"Third-party logistics providers that are investing in more automation and IT will attract more and larger customers," adds Coates. "In addition, 3PLs that have process engineers to design new services for customers will also win new business through the creation of innovative solutions."

—*Patrick Burnson, Executive Editor*

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Optimizing 3PL Relationships: A Big Step Toward More VALUE

In today's dynamic global marketplace, increasing logistics flexibility is critical as shippers look for greater collaboration with their third-party providers on the way to seamless integration of supply chain activities.

By Patrick Burnson, Executive Editor

Third-party logistics providers (3PLs) have gotten the message: Shippers expect seamless, value-added logistics services or they're taking their business elsewhere.

Today's ideal, optimized offering will need to do more than simply address the bottom line of a shipper's transportation budget. To make this happen, most major 3PLs are investing heavily in Big Data capabilities to ensure direct-to-consumer customization, and they're asking shippers to join them in "gainsharing" relationships as they move forward in the global arena.

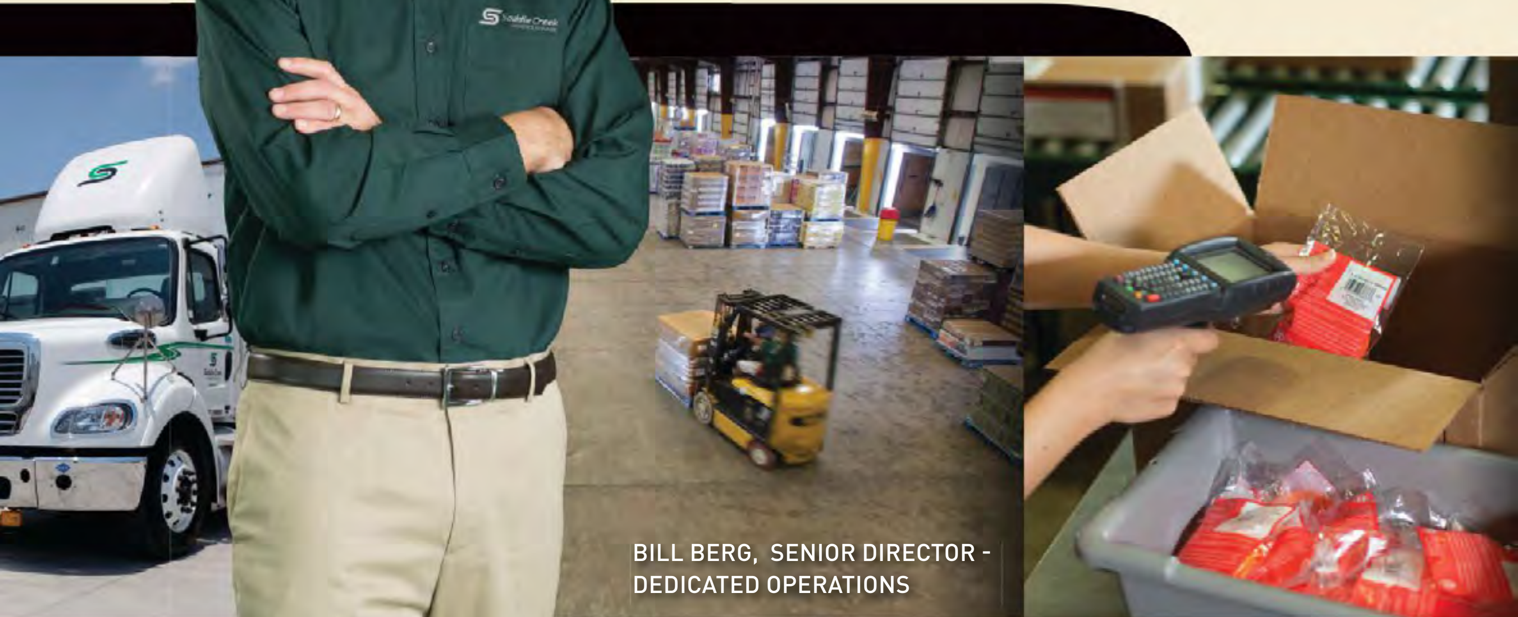
"Shippers should not be put off by a 3PL who brings in a team of experienced executives, nor should they feel threatened by this tactic," says Peter Moore, partner at the consultancy Supply Chain Visions. "The shipper should embrace this as a valuable resource that will reduce risk as the joint shipper-3PL team develops innovative solutions."

Moore advises shippers to empower the people who will be responsible for the planning and execution of global strategies to lead the team in joint solution development. "Get facilitation help if you need it, but don't leave the table with less than a fair solution that incentivizes both parties to continuously improve the logistics of the shipper and their customers," Moore adds.

Evan Armstrong, president of 3PL market research firm Armstrong & Associates, endorses Moore's position, and says optimization tends to be the most important aspect of strategic 3PL relationships.

"Of the total 6,398 shipper-3PL relationships we track in our database, 1,184, or 18.5 percent, are strategic, with the 3PLs performing supply

"We go beyond the basics to deliver comprehensive logistics solutions."



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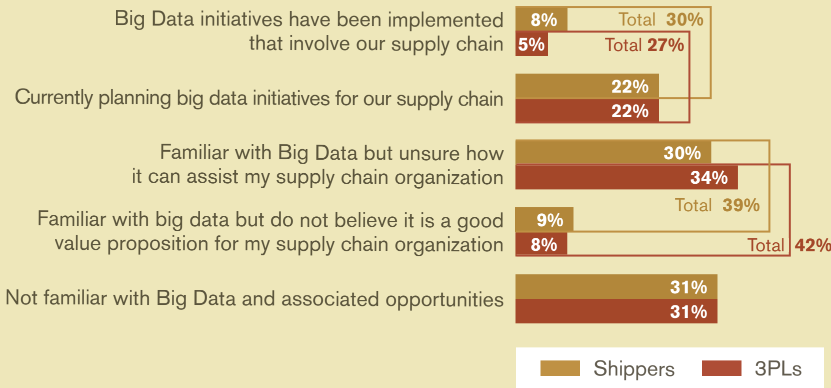


Source: *18th Annual Third-Party Logistics Study*, Capgemini Consulting

chain management or lead logistics provider services," says Armstrong.

And while large automotive and technology shippers have dominated these types of relationships in the past, Armstrong says that his firm is now seeing an increasing number of strategic partnerships cropping up within the retail and industrial sectors. "To the extent that lead logistics provider relationships have been formed, they're most likely to occur with those that are more 'partnership-based' and often involve larger 3PL accounts," he says.

According to Armstrong's research, lead logistics services are prevalent in 35 percent of the 3PL customer relationships it tracks, while another 35 percent are evolving to become strategic.

"Where you have that 18.5 percent that represent a pure strategic relationship, 3PLs tend to be managing significant parts of customer supply chains," says Armstrong. "Therefore, they are expected to have significant systems, process engineering and control, and transportation planning and execution capabilities. These capabilities provide for truly optimized supply chain networks."

