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How Do You Measure Success?

Supply chain managers are on the lookout for metrics that will allow them to put a number to their progress—or lack thereof. Welcome are KPIs that allow them to demonstrate the quantifiable value that they deliver. At the same time, Murphy's Law may intervene or they may be called upon to put out fires or come to the rescue and make good on the promises sales and marketing have made to customers—regardless of the cost. So, how do you measure success?

Take tech giant HP. Back in 2009, the supply chain group was challenged with bringing together two supply chains when HP acquired 3Com. The challenge, detailed in this issue's *How They Did it* by Tom Healy, HP's Supply Chain Integration Manager at the time, was that the two companies operated very different supply chains to serve similar inventories and markets. They did it over four years by partnering with a cadre of third-party logistics providers familiar with both companies to remove surplus inventory and unnecessary nodes from the supply chains. Some of the techniques brought to the effort included a redesign of the network, risk pooling of inventory, value stream mapping, the consolidation of distribution centers, and an overhaul of supply chain management software systems. The success of the integration is measured in a more responsive supply chain that has allowed HP to post 19 consecutive quarters of growth. And, HP is now poised to move from "visionary" to "leader" in Gartner's Magic Quadrant for Data Center Networking Infrastructure. "For a supply chain team, that is truly rewarding," Healy says.

Measuring success can sometimes be more elusive, especially with conceptual goals. Take supplier relationship management, a very hot topic among procurement and supply management professionals. Today's procurement leaders profess that they aim to be their suppliers' Customer of Choice, to deliver a Sustainable Competitive Advantage, and to be an Indispensable Business Partner. While laudable, those goals are elusive and hard to measure, according to Joe Sandor, author of *Can You Measure Your Supply Management Goals?* Sandor relies on his experience as a practitioner, consultant, and professor to suggest best practices to measure progress toward these goals.

Bob Trebilcock, Editorial Director
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Supply chain management isn't often thought of as controversial. Yet, our departments are the foot soldiers in the battle to deliver sustainable and ethically sourced products to our consumers and business partners. With more certifications and labels available than ever, it is often confusing. In *Viewpoint*, Andrew Pederson and Andreas Wieland and Robert Handfield take a pointed—some might say controversial—look at the role certification organizations and technology play in ensuring human rights in the supply chain. These are provocative opinions. I appreciate that not everyone will agree with them; my hope though, is that readers will give this topic some thought.

As a value add, we're including an online bonus feature for scmr.com subscribers. This article looks at how Papa John's, the nation's third-largest pizza chain, is using supply chain software and voice technology to create a demand-driven supply chain to replenish its network of distribution centers and North American stores with fresh ingredients. I hope this month's issue and online bonus feature help you consider how you measure your progress.

Bob Trebilcock

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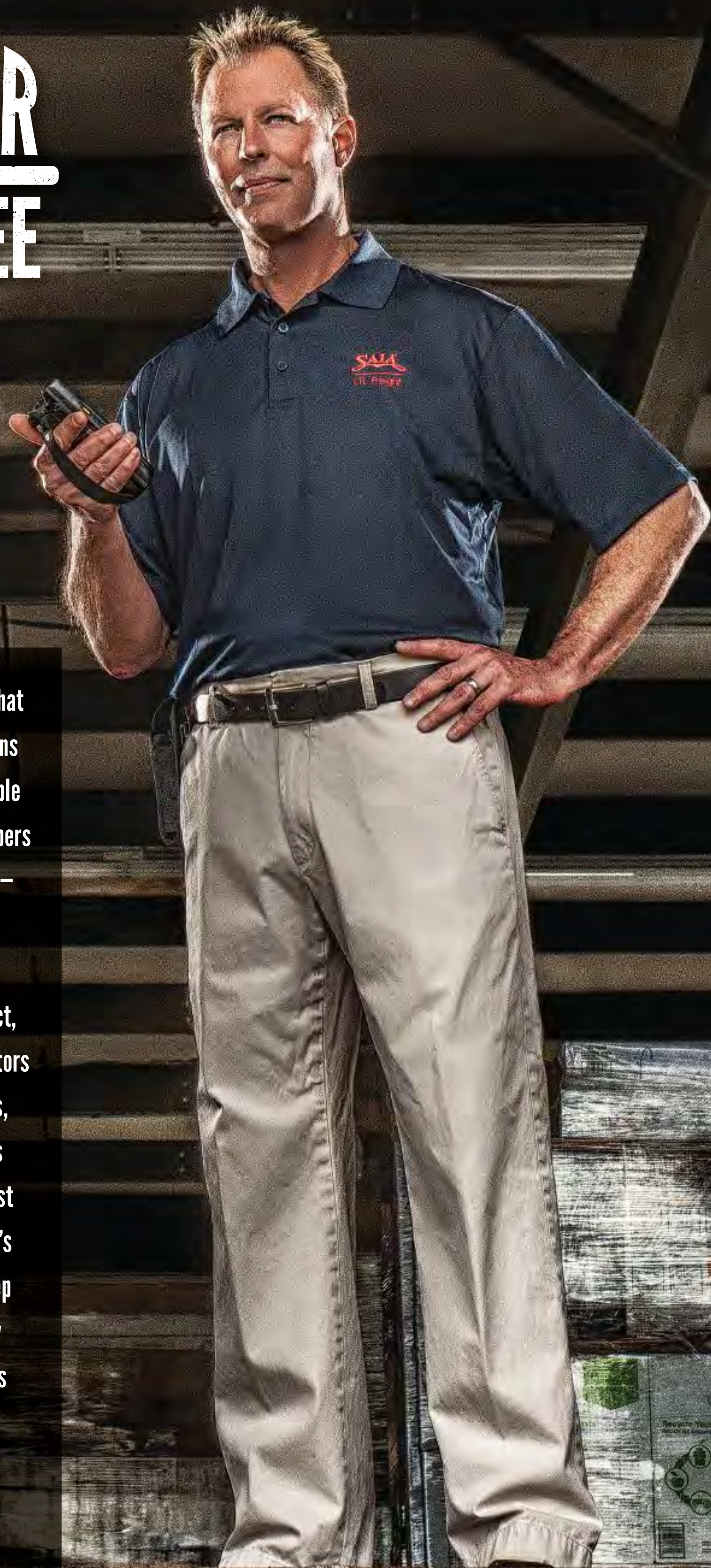

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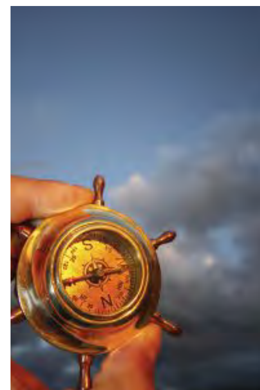

FEATURES

10 How They Did it: HP Meets the Challenge of a Supply Chain Merger

When tech giant Hewlett-Packard acquired 3Com in 2009, Wall Street applauded. But after the cheers died down, HP's supply chain team was tasked with bringing together two distinct supply chains that were managing similar inventories and markets, but using different strategies. Tom Healy explains how HP's supply management team turned to network design, value stream mapping, and 3PL partners to reduce inventory, remove nodes, increase velocity, and win market share—and accolades.