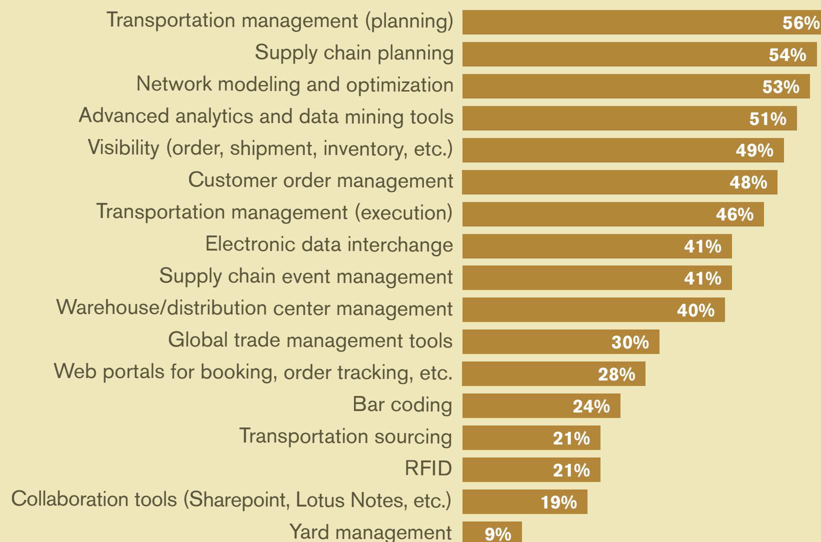
Armstrong views the ability to systematically optimize transportation networks as a key differentiator between those companies that are just freight brokers and those that are large scale network transportation managers. Good examples of this differentiation, according to Armstrong, are C.H. Robinson's TMC division; Menlo Worldwide; Transplace; Transportation Insight; and Ryder SCS. "Each of these providers has invested heavily in in-house and off-the-shelf modeling as well as supply chain execution systems," he adds.

Armstrong maintains that in any strategic supply chain and logistics outsourcing initiative, it's critical for the shipper to determine the requisite capabilities and best operational fit for a 3PL.

"We start by performing an internal analysis of a client's current supply chain network," says Armstrong. The firm then works with the shipper to identify its domestic transportation, international freight forwarding, and value-added warehousing and distribution requirements. "In addition, based upon our 3PL research and benchmarks, we develop a recommended 'future state,' which combines leading operations capabilities with 3PL pricing benchmarks," he adds.

The consultancy then supports the development of a comprehensive request for proposal (RFP). Armstrong then uses that knowledge base and future state forecast in evaluating 3PL candidates and facilitating the final provider selection.

"Warehousing and transportation key performance indicators are a must," says Armstrong. Other critical elements



Source: *18th Annual Third-Party Logistics Study*, Capgemini Consulting

What Does It Take to Be a Top 50 3PL?

According to business executive Jack Welch, "The team with the best players wins." And publisher Malcolm Forbes once said, "The best vision is insight." Put these two thoughts together, and that's what Founder and Chairman Paul Thompson believes about his company and his team at enterprise logistics provider Transportation Insight. The company has earned recognition as a premier supply chain management firm and an Armstrong & Associates Top 50 3PL by serving clients with a wide range of best-in-class services supported by one of the most highly-regarded leadership teams in the logistics industry.

With more than 500 years of combined executive level experience in logistics operations, engineering, carrier sourcing, technology development and supply chain analytics, Transportation Insight's intellectual capital is a differentiator in the 3PL/4PL market-place. "Transportation Insight is not the largest logistics provider in North America, but by leveraging our expertise to help our clients continuously improve, we have developed a reputation for being the best across all modes of transportation," says Thompson. "We dominate enterprise logistics, and we're growing rapidly to meet client demand for services in all areas."

With a consultative, co-managed approach that empowers clients to become better companies, Transportation Insight offers solutions in less-than-truckload (LTL), full truckload (TL), parcel, warehousing, international freight forwarding, LEAN consulting and packaging. The company has also made major investments into the LTL and Truckload transactional sectors, having recently acquired four companies. Building on the success of this unique business model, Transportation Insight also recently announced plans to triple in size by 2020, becoming a $5 billion company.

By diagnosing a client's logistics challenges before prescribing a solution, Transportation Insight gives clients flexibility to engage at any level, whether it be a transactional or enterprise solution. Under its Co-managed Logistics® model, Transportation Insight believes in teaching, coaching and training client personnel in the art and science of supply chain management and continuous improvement. This collaborative relationship creates powerful synergy by combining historical client best practices and advanced logistics processes to create maximum value for a client's customers.

Rather than replacing its clients' logistics operations, Transportation Insight *strengthens* them with an enterprise logistics offering that includes carrier sourcing, technology, freight invoice audit and payment and business insight. The company supplements its enterprise and transactional offerings – and separates itself from the competition – with innovative strategies in real-time interactive data management, supply chain analytics and continuous improvement methodologies for the end-to-end supply chain.

Developed by Eric Lail, Vice President of Client Services and Continuous Improvement, the Extended LEAN® continuous improvement methodology blends traditional LEAN principles into a company's supply chain network. This broader view of the entire value stream defines Extended LEAN and moves the continuous improvement journey from tactical to transformational.

"By applying Extended LEAN to our clients' supply chains, those companies not only survive in a competitive environment, but they thrive as agile, adaptive and dominant players in their markets," says Lail, one of 200 Shingo Prize examiners worldwide. "Traditional LEAN may take years to impact the bottom line. Extended LEAN shaves years from a company's continuous improvement journey – in some cases helping to double the size of the business."

Building on the vision of Extended LEAN, Transportation Insight's proprietary Big Data Solution, known as Insight Fusion™, can assimilate massive amounts of data from multiple sources – including the supply chain, the production line and the ERP system – to enable clients to make data-driven business decisions on the go. Insight Fusion was developed under the leadership of Jim Taylor, Transportation Insight's Vice President of Information Technology.

"Wherever they are, clients can use Insight Fusion to see all of their business metrics, analyze their key performance indicators through multiple filters and drill deep into the numbers if they need to," says Taylor, an industry leader in the creation of interactive business intelligence tools. "We're changing how clients use actionable data while meeting their need for increased mobility."

John Richardson, Director of Supply Chain Analytics, sees his group's role as one of marrying real-world experience with advanced data modeling techniques under the Extended LEAN methodology to create game-changing scenarios for Transportation Insight clients. "Big Data will be a driving business force for years to come," says Richardson. "Transportation Insight has the horsepower to provide solutions that will continue to help our clients transform Big Data into business intelligence."

Whether through co-managed enterprise logistics, transactional solutions, Extended LEAN, Insight Fusion, supply chain analytics or innovative packaging solutions, Transportation Insight is a trusted advisor to more than 400 clients around the globe – from mid-cap companies to Fortune 500 corporations.

"Our name and our brand – Insight – drive our business strategy," says Chris Baltz, Transportation Insight President and Chief Executive Officer. "The team and tools we have assembled provide clients unparalleled insight into how they can transform their supply chains into a sustained competitive advantage to dominate their markets."

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include IT requirements, network optimization skills, international and domestic transportation management capabilities, specific industry requirements, warehousing expertise, proposed pricing, and, of course, contract terms. "Cultural fit criteria should also be evaluated and never overlooked," he adds.

Role of Big Data

More market intelligence on the importance of building the 3PL-shipper dynamic is expected to be forthcoming at Armstrong & Associate's "3PL Value Creation 2013" conference in Chicago this month. Among those giving presentations is Mike Stark, president and CEO of Pacer Distribution Services, Inc.

According to Stark, Pacer has grown its global presence thanks in part to its management of Big Data. He maintains that when systems integration is optimized, data savings are made—for the small shipper as well as giants like Walmart.

"As a general trend, we see that retailers are constantly evolving to direct-to-consumer service, thereby bypassing the middleman," says Stark. "But 3PLs must evolve right along with them, working with retailers like Cosco through their websites for parcel delivery service to ship direct."

The contention that we've clearly entered the Big Data era was among the major themes surfacing at the recent Council of Supply Chain Management Professionals convention in Denver. When Capgemini analysts unveiled the *18th Annual Third Party Logistics Study*, they emphasized that shippers (97 percent) and 3PLs (93 percent) feel strongly that improved, data driven decision making is essential to the future success of their supply chain activities and processes.

But shippers differ widely in their levels of interest, understanding, and adoption, says Capgemini Consulting analyst Melissa Hadhazy. "While other surveys have reported higher levels of participation, ours found that only 30 percent of shipper respondents and 27 percent of 3PLs indicate that they're planning or currently undergoing Big Data initiatives," she says.