20 Can You Measure Your Supply Management Goals?

Every organization says it wants to be the Customer of Choice, deliver a Sustainable Competitive Advantage, and be an Indispensable Business Partner. But, how do you measure whether you're achieving these goals? Michigan State's Joe Sandor suggests three ways companies can measure the progress and success of their supply management initiatives.

28 The Tip of the Inventory Iceberg

Retailers focus on the cash tied up in the inventory on their shelves and in their DCs. Few, however, realize the hidden cost of high inventory, such as the additional labor, assets, and handling associated storing and moving that inventory. According to Sandeep Gupta and Charanyan Iyengar, those hidden costs can have a real impact on financial performance.

36 The DNA of Supply Chain Executives

In a joint project, a research group from Küehne Logistics University and McKinsey & Company studied the career paths and educational backgrounds of thousands of supply chain managers and hundreds of supply chain executives. The authors detail their findings on the DNA of the supply chain talent pool and supply chain executive success factors.

44 Fair Trade and Human Rights in the End-to-End Supply Chain

Consumers and business customers alike seek to do business with ethical, green, and socially-responsible partners. But, a proliferation of labels and certifications means that for supply chain managers, doing the right thing has never been more complex.

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InSIGHTS

B Y LARRY LAPIDE

Sales &Operations Planning Process Pillars

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 have been researching, speaking, and writing about Sales and Operations Planning (S&OP) for over 15 years and in that time I have seen the industry increasingly embrace the process. I have also noted an unsettling trend: The process has been subjected to too much hype and now appears to be positioned as too complicated, unwieldy, and costly to implement. Often times consultants and technology providers push too much technology and overly complicated processes. While indeed an important process, S&OP is simple.

The process merely involves conducting a set of periodic cross-functional meetings to develop consensus-based, aligned (i.e., matched) tactical supply and demand plans. Getting a working process started is tantamount to successful implementation, as this provides a firm foundation upon which to build the use of sophisticated methods often needing more technology—such as advanced planning and scheduling, the use of Big Data (e.g., upstream/downstream signals), and risk management techniques.

EXHIBIT 1

S&OP Foundational Process Success Factors

1. Ongoing Routine S&OP Meetings
2. Structured Meeting Agendas
3. An Unbiased Baseline Forecast to Start the Process
4. A Planning Horizon as Long as the Longest Supply-Demand Lead Time
5. Pre-Work to Support Meeting Inputs
6. Cross-Functional Participation
7. Clearly Defined Functional Roles at the Meetings
8. Participants Empowered to Make Decisions
9. An Unbiased, Responsible Organization to Run a Disciplined Process
10. Internal Collaborative Process Leading to Consensus and Accountability (by Leveraging a Forecast/Planning Hierarchy)

Source: Larry Lapide, Ph.D.

Ten "Foundational" Success Factors

Exhibit 1 depicts a list of 10 "foundational" S&OP process success factors. The factors deal with meetings and the support needed to conduct them. None deal with technology per se because technology enables businesses processes—and as a process—S&OP may not need much as long as it ultimately leads to consensus, accountability, and commitment to supply-demand plans. The factors are described below.

1. Ongoing routine S&OP meetings. Routine is the operative word and means that if a meeting is to be held, it gets held. For example, participants meet despite the fact that all might believe the current plans do not need to be changed. The main purpose of the meetings is to vet out whether or not to change supply-demand plans.

2. Structured meeting agenda. S&OP meetings are routine, so they should follow a fixed agenda. The first portion of a meeting should be focused on analyzing past plan performance. Root-cause analysis is needed to assess what can be learned from the past in order to improve the accuracy of future plans. This renders S&OP a continuous learning process. The latter (larger) portion of a meeting should focus on assessing the future. The meeting culminates with a consensus of whether plans should be changed. Closure is important so that finalized plans can be published and distributed around the company on a timely basis.

3. An unbiased baseline forecast to start the process.

Discussions about the future focus on an unbiased and unconstrained demand forecast. The forecast should be generated by a credible and professionally run forecasting organization, so that the forecast can be considered "innocent until proven guilty." The forecast organization should be prepared to defend its forecasts by clearly explaining the facts, figures, and assumptions that were incorporated into them.

4. A planning horizon as long as the longest supply-demand lead time. An S&OP planning horizon needs to consider all supply-demand lead times, not just the lead times of items sourced for production. On the supply side it also has to consider resource lead times such as those for labor, indirect materials, and equipment, as well as process times. On the demand side, it needs to consider lead times involved in sales and marketing activities such as new product launch, promotional, pricing, and product placement processes.

5. Pre-work to support meeting inputs. A demand forecast and rough-cut supply plans and limitations need to be brought into S&OP meetings. These need to be aggregated, synthesized, and translated in multiple ways prior to the meetings to help facilitate meaningful discussions. In addition, rough-cut demand plans should include all known impacts on the future, including details on planned marketing and sales actions. A lot of homework needs to be done in advance of S&OP meetings.

6. Cross-functional participation. The S&OP process needs to be cross-functional, involving representation from sales, customer service, and marketing as well as from manufacturing, logistics, procurement, and supply chain. In addition, finance managers are also involved to help marry the operational plans developed with the financial performance objectives of a company. Attendance at meetings is not sufficient towards making the S&OP process successful; there also needs to be active participation and engagement among attendees.

7. Clearly defined functional roles at each meeting. Each attendee should have a role to play that leverages their functional expertise. Sales managers should identify major sales opportunities, sales plans, and on-the-ground market assumptions. Marketing managers should identify all pricing, new product, promotional, and product placement plans, as well as market assumptions. Operations and supply chain managers are responsible for developing the supply plans that include what will be sourced, made, inventoried, and delivered. Lastly, finance managers' major responsibilities are to monetize the supply-demand plans and estimate their financial implications.

8. Participants empowered to make decisions. Participants in the S&OP process have to make decisions regarding the supply-demand plans. Therefore, they need to be empowered by the executive team to make decisions based on their beliefs and interactions with other participants during the meetings. SVPs and VPs need to support all decisions made by their subordinate managers at mid-manager meetings.

9. An unbiased, responsible organization to run a disciplined process. S&OP needs to be conducted as a repeatable process that runs on time and according to schedule. To accomplish this, it needs to be organized and run by a responsible organization that routinely schedules meetings, sets agendas, moderates meetings, and ensures that pre- and post-meeting work is done in a timely fashion. The person moderating meetings is usually a senior middle manager who is constantly focused on driving towards consensus among the participants.

To ensure that supply and demand plans get buy-in from all functional organizations, a collaborative process designed to lead to consensus-based plans is required.

10. Internal collaborative process leading to consensus and accountability (by leveraging a forecast/planning hierarchy). To ensure that supply and demand plans get buy-in from all functional organizations, a collaborative process designed to lead to consensus-based plans is required. This means each manager needs to commit to make plans happen and be accountable for doing so. To help ensure that participants truly understand what they are agreeing and committing to, I recommend developing a forecasting/planning hierarchy. The hierarchy enables a planning group to "translate" forecasts/plans into the "language" of a functional manager by aggregating information into a view that is aligned with the way he or she thinks about the business. For example, sales managers are most comfortable dealing with demand in terms of dollars not units, and demand broken down by major accounts and sales territories. Meanwhile, marketing managers want to see aggregations into brands and product groupings, logistics managers by warehouses and in cases, and manufacturing managers by production lines and manufacturing plants in terms of units.

S&OP teams should use the above list of 10 foundational success factors to gauge whether their S&OP process is at a minimum sustainable level, as well as provides a sound foundation upon which to enhance. Building on a deficient foundation often leads to a house of cards that topples down.

INNoVATION STRATeGIES

Wanted: Innovative Responses to a New Security Threat

By Jim Rice

Jim Rice is deputy director at the MIT Center for Transportation & Logistics (MIT CTL). He can be reached at jrice@mit.edu.

The recent cyber attacks and security breaches at Target and Home Depot drew executives' attention to the vulnerability of their companies to this type of crime. The incidents exposed some 40 million and 56 million credit cards respectively, and in the case of Home Depot, occurred despite the company's best efforts to protect the firm.

What has this to do with supply chain management, and in the context of this column, supply chain innovation (SCI)? The answer is a great deal. As I have argued on these pages, one of the main types of SCI entails challenging the dominant design. In this case, that means challenging the prevailing method for supply chain security in response to the cyber security threat. The SCI will become a reality when firms develop the robust responses that are required.

Edge of the Precipice

High-profile breaches such as the ones cited above have spotlighted cyber security, but awareness of the actual risks involved is still relatively limited.

This is especially true with regard to the flow of information that parallels the flow of materials, and powers all supply chains. These information streams include product details, logistics data, and customer information, as well as facts and figures on factory and retail operations and financial management. On the factory and warehouse floor, automated equipment and machines are increasingly assigned an IP address, creating additional access points that serve as openings for intrusions.

In terms of protecting this information from cyber attacks, I believe it is as if we are doing business in a pre-9/11 period, where a disaster that will expose our cyber weaknesses is imminent.

The signs are there if we look at recent incidents and imagine the potential implications for supply chains. Here are three examples to consider.

- After being dismissed by his employer, a wastewater plant employee in Australia remotely hacked into the organization's plant operations and altered fluid flows resulting in a sewage release into the public waterways.
- Just a few months ago the Zombie-Zero malware attack was discovered in several logistics and robotics firms. It had been active inside the organizations for more than a year, and was being used to observe and track conveyances on their logistics journey. The malware was found in scanners that were used by each of the firms, and was apparently embedded in a Chinese supplier's facility. Sadly, software updates provided by the manufacturer failed to rectify the vulnerability.
- A study on ocean-going vessels showed that clever adversaries have already figured out how to take control of a vessel using its GPS system.

These examples show how attackers are capable of gaining access to internal systems to not only steal operational information that drives the supply chain, but also to control the targeted operations.

Redefining Dominant Designs

Current defenses against attacks like these are based on dominant designs for security systems. What are these models?

The dominant design for protection in the supply chain domain involves physical site security for material flows and/or conveyances. But, physical measures are of little use where cyber crimes are involved. Many of the IT systems that underpin information flows are protected by password systems, but invariably these are not very robust

There is also a dominant design for responding to supply chain security breaches. This often entails a lengthy process that starts with chartering a committee to investigate, develop, and implement a solution. The process tends to proceed relatively slowly, however. For example, Home Depot responded speedily after learning of the Target breach, but its efforts to inspect,

detect, and protect were not fast enough to outpace the attackers. Companies often lack the in-house tools and resources to properly evaluate their vulnerabilities, much less respond quickly.

There are also some perceptual barriers to more effective responses. Most supply chain organizations view cyber security as an IT concern. The assumption makes sense given supply chain's traditional focus: efficiency and effectiveness in sourcing, producing, and delivering to demand, while collaborating with upstream and downstream partners.

Ironically, it is these activities—enabled by integrated IT systems—that make the supply chain prone to cyber attacks. But companies have not yet learned that the threat to our systems through IT is as great as any other potential disruption.

The Need to Learn Fast

Why is the threat so different now? Today, cyber adversaries not only destroy information, they can also commandeer systems and use them to distribute weapons and contraband. They can engage in human trafficking or turn your business into a conduit for malware and further cyber attacks. And they are in the business of aiding and abetting the theft of cargo and competitive intelligence, and of doing damage by altering information on customers and shipments.

Cyber criminals include professional gangs, business competitors, "hacktivists," and nationalists intent on disrupting commerce for profit and political gain. Moreover, for every $1 that a hacker spends attempting to break into your system, your firm must spend $100 to defend itself. As a result, most firms have already lost or are losing the battle to prevent illicit access to their systems; the bad guys are already inside.