Lead logistics provider relationships by industry category

Major industry	Number of relationships
Technological	248
Retailing	191
Industrial	153
Automotive	147
Food, groceries	122
Consumer goods	105
Elements	83
Healthcare	80
Other	55
Total	**1,184**

Source: Armstrong & Associates, Inc.

Interestingly, about half of each group disagree that Big Data currently fuels these decisions. Despite this, shippers and 3PLs concur that the concept can be leveraged in both functional and strategic aspects of supply chain operations—as well as to support visibility and the ability to create agile supply chains.

Gainsharing Gaining Steam

The 18th Annual Third Party Logistics Study—conducted in collaboration with Penske, Penn State University, and Korn/Ferry International—also showed the continuing and overall positive nature of shipper-3PL relationships.

According to the report, both parties view their current relationships as being "successful," while shippers report that they're seeing encouraging results again this year due to the work of their 3PL. By putting their 3PLs to work, shippers say they're seeing an average logistics cost reduction of 11 percent; an average inventory cost reduction of 6 percent; and an average fixed logistics cost reduction of 23 percent.

According to the results, shippers agree that 3PLs provide new and innovative ways to improve logistics effectiveness, and that they are sufficiently agile and flexible to accommodate future business needs and challenges.

And despite ongoing churn in shipper-3PL relationships, shippers report that they're increasing their use of outsourced logistics services, while both parties now say that they're about equally satisfied with the openness, transparency, and communication in their relationships. As suggested in last year's report, however, several ongoing factors are having an impact on the progress toward the advanced end of the maturity model for shipper-3PL relationships.

While "gainsharing" and collaboration with other companies—even competitors—to achieve logistics cost and service improvements would appear to be markers for advanced relationships, it seems that these approaches are more preferred in certain shipper-3PL relationships, and less in others. Capgemini says that there are some encouraging results that suggest a slight increase this year in the outsourcing of strategic, customer-facing situations, as well as IT-intensive logistics activities.

Hadhazy and others involved with the survey observed that innovation—when it finally surfaces in the optimization process—is fast, but not disruptive. "And disruption is often precisely what we need," concludes Hadhazy.

—Patrick Burnson is Executive Editor of Supply Chain Management Review

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CASE STUDY

Bombay Company: Fresh Start For a New Age

"Insourcing was not an option."

—Uwe Bald, vice president of international business development, Hermes-NexTec LLC

The global retailer re-launched in North America and built a new multi-channel supply chain from the ground up with the help of its existing 3PL partner.

By Patrick Burnson, Executive Editor

When Hermes-OTTO International—a global trading and sourcing company specializing in fashion, home living, and leisure products—sought to re-launch its Bombay Company brand in North America, the logistics team faced a tough decision: Should they stay loyal to one third-party logistics (3PL) provider or spread the risk among multiple players?

In order to make this fresh start in the multi-channel age, Bombay needed a provider of fulfillment and distribution services with knowledge, experience, and assets that could support rapid growth. The new distribution network had to be built from the ground up, and it had to meet high customer expectations from the first day of operations.

"Insourcing was not an option," says Uwe Bald, vice president of international business development at Hermes-NexTec LLC. "We evaluated the strengths of our existing 3PL, but considered several other players capable of supporting our new multi-channel distribution strategy."

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As with most cases of this kind, the shipper was confronted with profound risk/reward decisions. It could sever ties with its existing 3PL and build a relationship with another from scratch; it could hire multiple 3PLs to handle different parts of its business; or it could turn to an existing partner and expand services and build on past success. For Bombay, the choice was simple.

Brand Rebirth

The Bombay Company closed its retail operations in 2008, but the brand still proved resilient enough to attract the attention of Hermes-Otto International, which also owns Crate & Barrel—another multi-channel seller of home furnishings. Purchasing Bombay's U.S. license appeared to be a good idea, and the deal was signed in September 2012.

Having retail partners like Bed Bath & Beyond and Burlington Coat Factory helped get Bombay back in business by giving its licensed products a brick-and-mortar platform, augmenting fulfillment direct to consumers via e-commerce and direct channels. These channels also include international e-commerce retailers QVC and Joss & Main.

But complicating matters was the fact that Bombay was seeking a lead logistics provider capable of meeting high perfor-

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Four Reasons 2014 Will Be the "Year of the Distribution Center"

As Bombay made eminently clear, distribution space and location are deal makers or deal breakers when it comes to successfully fulfilling multiple channels. Not surprisingly, industrial real estate is poised for a spike in demand, development, and delivery.

According to recent research by Jones Lang LaSalle (JLL), industrial markets nationwide have been recovering for more than four full years, with 15 consecutive quarters of adaptive reuse. Last year marked a five-year high, with 168 million square feet of reuse, and, with current forecasts, this figure could top 180 million square feet in 2014. So, what's behind this momentum?

"This year is starting off with high demand from e-commerce and other users who are in the market for large, sophisticated space, and lots of it," said Craig Meyer, president of industrial brokerage at JLL. "This will make 2014 the 'year of the distribution center.' Modern space with proximity to population centers and a robust logistics infrastructure will dominate the industrial real estate sector in 2014."

JLL anticipates the overall national vacancy rate will settle at a cyclical low of 7.5 percent in 2014. Here are four trends driving this momentum:

1. Demand is spreading into secondary markets. Tenant requirements for large, modern warehouse space to accommodate evolved distribution strategies and materials handling processes outweigh supply in prime distribution hubs such as Los Angeles, Chicago and New Jersey. As a result, development will spill into markets with land ready for new construction like Phoenix and Indianapolis.

2. Build-to-suits are the new spec. In 2013, half of all U.S. warehouse and DC construction began with pre-leases in place. Underwriting criteria for big box space made true speculative construction difficult and many developers sought pre-commitments prior to ground breaking. This means today's build-to-suits are less about special purpose buildings, or design-build projects, but are more about kicking off semi-spec buildings.

3. Focus on rail. With the cost of trucking on the rise, developers and investors are focusing on markets with solid intermodal infrastructure in place such as Dallas, Columbus, and Memphis. For the seaport markets such as Oakland and Miami there is a push to enhance on- and near-dock rail capabilities. Miami's new rail system, for example, will give the port access to 74 percent of the U.S. population.

4: Growth driven by "clicks" surpassing "bricks." A staggering 40 percent of big-box industrial requirements are correlated to e-commerce, a sector growing globally by 20 percent each year. As retailers develop new real estate models to support their omni-channel logistics models, they are looking at six primary types of warehouse space, ranging from mega-distribution centers to smaller delivery centers in urban areas. In 2014, JLL expects to see demand for urban logistics centers to support same-day package delivery.

—Patrick Burnson, Executive Editor

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Bombay ships items as small as candle holders and as large as beds.

mance requirements extending across a wide range of products. "We ship items as small as candle holders and as large as beds, which are sold through e-commerce channels driven by holiday peaks, 'deals of the day,' and TV specials," observes Bald. "There's also a consistent stream of orders from regular customers."

Bald says that the wide range of product characteristics, from heavy weight to fragile, had to be considered when evaluating a 3PL. "You must remember that our products used to be packaged for B2B distribution," says Bald. "Now we had to find ways to repackage them for B2C fulfillment in some cases. At the same time, we had to improve the inbound packing where possible in order for it to meet the requirements for B2B and B2C fulfillment."

Expanding Existing Contract

Kenco was Bombay's sole logistics provider when plans were afoot for the re-launch into North America. The provider executives knew and understood that they would be asked to demonstrate their ability to grow with the shipper—or be replaced with a competitive 3PL.

"It is generally our assumption that existing and potential customers will assess multiple 3PLs when their needs change," says Judy Craig, vice president of sales at Kenco. "We didn't ask Bombay who they were evaluating, but the process must be transparent."