What Can a Firm Do?

In general, companies should focus on detecting infiltrators and limiting their ability to remove data and exert control over operations.

To begin with, a firm should conduct an assessment on the presence of adversaries, the quality of the software, and the validity of the data sources used. It is also advisable to identify every potential network access point including suppliers, maintenance third parties, 3PLs, and contractors.

The outcome of the assessment will likely require investing in skilled human resources to detect and protect the firm's supply chain and cyber systems. Another possible recommendation is to change the way systems are accessed to include two-factor authentication, and perhaps a "100 percent reliable" information supply chain. This level of assurance and security is necessary for nuclear weapons testing but may be cost-prohibitive for logistics and supply chain applications.

An ongoing monitoring system is required to identify atypical data movements and access within the firm. Keep in mind that an adversary already inside the system will likely traverse from its entry point to other systems, attempting to laterally move data to its access point. As a result, companies should look for atypical lateral movements of data and access.

And once an intrusion has been detected, the firm will need an Incident Response Team (IRT) that can respond quickly—in minutes, not weeks or months.

The firm must also invest in resilience measures to deal with the inevitable breaches, designing the operations to limit the impact of an intrusion. In addition to traditional measures, firms need to adopt some innovative counter-measures such as kill-switches that enable them to reclaim control of vital systems. There could be parallel control systems that can be disconnected from the internet and other internal systems, and allow for local/manual operation only. This gets challenging when considering control for the entire network of upstream and downstream supply chain partners.

Companies often lack the in-house tools and resources to properly evaluate their vulnerabilities, much less respond quickly.

The concept of a kill-switch is a new idea gaining credibility. A recent *Wall Street Journal* piece "Unleash the Repo-Drones," advocated for the use of remotely-controlled kill-switches to disable military equipment stolen by ISIS fighters; something the U.S. military wishes it had now.

These are not the only challenges. Supply chains are traditionally focused on efficiency, and are run by logisticians and engineers—not IT. Supply chain, IT, and security departments have to work shoulder-to-shoulder in new ways in order to effectively deal with cyber threats.

An Emerging Innovation

The dominant design for supply chain security decision-making and response must change if organizations are to have a chance of keeping pace with the cyber security threat.

Companies are not alone. Two documents, GAO-13-652T and NIST 800-161, are especially useful resources. These guidelines help companies to map their responses and can serve as a starting point.

But the primary challenge is developing a new dominant design for supply chain security that integrates the elements described in this article in new ways. In effect, we are laying the groundwork for a new form of resilience that is specific to cyber attacks, perhaps called "cyber resilience." Whatever name it takes, it will be an important innovation that enables supply chains today and in the future.

GLOBAL LiNKS

BY PATRICK BURNSON

Balancing Financial Settlement and Inventory Levels Remain Key Concerns

Two new studies indicate that successful innovators in inventory control and banking will gain market share as supply chain disruption is addressed.

Patrick Burnson is the executive editor at *Supply Chain Management Review.* He welcomes comments on his columns at pburnson@ peerlessmedia.com

U.S. companies made only marginal improvements in their ability to collect from customers and pay suppliers in 2013, while showing no improvement in how well they managed inventory, according to the *16th Annual Working Capital Survey* from REL, a division of the Hackett Group, Inc.

"For inventory, the global marketplace has made issues like demand planning more important than ever before," says Analisa DeHaro, Associate Principal for REL. "Companies need to factor in lead times that may not have been an issue when manufacturing was done closer to home. The best companies are becoming more savvy about this, and are more effectively balancing the various elements of inventory management."

The amount tied up in excess working capital at nearly 1000 of the largest public companies in the U.S. is over a trillion dollars, according to the REL research.

The U.S. economy was slow but stable, with gross domestic product increasing by 3.2 percent in 2013. But at the same time, the REL research found that gross margins decreased by 0.3 percent, indicating that companies are spending more internally to generate revenue.

The researchers also found that companies are continuing to borrow, using low interest rates to improve their cash position, with cash on hand increasing by 12 percent, or $110 billion. At the same time, companies continued to ramp up capital expenditures, which have risen by 43 percent over the past three years.

The value of total net working capital rose by 3.2 percent in 2013, and days working capital improved by less than 1 percent. While days sales outstanding and days payable outstanding improved only slightly, days inventory on hand showed no change at all.

"We're clearly not seeing a big push on improving inventory performance right now," says Craig Bailey, director of The Hackett Group. "That's being driven by a few things. With low interest rates, it doesn't cost as much to hold inventory, so service and availability become the drivers. In some industries, there's also an expectation of an upturn in the market, which is leading companies to stockpile inventory."

According to Bailey, some off-shoring trends are also working against inventory improvements.

"As the cost of manufacturing in China continues to increase, companies are moving West within China, or relocating to Vietnam or other countries to find markets where infrastructure and labor costs are lower," he says. "To facilitate moves like these, companies will commonly build inventory, to allow production to ramp up, and as a fallback in case of startup issues, which are common."

Follow the Money

Meanwhile, off-shoring poses ongoing challenges for supply chain financial management, too. Analysts with the Boston Consulting

Group (BCG) note that the payments and transaction businesses continue to represent vital elements of the banking industry and the global financial services landscape.

In its recent *Global Payments* report, BCG observes that the importance of these sectors—both as critical sources of stable revenues and as the foundation of customer relationships and loyalty—has grown steadily in recent years and shows no sign of slowing down.

The growth in payments and transaction banking, moreover, is driving stiff competition among not only traditional players but also with new entrants. Consequently, financial institutions must differentiate themselves, refine their strategies, and raise their execution skills if they want to remain competitive in the supply chain arena.

BCG expects the next 10 years to continue to bring substantial growth in the payments and transaction-banking businesses. But these years will also bring disruptions, as economic models shift owing to digital technologies, regulation, intensifying competition, and new market entrants challenging incumbents. The many faces (and interfaces) of payments will change as successful innovators gain market share.

By contrast, developed regions are projected to achieve a much lower annual growth rate of 4 percent. These regions continue to be challenged by narrow margins, the maturation of payments products, and modest economic growth. Compounding the systemic trends, various regulatory measures have been or will be implemented that significantly reduce revenues.