Rather than go through another RFP process, however, Bombay asked its existing 3PL to detail a new pricing arrangement and customize the existing contract. Both Bald and Craig agree that a long-term, valued relationship was the foundation for the deal. They dismiss "price point hunting"—going with the lowest bidder—as a tactical error when making a decision of this magnitude.

Bombay did not demand that its 3PL customize it warehousing, either, because new supply chain configurations are changing the industrial landscape. Indeed, industry analysts note that technological advances in fulfillment are

doing what other 3PL's can't or won't do

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The arrangement found the 3PL developing an optimized fulfillment network, importing products from China and Asia into its Chino, Calif., distribution center.

affecting the demand for warehouse space, influencing not only building size requirements, but also the location and build-out of the facilities (see sidebar on previous page).

"For a company like Bombay, the need for regional expansion is not necessarily a 'big box' solution," says Bob Silverman, executive vice president for Jones Lang LaSalle. "Having the right space in the right location is

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far more critical."

The arrangement found the 3PL developing an optimized fulfillment network, importing products from China and Asia into its Chino, Calif., distribution center. Handling up to 400 SKUs, Kenco now receives Hermes volume forecasts and fulfills all Bombay products as needed to retail stores throughout North America and direct to consumer homes in fulfillment of e-commerce orders. The 3PL handles returns for the retailer.

"The reverse loop is very important to us," says Bald, "because furniture returns can be very costly. We needed a 3PL with a special concentration in reverse logistics."

At the same time, reliable forward logistics had to be assured with push into the region. "We expect and require our 3PL to provide same-day shipping for about 90 percent of all B2C orders, and to do so with a high level of inventory accuracy," says Bald.

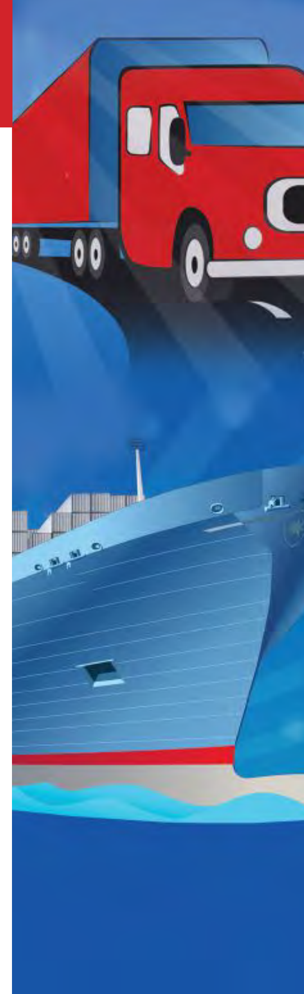
Lessons Learned

According to Bald, there was one clear logistics management lesson from the re-launch. "For us, it meant remaining loyal to our 3PL until they failed or disappointed us," he says. "And that did not happen…fortunately for both of us. We're very happy with the way things are going, and the network worked fine from the beginning."

Bombay says that with its new multi-channel strategy, it made changes in 20 percent of its core processes. These include delivery, quality control, and returns. Furthermore, it made changes in 15 percent of their supporting processes, including exception handling and cycle count—counting on a cyclic schedule rather than the traditional inventory process, which occurs once a year.

Meanwhile, its 3PL partner has a supply chain design capable of handling B2B and B2C volume spikes, while providing stable B2B and B2C freight and packaging rates. "Customer satisfaction rose by 17 percent on average for the areas that were improved," says Bald, "and that is a direct reflection of our logistics management."

—Patrick Burnson is Executive Editor of Supply Chain Management Review



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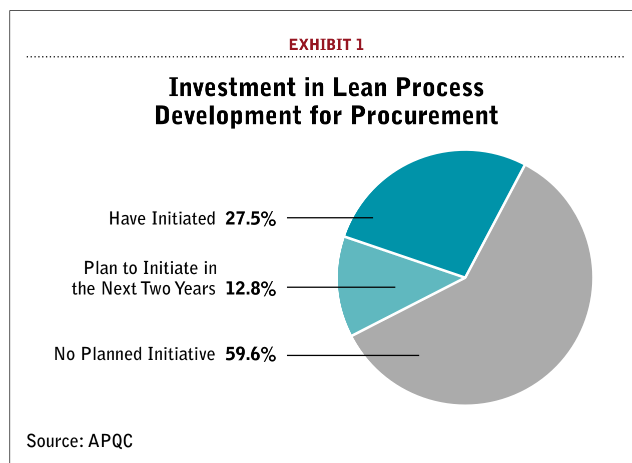
Adopting Lean Processes in Procurement Can Lead to Efficiency and Lower Costs

Organizations extending Lean efforts to their suppliers can reap additional benefits, but they should focus on internal adoption first.

By Becky Partida,
Research Specialist,
Supply Chain
Management,
APQC

With a renewed focus on "doing more with less," many organizations are looking to achieve efficiency and effectiveness in their supply chains. A variety of opinions exist on how organizations can accomplish this. One method organizations employ to achieve efficiency is the adoption of Lean processes within their supply chain functions. These processes aim to identify and eliminate wasteful activities from operations and emphasize the need to continuously improve performance. Data from APQC's Open Standards Benchmarking in procurement indicates that 27.5 percent of organizations have invested in Lean process development for their procurement functions, and nearly 13 percent plan to invest in Lean process development within the next two years (see Exhibit 1).

To understand how streamlining procurement processes through the adoption of Lean methods can affect procurement performance, APQC compared the procurement costs and efficiency of organizations that have adopted Lean process development against that of organizations that have not adopted these processes. It also conducted in-depth interviews of organizations that have embraced Lean concepts and have expanded their Lean initiatives to include suppliers. Through its research, APQC found that organizations investing in Lean process development for their procurement functions spend less on procurement and are able to process more purchase orders. Organizations that have expanded their Lean efforts to include suppliers have generated benefits from streamlined supplier processes that in turn provide value to their customers.



Lean Processes and Procurement Performance

APQC's data indicates that organizations that have initiated investment in Lean process development for their procurement functions spend less on procurement than organizations that have not invested in Lean process development.

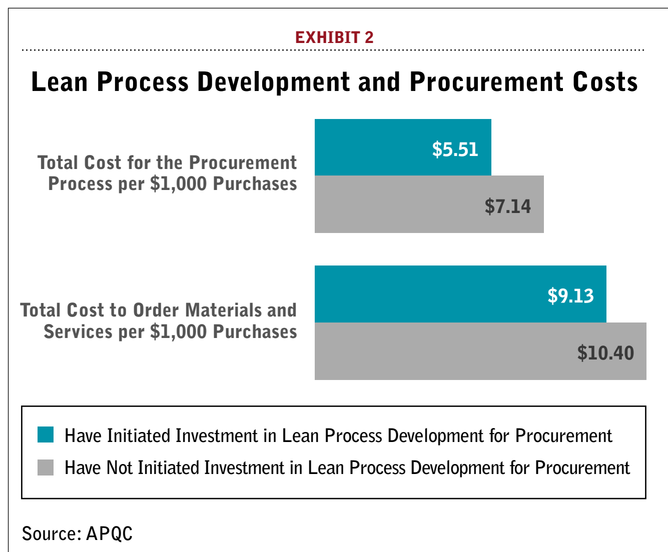


Exhibit 2 provides the median cost of the procurement process and the median cost to order materials and services per $1,000 in purchases for organizations that have and have not invested in Lean processes. Organizations that invest in Lean process development spend $1.27 less per $1,000 in purchases on the entire procurement process than their counterparts that have not invested in Lean process development. For an organization with $1 billion in purchases annually, this difference would translate into $1.27 million in potential savings associated with investing in the development of Lean processes for procurement.

These results indicate that organizations developing Lean processes within their procurement groups are able to reduce their costs both for procurement overall and for activities related to placing orders. This may be due in part to their higher efficiency within the ordering process. APQC's data indicates that organizations investing in Lean process development are able to process more purchase orders for each full-time equivalent employee (FTE) dedicated to ordering materials and services than their counterparts that have not invested in Lean process development.

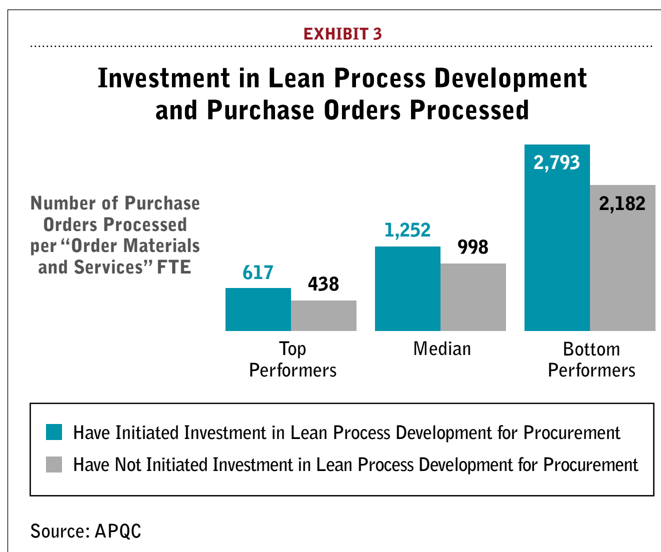
At the median, organizations that have initiated investment in Lean process development are able to process 254 more purchase orders per FTE than organizations that have not invested in Lean process development. The difference between the two groups is even larger among top performing organizations, with those investing in Lean process development able to process 611 more purchase orders per FTE than their counterparts that have not invested in Lean processes.

By eliminating non-value-added activities in the procurement function, organizations free up their employees to perform more essential activities, such as processing purchase orders. These organizations may also have streamlined activities associated with purchase order processing to reduce the time needed to complete this task.

Procurement Functions of Organizations Embracing Lean

In addition to implementing Lean processes within their own operations, some organizations are working with their suppliers to further reduce waste. APQC conducted interviews with winners of the Shingo Prize, which recognizes organizations that have embedded operational excellence in their cultures. Two of the organizations APQC interviewed, Lycoming Engines and US Synthetic, outlined how they have extended their Lean initiatives to their suppliers so they can provide the best value to their customers.

Lycoming Engines provides engineering, manufacturing, service, and support to the general aviation industry. It has adopted Lean processes to eliminate waste throughout the enterprise and has trained all of its staff members in Lean processes. Lycoming has also provided its employees with training on practical problem solving so they can determine new ways to identify and eliminate wasteful activities from the organization. Within its manufacturing operations Lycoming holds regular meetings to review performance, discuss quality improvement, identify manufacturing defects, and evaluate its inventory management process.



To ensure that its customers receive the most reliable products possible, Lycoming extends elements of its Lean program to its suppliers. It challenges suppliers annually to identify the Lean processes they have adopted to improve product quality, the availability of materials, and cost. It further encourages its suppliers to adopt Lean initiatives by inviting select suppliers to participate in training on additional Lean processes. Lycoming also sends members of its staff to work with suppliers to implement Lean practices in their manufacturing operations.

US Synthetic is a manufacturer of diamond inserts for down-hole drilling tools used in oil and gas exploration. Advancing technology in its industry means that US Synthetic must develop new products that can be produced and delivered to customers quickly. The organization uses Lean processes in its operations, but it has extended these processes to ensure a robust supply chain that can meet the demands of its rapid product development cycle.

Organizations wanting to develop Lean processes for their procurement functions should focus on achieving some success with implementing these processes internally before expanding them to the broader supply chain.

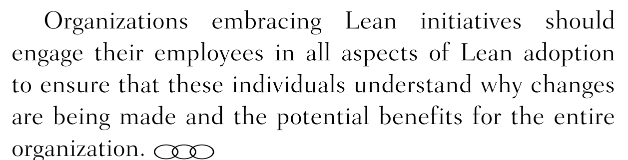
The organization emphasizes collaboration with suppliers to ensure that the resulting products deliver the best value for customers and that suppliers benefit as well. It monitors its suppliers to ensure that they are continuously improving their operations and eliminating non-value-added activities. Although it does not provide global guidance to its suppliers on the use of Lean processes, it works with suppliers when needed to improve their systems and delivery time. US Synthetic's supply chain staff members regularly identify and document lessons learned and best practices so that the organization and its suppliers avoid repeating inefficient activities.

Focus Internally First

APQC's research has shown that organizations that have initiated investment in the development of Lean processes in their procurement functions have lower procurement costs and more efficient purchase order processing than organizations that have not adopted Lean process development. Organizations that have extended their Lean initiatives to include suppliers have realized additional benefits. For example, Lycoming Engines and US Synthetic have created closer relationships with suppliers that are based on mutual benefit. These organizations have realized that they need these close relationships to ensure that other tiers of their supply chain are focused on eliminating waste. The training these organizations offer on Lean processes to their suppliers and the use of their own resources to help suppliers streamline processes ensure that efforts to continuously improve performance result in benefits to the organization as well as its suppliers and customers.

It is worth noting that Lycoming and US Synthetic successfully adopted Lean processes within their own organizations first and then determined that they were ready to extend their Lean efforts to suppliers. Organizations wanting to develop Lean processes for their procurement functions should focus on achieving some success with implementing these processes internally before expanding them to the broader supply chain. In some cases modifying activities to eliminate waste means fundamentally changing the way employees have done their jobs, which can lead to some resistance.

Organizations embracing Lean initiatives should engage their employees in all aspects of Lean adoption to ensure that these individuals understand why changes are being made and the potential benefits for the entire organization.



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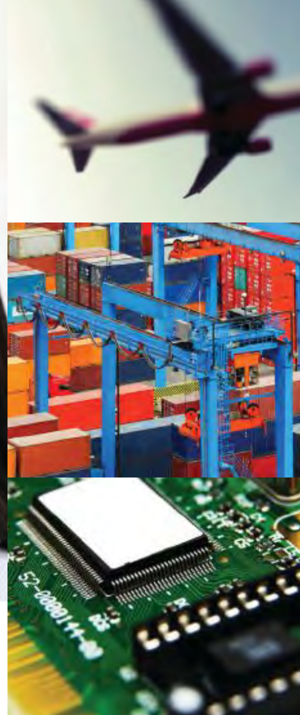

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Executive Education Report

Customization Counts

Tracking the growth in customized supply chain executive education.

By Bridget McCrea

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Customized Education Counts

Ten years ago, only the largest companies with the deepest pockets called on university supply chain programs to develop customized curriculums for their teams. Fast forward to 2014 and interest in tailored, company-specific executive education content is at an all-time high.

There was a time when any reference to "customized education" immediately conjured up big dollar signs for companies looking for the most effective and efficient ways to educate their supply chain organizations. Ten years ago, for example, only the largest companies with the deepest pockets called on university supply chain programs to develop customized curriculums for their teams. Fast forward to 2014 and interest in tailored, company-specific executive education content is at an all-time high.

"In general, the executive education market has dramatically shifted from 'open enrollment' (i.e., on-site, multi-company affairs) general programs to more customized options," says Ravi Anupindi, faculty director for the Master of Supply Chain Management Program at the University of Michigan's Ross School of Business. "This trend has been growing for a while. Look at any business school right now and custom [programs] have become a much larger fraction of their revenue base and program offering, compared to open enrollment."