For example, a regulatory tidal wave has already hit the United States, one that was fully reflected in 2013 revenues. In Europe, two waves are in force: First, the Single Euro Payments Area (SEPA) has resulted in gradually declining prices for certain payments products; and second, limits on interchange are expected to take a significant toll, resulting in €8 billion in lost revenues annually beginning in 2015. Payments stakeholders in developed European markets must therefore weather the regulatory storm and forge new business models to fill the revenue gap.

On the wholesale side, transaction-related revenues have tended to track economic and trade growth, whereas account revenues have faced a tug of war—pulled up by rising bank balances and pulled down by shrinking spreads. Account revenues are expected to recover, however, contributing roughly 56 percent of total wholesale revenue growth from 2013 through 2023.

Good News and Bad News

Cash conversion efficiency—or the time companies take to convert sales into cash—improved somewhat in 2013, after two years of declines. In addition, free cash flow—which is a key indicator of the health of corporate cash flows and represents the cash companies are able to generate after laying out money to maintain or expand their asset base—improved dramatically, rising by 23 percent over the previous year. This, say analysts, indicates an upswing in cash flow management.

With easy access to low-interest cash, there's little motivation for companies to deal with complex issues like how to collect from customers faster without alienating them.

"The good news is that U.S. companies aren't getting any worse at managing their working capital," says REL's Analisa DeHaro, "In fact, the number of companies that improved working capital performance for three years in a row increased significantly in 2013.

For most companies, however, working capital remains a low priority. With easy access to low-interest cash there's little motivation for companies to deal with complex issues like how to collect from customers faster without alienating them, what can be done to optimize payments to suppliers, or how to maintain just the right inventory levels given today's complex supply chains.

But there are tremendous opportunities here, and with slow growth and shrinking margins, plus interest rates that are certain to rise, companies that focus in these three areas can drive real bottom-line benefit, today and in the future.

When HP acquired networking equipment company 3Com, somebody had to integrate the two companies' supply chains. But this wasn't simply an operational merger to take out cost; it was an opportunity to push for greater market share for the combined organization. Here is how HP accomplished those objectives—and won widespread recognition for doing so.

By Tom Healy

Mergers and acquisitions are part and parcel of business life today. Yes, we celebrate the deal, but there's a morning after reality: How do we quickly integrate the two companies into one so that we can realize the value of the merger?

Those were some of the big questions facing our team at Hewlett-Packard after the

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How They Did it:

HP Meets the Challenge of a Supply Chain Merger

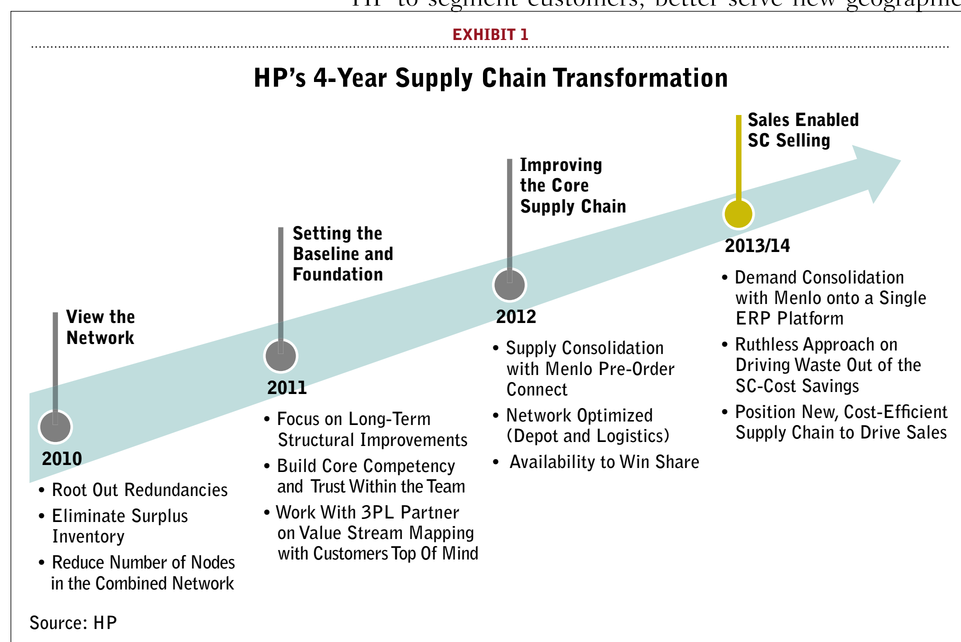
acquisition of 3Com. When the deal was announced in November 2009, Wall Street applauded. But in 2010, after the deal closed, we were faced with how to bring together two distinct supply chains that were managing similar inventories and markets, but using very different strategies to do so.

As the timeline below illustrates (see Exhibit 1), over the next four years, HP consolidated manufacturing and distribution centers—from 25 locations worldwide to approximately half that number today. We adopted a strategy to share inventory, and are in the process of building out a shared business platform for the different supply chain strategies. And we dealt successfully with a big challenge to our supply chain integration—a cultural hurdle that challenged the logic of the integration and tested our creativity.

To master our many integration challenges, HP partnered with Menlo Logistics, a third-party logistics provider that was familiar with both HP and 3Com prior to the acquisition. The result is a supply chain that enables HP to segment customers, better serve new geographic

EXHIBIT 1

HP's 4-Year Supply Chain Transformation



Source: HP

regions, eliminate redundancies, distribute a new portfolio of products, and offer new services. It has also delivered real savings and positioned HP as a key player in fast-growth markets. This is the story of how we did it.

Scoping Out the Challenge

First, let's provide a quick background about where we came from. The HP unit that became the ProCurve division, and ultimately, HP Networking, began in Roseville, Calif., in 1979. The division manufactured and sold a wide range of networking equipment, from local area network switches to wireless access points and network management software. Originally a part of HP's Data Systems Division (DSD), ProCurve became part of the company's largest business division, the Technology Services Group organization, in 2008. After HP acquired 3Com in 2010, ProCurve and 3Com became HP Networking.

When HP announced its acquisition of 3Com in 2009, all of the anticipated challenges surfaced. As part of the acquisition, each of three regions ended up with competing supply chain flows, multiple priorities, and duplicate supply chain nodes across the globe — 3Com locations and HP locations everywhere from Juarez in Mexico and Nashville in the U.S., to Hangzhou in China and Eersel in the Netherlands. (See Exhibit 2.)

We quickly assembled a small, dedicated supply chain integration team to address these obstacles—a collection of the best supply chain professionals from both companies. The first question we had to answer was: How do we show value from the integration? Most of the time, the value is centered on cost, or rather, how to take cost out of the newly merged supply chain. As we'll see in a moment, there were all kinds of supply chain redundancies to be addressed.

The second item that our team and I had to address was how to grow the business. Not simply: "How could we integrate HP ProCurve with 3Com?" But, instead: "How would we grow market share for the combined organization?" The consequence for us: Our supply chain was about to be under the spotlight, and we needed to move very quickly.

The challenges were daunting. Could we actually make two plus two equal five? Could we find ways to expand market share at the same time that we were rationalizing two supply chains? I knew that the successful integration of the two supply chains would produce the quickest solutions for the customers of what would soon become HP Networking. I was convinced that supply chain velocity—the responsiveness of the supply chain—was the key driver to win market share.

Rooting Out Redundancy

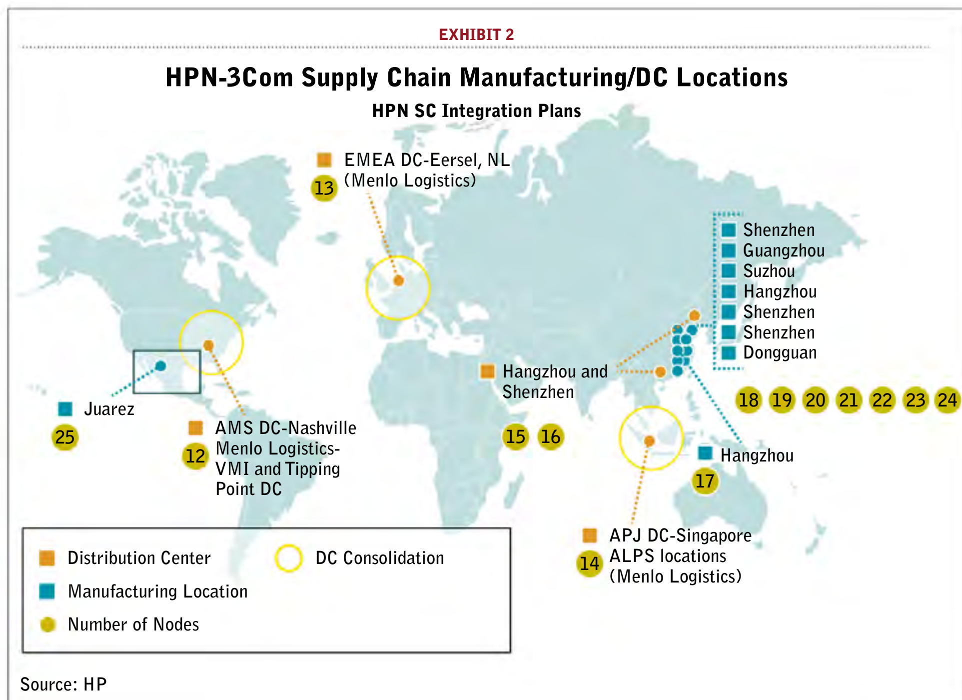
Our roadmap called for a progression of supply chain integration activities rolling from early 2010 onward. We knew we had to start with rooting out redundancies, eliminating surplus inventory, and reducing the number of "nodes" in the combined supply chain network. That would be the "low-hanging fruit"—programs that would occupy much of the first year of the initiative.

The second year would see a stronger push to counter big demand variability with a far bigger product mix. This would involve long-term structural improvements—bolstering the core competencies of and trust among the integration team, for instance, and using tools such as

EXHIBIT 2

HPN-3Com Supply Chain Manufacturing/DC Locations

HPN SC Integration Plans



Source: HP

value stream mapping to deconstruct the whole supply chain and rethink the model with HP's customers foremost in mind. The third year would see renewed emphasis on supply chain velocity and a stronger focus on optimizing the Americas supply chain. And the fourth year—this current year—would involve "node reduction part two:" consolidating demand onto a single enterprise resource planning (ERP) platform, and positioning HP's streamlined, cost-efficient supply chain to drive new sales opportunities. We knew we had a lot of work to do.

We rolled up our sleeves in earnest early in 2010, working hard to reduce supply chain redundancy. We counted the number of existing distribution centers, manufacturing locations, and other delay points, and quickly determined that it was necessary to remove several of these supply chain nodes.

There were multiple nodes—that is, multiple cost structures, because two separate and distinct supply chains were being brought together, along with two very different sets of values about what is important in the supply chain. The 3Com business brought in a much larger base of products; we now found ourselves working with a product/option mix that was 60 percent greater than HP ProCurve's had been, and with a product count that now topped 2,000 products—and a very different customer base. The 3Com SKUs had multiple configurations across an order mix—multiple transceivers, power supplies, and so on—which made it very difficult to guess the configurations when they rolled off the lines in Asia. Whereas HP had traditionally sold into "the channel"—building fairly standard products for inventory, which would then go to market through resellers—the bulk of 3Com's business was directly with large enterprises, whose orders were far more complex than HP's.

So now we had to meet the needs of multiple customer markets. Not only did supply chain processes that had worked well in the past now have to handle greater volume, but they also had to cope with increased variability in global demand and a broader product mix.

When HP announced its acquisition of 3Com in 2009, all of the anticipated challenges surfaced. As part of the acquisition, each region—Americas, EMEA, and APJ—ended up with competing supply chain flows, multiple priorities, and duplicate supply chain nodes across the globe.

These changes needed to be implemented within a quarter to demonstrate to the HP Networking customers that the new combined supply chain was responsive. The central challenge: how best to serve the combined group of customers with so many products while improving the velocity of HP's supply chain.

This was a tricky point to communicate across the company. Many business leaders view merger consolidation programs as efforts to cut costs. They are not wrong, of course. But that's not the only benefit. What we had to convey was that by removing nodes, you increase velocity, too. The more we could streamline, the faster we could meet customer needs—and the more competitive we would be. With HP's new customer mix—particularly time-sensitive enterprise customers—this factor was absolutely critical.

Recognizing that HP was employing multiple order fulfillment systems across both supply chains, exacerbating longer cycle times, the team set out to quickly consolidate a fulfillment platform for the two customer bases that were consolidating.