Nick Little, assistant director of executive development programs for Michigan State University's Broad College of Business, has also detected increased interest in custom supply chain options. Calling open enrollment the "build it and hope they will come" approach to such education, Little says that over time the strategy of creating content that applies to as many companies as possible is passé. Instead, he says more schools are helping to address organization-specific supply chain issues rather than just handing out possible solutions.

Although both open enrollment and customization remain viable options for companies, Little says firms that are seeking a return on investment (ROI) from the experience tend to steer more towards the latter. "It's easier to measure the ROI of a custom program," he notes, "because companies can set up assignments and project goals, and then have the program presenters monitor progress and achievement." From that exercise, companies can walk away with a solid financial number that reflects savings, benefits, improvements, growth, or other measures.

"Quite often that ROI can be very high because attendees come away from the experience highly energized and ready to tackle difficult issues," says Little. "Plus, they know that their companies have invested in

the time and expense of sending them to the program. That can be very motivating."

In this article, we'll explore the key drivers of the custom supply chain education movement, review the various options that companies have at their avail, and discuss the future educational trends that supply chain organizations should keep an eye on.

Key Drivers of the Custom Movement

From the company perspective, several forces are driving interest in custom supply chain programs, according to Anupindi, who says cost is the first and most obvious impetus. A company that needs to train 35 people, for example, could wind up having to send those employees to multiple locations for several months (or even years) to get the training completed. "Looking at that type of scale, the open enrollment option becomes too expensive for that company," Anupindi says.

"Teaching someone else's material can be extremely challenging. We did this with a large computer manufacturer a few years ago and I literally had to go through every slide with a fine-tooth comb, I spent hours learning their vernacular and terms."

—Don Klock, professor of supply chain management and business director at Rutgers Center for Supply Chain Management

The second driver is simply the "custom" prefix, which is typically associated with non-generic knowledge and information that isn't delivered in the open enrollment setting. "The idea is that by using a custom approach, students will come away with a least some information that's relevant to the challenges that their companies are facing," Anupindi explains, noting that the typical back-and-forth dialogue that takes place between the program's executive sponsors and faculty members helps to ensure that the goal is met.

At Vantage Partners in Boston, Jonathan Hughes, partner, says demand for customized supply chain training appears to be driven mostly by supply chain, procurement, and/or sourcing organizations that are experiencing transformations. "They're trying to evolve away from a more transactional and tactical way of operating," says Hughes, "to a much more strategic function within the enterprise." As part of that process, he says organizations are identifying major business problems that need to be solved—a conundrum that leads many of them to explore customized education versus open enrollment.

"Companies that are in that situation are certainly willing to invest more, but they also have much higher expectations of what the training will look like and what it will deliver," Hughes explains. "Customized training does provide a better fit and delivers better value for companies or functional organizations that are in that kind of situation."

The Pros and Cons of Customization

On one hand, customized programs give organizations the opportunity to get pretty granular when it comes to their target supply chain curriculums. They don't have to send multiple employees to various programs around the country. Instead, they can have a fairly large group of employees educated on key, company-centric topics in one fell swoop and for one fee.

On the other hand, customized programs also present their fair share of challenges for companies. For starters, there's no opportunity for cross-company knowledge sharing and brainstorming. And, because the curriculum is developed for (and sometimes even by) the specific company, it is often lacking in diversity and depth.

"We've run into situations where the companies develop the guidelines themselves and ask us to teach it to their employees," says Don Klock, professor of supply chain management and business director at Rutgers Center for Supply Chain Management. And while the gesture may be well intentioned, Klock says teaching someone else's material can be extremely challenging. "We did this with a large computer manufacturer a few years ago and I literally had to go through every slide with a fine-tooth comb," says Klock. "I spent hours learning their vernacular and terms."

In assessing the downsides of custom supply chain programs, Anupindi says organizations must rely solely

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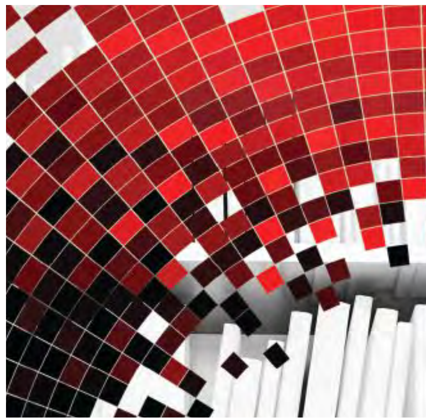
on faculty members to provide an "outside looking in" viewpoint. In other words, those teachers are the only third parties in the room that are delivering the content, presenting the case studies, and offering up the solutions. In an open enrollment setting, students interact directly with other firms and can use those interactions to benchmark their own progress and bounce ideas off one another.



As executive education continues to morph and evolve, so too do the number of delivery options available to companies. And while open enrollment courses aren't going away anytime soon, according to the experts interviewed for this article, they are being augmented by newer options and opportunities.

But the beauty of customization, says Klock, is that companies get an educational foundation that rings true to their specific organizations—including vocabulary, values, people, and so forth. And the fact that the content is customized allows firms to hone their offering in a way that generic coursework can't match. If production planning is a pain point within the company, for example, then the supply chain executive education can easily be tailored to address and reinforce that point. "That's the power of customized education," Klock says.

On the Near Horizon

As executive education continues to morph and evolve, so too do the number of delivery options available to companies. And while open enrollment courses aren't going away anytime soon, according to the experts interviewed for this article, they are being augmented by newer options and opportunities. Anupindi, for example, says he's seeing more interest in what he calls "short-term training programs" that hit on specific topics and issues. He's also noticed that more organizations want to fill the gap that exists between general knowledge and action. "Companies are starting to think about how much money is being spent on executive education," says Anupindi, "and how much of the information learned is being made actionable."

Calling executive education a "very reactive marketplace," Little says predicting what's coming around the next corner is difficult at best. "The very dynamic of the space is stimulated by the problems that companies are facing, so trying to predict what's next can be difficult," says Little, who expects to see a growing interest in understanding the end-to-end supply chain across borders, rather than just within the functional boundaries of a single organization. "Companies need to know how to work more efficiently and effectively with trading partners (both suppliers and customers)," says Little, "to ensure that value is being added through every step of the supply chain process for the end consumer."

On the delivery side, Klock expects the lines drawn between customized supply chain education and online options to blur over the next few years as more companies turn to the web for educational opportunities. "Not many people are there yet, but it's going to happen," says Klock. "Online programs are getting better every year and [most] schools are doing some form of it, either hybrid or full online. Why wouldn't a company approach a third party about creating an online program?"

Klock adds that while Rutgers has yet to receive such a request, the online option is the next logical step in the progression of executive supply chain education. And with the supply chain becoming more global in nature, the online venue will be particularly attractive for companies with multi-national operations. "We're already seeing this movement on the MBA side, so why not the supply chain too?" Klock asks. "In the next five years it's an area that will certainly accelerate due to the growing mobility and the increasingly global business environment."

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www.damore-mckim.northeastern.edu

The Supply Chain Management area emphasizes to students the importance of transportation planning, inventory control, warehouse management, development of customer service standards, and procurement in the design and operation of supply and distribution systems. Courses underscore the importance of information technology and the Internet in supporting such activities. They also highlight the need to develop close working relationships with managers in other functional areas including manufacturing, information systems, marketing, and international operations. Students learn that this integrative approach to management is critical in supporting supply chain cost and service improvements.

Northwestern University

Kellogg School of Management
847-467-6018
www.kellogg.northwestern.edu/execed

With The Supply Chain Management: Strategy and Planning for Effective Operations program you will learn effective logistics strategies for companies operating complex networks and be inspired to integrate supply chain components into a coordinated system to increase service levels and to reduce costs. The effective management of facilities, inventories, transportation, information, outsourcing, and strategic partnering to improve operational performance are presented with real-world case studies. Each participant receives the book, Supply Chain Management: Strategy, Planning, and Operation.

The Ohio State University

Fisher College of Business
614-292-0331
http://fisher.osu.edu/centers/scm/executive-education

The Supply Chain Management Program will focus on how to implement The Global Supply Chain Forum framework. The framework is comprised of eight essential cross-functional, cross-firm business processes. Examples are provided on how they have been implemented by major corporations. The seminar listed is designed specifically for executives who are striving to achieve cross-functional integration within their organization and with key customers and suppliers:

- September 9-12,2014—Columbus, Ohio
- May 18-21,2015—Ponte Vedra Beach, Florida

Penn State University

Smeal College of Business
814-865-3435
www.smeal.psu.edu/psep

Smeal offers highly regarded supply chain programs at every educational level. For undergraduates, the college offers a bachelor's degree in Supply Chain and Information Systems. At the graduate level, the Smeal MBA Program offers a concentration in supply chain management and, together with Penn State World Campus, Smeal offers an online, 30-credit professional master's program in supply chain management. The college also offers a Ph.D. in supply chain, and Smeal's Center for Supply Chain Research and Penn State Executive Programs offer three certificate programs in supply chain management. Upcoming events at the Executive Center, University Park Campus:

- Developing Strategic Supply Chain Leaders - September 09 -11,2014
- Essentials of Supply Chain Management - October 07 - 09, 2014
- Processes and Tools for Supply Chain Success - October 19 - 24, 2014
- Supply Chain Analytics - October 20 – 21, 2014
- Achieving Supply Chain Transformation - October 28 - 30, 2014
- Aligning Supply Chain Organizations - November 5 - 6, 2014

Rutgers University

Rutgers Business School
973-353-5185
www.business.rutgers.edu/scmms

The Rutgers Center for Supply Chain Management, at Rutgers Business School, is dedicated to the development of leading-edge strategies and practical solutions to problems encountered by the business community relative to the management of the end-to-end supply chain. With a distinguished faculty, including world-class scholars, and a talented core of Ph.D. and MBA students, the Center offers extensive research and consulting experience in logistics management, in-bound/out-bound transportation network design, modeling and optimization, partnership and negotiation, information technology and e-commerce, and end-to-end supply chain management strategies. Recognized as a strategic multi-disciplinary core unit within Rutgers Business School, the Center is proud to have developed the first MBA concentration in Supply Chain Management in the state of New Jersey.

Stanford University

Graduate School of Business
650-723-3341
www.gsb.stanford.edu/exed

The complexity involved in managing supply chains that span continents and dominate markets demands strategies and systems that are agile, adaptable, and aligned. The Strategies and Leadership on Supply Chains program is taught by world-renowned thought leaders in the field. This program gives you the tools you need to create and manage market-leading global supply chains.

Upcoming events:

- Strategies and Leadership in Supply Chains August 17 - 22, 2014 - Executive Education Stanford Graduate School of Business, Stanford, California

Syracuse University

Whitman School of Management
315-443-3751
www.whitman.syr.edu/scm

Supply chain managers very often hold the key to corporate profitability. Economists and employers single out supply chain management for its strong growth potential. Home to the nation's first supply chain program (established in 1919), the school's Supply Chain Management program is well attuned to the needs of this dynamic specialty. Whitman offers an undergraduate degree program and an MBA degree program in Supply Chain Management.

Texas A&M University

Mays Business School
979-845-1216
www.business.tamu.edu

The Supply Chain Management major prepares students for a career in designing and managing the activities that deliver products and services to customers. This major produces graduates with strong analytical and problem-solving skills and the ability to work in and coordinate team activities. Graduates possess the business, technical, and leadership skills needed to meet the challenges of the rapidly evolving global marketplace.

The World Academy

855-496-8394
www.theworldacademy.com

The Academy provides training programs and seminars for organizations in all phases of export/import logistics, hazardous materials (HAZMAT), letters of credit, communications, harmonized tariff schedules, and INCO terms. A full list of webinars and workshops can be found on the Academy's website.

The University of Alabama

Culverhouse College of Commerce
Manderson Graduate School of Business
800-467-0227
bamabydistance.ua.edu/supply

At The University of Alabama, you can earn a Master's degree online in Operations Management from a leading business school. This 30-hour program is flexible and convenient. Operations management focuses on the operations of a business, including producing and delivering goods and services. Professionals in this field use quantitative tools to analyze and design business operations and to make decisions effectively. As a graduate of this program, you will possess an expertise in operations management and will be prepared to pursue a career in this field.

University of Arkansas

Sam M. Walton College of Business
479-575-5949
www.waltoncollege.uark.edu

Graduates of the Supply Chain Management (SCM) program will find themselves in exciting and diverse roles in organizations where they will manage activities, such as planning and forecasting, purchasing, sales, transportation, storage, and distribution, which are required for the efficient flow of goods and services between the points of their creation and their ultimate consumption or disposition. Beyond faculty expertise in these areas, our students benefit from the College's Supply Chain Management Research Center, which connects students to industry executives leading to job opportunities, internships, or other support.

University of Denver

Daniels College of Business
303-871-3416
daniels.du.edu

The Supply Chain Roundtable at the University of Denver's Daniels College of Business has welcomed well-known executives from throughout the Rocky Mountain region and around the country. The Supply Chain Roundtable gives Daniels students an opportunity to meet with top professionals through our speaker series, networking events, out-of-classroom projects and internships while giving speakers a chance to meet the students and market their companies.

University of Maryland

R.H. Smith College of Business
301-405-3063
www.rhsmith.umd.edu

Whether you're a recent graduate with an interest in how goods move around the globe, or a manager who would like to broaden your understanding of the global supply chain, the Smith MSB in Supply Chain Management will help you develop strong managerial skills and make connections with supply

chain executives from a cross-section of industries. You'll be prepared to lead innovation that drives business growth, promotes efficiency, and helps sustain the planet - and gain the relevant, real-world experience most sought after by recruiters.

University of Michigan

Ross School of Business
734-763-1396
execed.bus.umich.edu

Students in our Ross School's Master of Supply Chain Management Program (MSCM), learn from Ross' world-renowned faculty in operations and management science, as well as top-ranked researchers in all business disciplines. MSCM students are admitted to the Tauber Institute for Global Operations, a partnership between the Ross School and U-M's College of Engineering.

University of San Diego

Supply Chain Management Institute
619-260-4894
www.sandiego.edu/business/centers-of-excellence/supply-chain-management-institute

The Supply Chain Management Institute (SCMI) supports the development of exceptional professionals who are sought after by industry and the public sector alike. In addition to supporting the educational opportunities and curriculum of the Master of Science in Supply Chain Management (SCM), the MBA concentration in SCM, and the undergraduate BBA minor in SCM, we offer various symposiums, forums, and seminars for supply chain professionals throughout the year.

University of San Francisco

415-422-5555
www.usanfranonline.com/ism

With companies trying to cut expenses, operate more efficiently, and reduce their environmental footprint, sustainability and supply chain management (SCM) have become critical fields worldwide. Gain cutting-edge skills from U.S. News-ranked University of San Francisco, as renowned instructors guide you toward a three-course Advanced Professional Certificate through the convenience of video-based e-learning.

University of Tennessee

College of Business Administration
865-974-5001
supplychain.utk.edu

For more than 50 years, University of Tennessee faculty have played a major role in the supply chain arena, conducting innovative research, publishing leading-edge findings, writing industry-standard textbooks, and creating the manual to which companies successful in supply chain management adhere. We offer comprehensive supply chain management/logistics programming across the entire educational spectrum, as well as customized solutions to fit your specific needs.