The low-hanging fruit phase moved relatively easily; by the start of 2011, we had successfully closed down about half a dozen nodes from the combined network and put the brakes on the 3Com legacy ERP systems. Most of the shuttered facilities were distribution centers (DCs); the manufacturing nodes were more complex in terms of the changes involved. Although HP's

overall node reduction push was largely complete, our teams continued to look for opportunities to eliminate redundancies.

The Value of Risk Pooling

Much more was needed to streamline the supply chain beyond just closing down supply chain nodes. At that point in 2011, more than a year into the integration effort, patience was a real virtue—not only in terms of what we could achieve quickly, but in terms of setting expectations for others at HP. Time was needed to examine the supply chain for idle points and POI (my acronym for undesirable "piles of inventory")—areas along the supply chain where products tended to remain longer than desired — that stopped or slowed the flow. We knew that getting rid of POI would be a quick win—something that could be recognized easily as a cost saving and a way to reduce overall cycle times for customers.

We had to address this area. I remember one instance where we lost a large router deal in Latin America solely because we could not deliver within the compressed time frame requested. We had split the supply to multiple POI points just because the node existed, but had no true demand for these products at those other locations.

HP's roadmap called for a progression of supply chain integration activities rolling from early 2010 onward. The team knew they had to start with rooting out redundancies, getting rid of surplus inventory, and reducing the number of "nodes" in the combined supply chain network.

My team and I measured the end-to-end response time—that is, the total cycle time — to determine how long it took for the supply chain to respond and deliver to a customer's location. Our base measure was how long it would take to get product to a customer through a completely dry pipeline, one with no work-in-progress inventory anywhere along the supply chain when the demand signal is received. Total cycle time had typically been over 30 days. But we knew we had to reduce it to closer to 20 days from manufacturing point to customer location.

To help tighten cycle times, we turned to risk-pooling supply, a common technique for handling high demand variability. We were in a period of strong growth in terms of pure volume and with the extra complexity of our product mix, we were uncertain what configurations customers might order: ProCurve only, 3Com only, or some combination of both. We knew it would not make a lot of sense to locate supply at a regional DC in the Americas region and then try to match it against an order coming in from our Asia Pacific and EMEA region.

Some years earlier, I had implemented risk pooling with great success to sell printers directly to end users. Consolidating supply would effectively allow the HP Networking business to handle the greater mix associated with demand variability from the new customer base. Based on the principle that high demand from one customer or region will offset lower demand from another, risk pooling involves consolidating supply until the last possible moment and then quickly deploying it, boosting the response time of the overall supply chain. As a result, this improved velocity drove cost savings across the network.

Our approach ran counter to what is typical: Usually, the acquiring company adopts and continues to run the acquiree's supply chain. But we had particular demands that militated against the "same old, same old." Not only did we now confront enormous variability in demand, we were also up against strong competitors. So instead, we chose to risk pool certain portions of the total supply based on customer data and to deliver quickly based on demand, with drastically decreased response times. Speed and responsiveness would make all of the difference in our competitive battles.

We decided to centralize supply for specific products in a hub in Southeast Asia (we called this "central stock") to process orders as they came in, and to deploy product quickly. We predicted this approach would reduce variability and uncertainty, and allow us to cut safety stock by 20 percent, thus reducing average inventory. We believed we would have a huge win if we could

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successfully deploy these techniques and speed up the entire supply chain.

The risk pooling effort ran for more than a year, well into 2012, and helped tighten the supply chain cycle times. By the end of 2012, much of the integration was in place worldwide. It was working as planned. We were successfully meeting the needs of different customer groups, and doing so in less time and expense. I knew we had done well when HP won a contract to supply the same large Latin American company with routers that had rejected HP's bid the year before due to the lengthy delivery timeline. When the order came in, we had most of the supply ready in the Southeast Asia "central stock" hub, and we were able to ship it quickly into Latin America. Soon thereafter, our Latin America sales vice president sent us a note that read: "The Supply Chain Team rocks!"

As it turned out, we could not rest on our laurels. Other big changes were under way that would test the robustness of HP's supply chain integration.

Putting Value Stream Mapping to Work

As 2012 unfolded, the management team began an assertive campaign to identify growth markets worldwide and to boost HP Networking's market share in those markets. I became heavily involved in the push to penetrate the Americas region—specifically, Latin America, where HP had less than 2 percent of the available market for the types of networking equipment that it sold. HP had two different businesses there: Volume, which sold through channel distribution centers; and Value, which served enterprise customers through more direct channels.

At the same time, HP Networking began to see a pick-up in business from large enterprises—similar to the kind of business that 3Com had conventionally served. But this time, HP was also selling servers and storage equipment for high-end data centers run by Fortune 500 companies. Previously, the HP sales teams had supplemented the sale of core equipment with routers and switches supplied by other companies; now HP had its own networking offerings for the enterprise.

Here's where things got sticky. Clearly, the new enterprise work moved HP Networking's business into more expensive, more complex networking gear—a sector in which HP ProCurve had not been competing previously. Now, the Latin America business was expanding and the North America Volume business was also doing well. All of these areas were competing for the same supply; we had multiple HP fulfillment platforms splitting the demand signal. The split was causing Latin America cycle times to increase. For instance, supply would be in one physical location to meet demand from our Enterprise Group (EG), and then we would get a Volume order for the Finished Goods Inventory (FGI) business, we would then find we could not deliver to the Americas customer base. It reminded me of a nice day of spearfishing on the California coast: calm on the surface, but lots of action going on below the surface that could take you down in a second.

Today, the new HP Networking supply chain is a combination of the best of both companies' supply chains—one that has been truly optimized to grow the business. The result is a streamlined operation that leverages a few strategically chosen locations and uses standardized processes across all regions, poising HP Networking for growth and success.

The competition in Latin America was fierce; it would not be an easy fight. To expand HP's market share, HP needed to be very responsive and reliable. This is where HP's partnership with Menlo Logistics—HP's longtime third-party logistics (3PL) provider in North America—paid huge dividends. Menlo had deep expertise in value stream mapping—the Lean management technique for analyzing the current state of a system or process and designing a future state for the series of events that take a product or service from its beginning through to the customer. We felt we could use this Lean process to identify idle points and to pinpoint further opportunities to cut supply chain costs.