University of Wisconsin-Madison

Grainger Center
608-262-1550
bus.wisc.edu/centers/grainger-center-for-supply-chain-management

The Wisconsin MBA in Supply Chain Management, supported by the Grainger Center for Supply Chain Management, provides students with a personalized, industry-focused program which partners with companies known for supply chain excellence. We provide students with an exceptional interdisciplinary education that builds on fundamental knowledge and incorporates the latest in supply chain thinking. The strategic, cross-functional curriculum takes an integrated business process view of supply chains, including marketing, sourcing, logistics, operations, and customer service. Students connect with and learn from real-world supply chain leaders and are part of a strong, close-knit community.

Walden University

1-866-492-5336
www.waldenu.edu

Whether you are a manufacturer, retailer, or service provider, if you conduct business globally, you need to understand how products and services move from concept to deliverable. Learn the systems required to identify sources of personnel and material and how to ensure that supply chains conform to the highest global standards. In addition, you will explore new ways of applying technology to help cut costs, increase customer satisfaction, and find

new business opportunities. Coursework focuses on the development of writing and critical-thinking skills at the doctoral level.

Washington University-St Louis

Olin School of Business
314-935-9494
www.olin.wustl.edu/EN-US/Pages/default.aspx

With the Supply Chain Certificate for Managers learn to improve operational effectiveness across the entire supply chain, from sourcing to point of sale. Learn how to manage and monitor raw materials, work-in-progress inventory, finished goods, and channel partners. The goal is to balance supply and demand, streamline logistics, and create net value.

PROFESSIONAL ASSOCIATIONS

APICS

1-800-444-2742
www.apics.org

APICS is the leading professional association for supply chain and operations management and the premier provider of research, education, and certification programs that elevate supply chain excellence, innovation, and resilience. APICS Certified in Production and Inventory Management (CPIM) and APICS Certified Supply Chain Professional (CSCP) designations set the industry standard.

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CSCMP (Council of Supply Chain Management Professionals)

630-574-0985
cscmp.org

The Council of Supply Chain Management Professionals (CSCMP) provides you and your organization with the education, research, connections, and professional growth you need to meet the demands of a constantly changing marketplace. Our member benefits are designed for supply chain professionals passionate about their careers and the supply chain profession. Council of Supply Chain Management Professionals members receive practical, "how to" solutions on the industry's current hot topics from receiving member exclusives such as publications, professional education, online benefits, networking opportunities, and cutting-edge research.

Events planned:

- Annual Global Conference - September 21-24, 2014—San Antonio, Texas

ISM (Institute for Supply Management)

480-752-6276
www.ism.ws

ISM offers certification programs, seminars, professional development services, and online courses for the supply management professional. It also features an annual Conference and Educational Exhibit. Conference events:

- ISM Risk Management Summit–July 16, 2014; New York Marriott Downtown, New York City, New York
- ISM Metrics Symposium - July 17 - 18, 2014 - New York Marriott Downtown, New York City, New York
- ISM Indirect Procurement Conference - December 3 - 4, 2014—Renaissance Phoenix Downtown Hotel, Phoenix, Arizona

NITL (National Industrial Transportation League)

703-524-5011
www.nitl.org

Career advancement, meeting new challenges, and taking advantage of the latest opportunities and trends requires today's freight transportation professional to be up to date on the latest developments. The League has a proven track record of providing educational forums which meet all these needs. From seminars on critical emerging issues, to webinars on best practices in every aspect of supply chain management, the League's constantly evolving education program for Members is an industry leader.

Annual TransComp Event scheduled as follows:

- 2014 NITL Conference & TransComp Exhibition - November 15 - 19, 2014 - Fort Lauderdale, Florida

SIG (The Original Executive Sourcing Network)

904-310-9560
www.sig.org

SIG is acknowledged by many as a world leader in providing "next" practices, innovation, and networking opportunities through its: global and regional events, online webinars and teleconferences, member peer connection services, content-rich website, and online Resource Center, which was developed by and for professionals in sourcing and outsourcing. The organization is unique in that it blends practitioners, service providers, and advisory firms in a non-commercial environment.

Events planned include:

- Global Summit - October 14 - 16, 2014 - Denver, Colorado

Supply Chain Council

202-962-0440
https://supply-chain.org/

Supply Chain Council (SCC) is a global nonprofit organization whose framework, improvement methodology, training, certification, and benchmarking tools help member organizations make dramatic, rapid, and sustainable improvements in supply chain performance. Events, conferences, and training calendars are available on our website.

TRB (Transportation Research Board)

202-334-2934
http://www.trb.org

Transportation practitioners, researchers, public officials, and other professionals need credible, high-quality information and research results to address the transportation challenges of the 21st century. The Transportation Research Board engages professionals worldwide in a broad range

of interdisciplinary, multimodal activities to lay the foundation for innovative transportation solutions.

VICS (merged with GS1 US)

609- 620-0200
www.vics.org

The apparel and general merchandise industries are most concerned with improving inventory accuracy and speed-to-market capabilities to satisfy consumer demands, while still addressing requirements around business process efficiencies and product safety. Learn more about the GS1 US Apparel and General Merchandise Initiative and the EPC Item Level Readiness Program that can help your organization benefit from adopting GS1 Standards.

WERC (Warehousing Education & Research Council)

630-990-0001
https://www.werc.org

WERC offers resources that help distribution professionals stay at the leading edge including educational events, performance metrics for benchmarking, practical research, expert insights, and peer-to-peer knowledge exchange. WERC members are from companies across the gamut whose focus is on warehousing and distribution.

PRIVATE FIRMS

Accenture Academy

312-842-5012
www.supplychainacademy.com

The Accenture Academy supply chain curriculum offers hundreds of courses covering supply chain fundamentals, product innovation and lifecycle management, supply chain planning, sourcing and procurement, manufacturing, logistics, and customer and service management. We integrate these supply chain-specific courses with the specialty skills and broader business management capabilities needed to help the supply chain workforce become more versatile business professionals.

Next Level Purchasing Association

412-294-1990
www.nextlevelpurchasing.com

The Next Level Purchasing Association (NLPA) is a leading provider of online training and certification for purchasing departments. Its training includes the globally recognized SPSM Family of Certifications for world-class supply management success. The NLPA also offers on-site seminars on topics including negotiation, sourcing, contract management, and more. Its services enable organizations to lower costs, support operations, and reduce risk by improving purchasing processes and expanding the capabilities of supply management organizations.

Events scheduled:

* 2014 Next Level Purchasing Association Conference - September 15 – 17, 2014 - Pittsburgh, Pennsylvania.

Vantage Partners

888-547-8852
www.vantagepartners.com

At Vantage Partners, we advise chief procurement officers, lead supply chain transformation initiatives, support development of category strategies, design and implement supplier relationship management programs, advise on high-stakes supplier negotiations, and provide a range of training solutions to procurement leaders and professionals.

Events planned:

- 2014 Next Level Purchasing Association Conference, Sourcing and Supplier Management - September 15 - 17, 2014—Pittsburgh, Pennsylvania

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Olin Business School's seminar and certificate programs help you develop skills and knowledge in areas crucial to operational excellence, including leadership, financial management, strategic thinking, supply chain, and coaching and development. Research-based, application-focused, and taught by renowned faculty, each session efficiently delivers relevant content in an engaging and thought-provoking environment.

Supply Chain Management Certificate Program: April 21–May 1, 2015

Collaborate with our research team to solve your greatest operational challenges.

Boeing Center for Technology, Information, and Manufacturing (BCTIM)

BCTIM fosters interactions between industry and academia on issues related to supply chain, operations, innovation, and real-time impacts on organizational management. Together with Boeing and other member companies, BCTIM advances best practices to optimize firms' global enterprise process through team-managed, faculty-led, and company-developed projects that produce tools to enhance supply chain agility, efficiency, and sustainability.

Washington University in St. Louis

OLIN BUSINESS SCHOOL

BCTIM
olin.wustl.edu/bctim

314-935-5577

Executive Education
olin.wustl.edu/seminars