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The HP Networking team assembled a team comprised of Menlo and other third-party logistics partners. Together, we ran a joint planning session in which we leveraged value stream mapping to pinpoint short-term and long-term objectives for resolving the new challenges of serving multiple masters. We developed an overall timeline for the fixes, and identified key business processes along with the necessary physical assets, IT systems, human resources, and transition steps. Each was outlined and documented in detail during the planning session.

The session also helped us pinpoint some specific obstacles in serving the Latin American markets. For instance, customs compliance had always been an obstacle. We also identified a number of additional POI points, from Asia to Latin American end users, which had to be removed if we were going to increase supply chain velocity. One specific POI point had actually been set up to service the growing HP Americas Enterprise business.

The value stream mapping exercise laid bare the problem of trying to split inventory between Value customers serviced out of the Americas depot—where HP produces servers and storage equipment for enterprises—and the traditional Volume customers, serviced out of another location. Dual demand systems were creating additional variability, which we were buffering by carrying more inventory between the two locations than needed. My first cultural challenge was persuading the Value guys that if we continued with the split, nobody would be served well. I had to show them that there was a better way.

Our proposal, supported by partners like Menlo, was to provide savings, in cost and time, to both the Enterprise and the Volume channels by risk pooling inventory. We were not offering to run everyone's ERP systems; what we were proposing for the Americas region was a plan to have Menlo run two fulfillment platforms within its warehouse management system and then transition to a single ERP-driven system. The first phase of this plan involved transitioning the Value system and Enterprise inventory to a Menlo hub to quickly capitalize on additional supply chain savings. Menlo's clear systems capabilities were boosting the supply chain velocity by eliminating another node point.

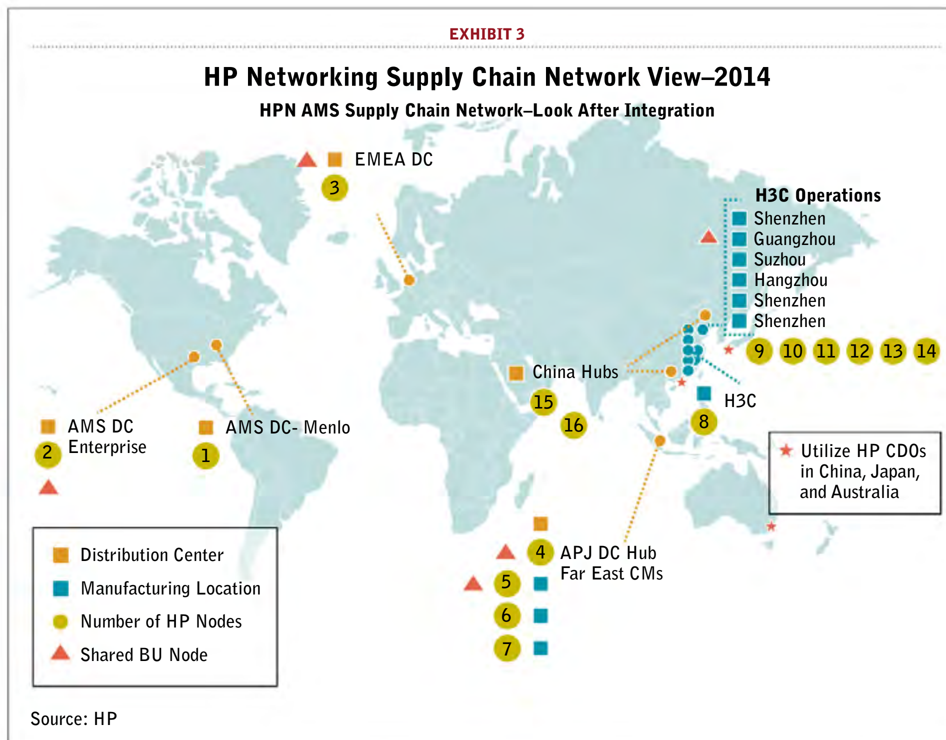
Our overall systems solution was to use one of the two ERP systems to feed information to a transportation management system (TMS) that, in turn, feeds a warehouse management system (WMS). When the conversion is complete, HP Networking in the Americas will have consolidated into a single distribution platform that will be based solely on HP's ERP platform. The other platform will no longer be used.

Menlo's ability to learn the complex process has eliminated warehouse transfers of finished goods between sites, which in turn eliminated a Latin America POI location that had been hurting cycle times with HP's important enterprise customer base. In addition to truckload and warehouse savings, HP also received an additional bonus—significant air freight savings.

EXHIBIT 3

HP Networking Supply Chain Network View–2014

HPN AMS Supply Chain Network–Look After Integration



Source: HP

The Results

Today, the new HP Networking supply chain, as illustrated in Exhibit 3, is a combination of the best of both companies' supply chains—one that has been optimized

Neither HP's nor 3Com's customers experienced any meaningful disruption during the transition. HP, Menlo, and the collaborative partnership developed with other 3PLs ensured that all aspects of the acquisition and transition were transparent.

to grow the business. From both the physical location and systems perspectives, the supply chain has been significantly consolidated and centralized, resulting in a streamlined operation that leverages a few strategically chosen locations and uses standardized processes across all regions. HP Networking now has three primary distribution centers in each region and is strongly supporting channel Volume and direct Value sales in those regions.

So how can we gauge the success of the acquisition? There's one important point to make right away: The whole integration effort was truly a collaboration from the beginning. It would not have been possible—in scope or in timing—without the candid, ongoing, open cooperation from HP's Global Logistics partners, such as Menlo Logistics. I cannot emphasize enough that it was the initial relationship with Menlo and other 3PLs that allowed us to deliver value for our customers. This collaborative value chain approach allowed us to build a core competency in the supply chain that has created a level of trust that led us to far exceed our original expectations.

The results are in, and they are impressive. Since the acquisition, HP Networking has enjoyed 19 consecutive quarters of growth worldwide. This is directly attributable to improvements in the supply chain and HP's ability to execute the integration. In Latin America, we have expanded our market share to more than 6 percent—a big step forward in a short time. And the integration has brought us lower operating costs. Now we can confidently say that we can process Value orders at Volume prices. We have also been told that the 3Com integration is considered one of the most successful acquisitions in HP's history in terms of growth, market share, and cost savings.

Less tangible, but equally significant, is the impact on customers. Neither HP's nor 3Com's customers experienced any meaningful disruption during the transition. HP, Menlo, and the collaborative partnerships developed with other 3PLs ensured that all aspects of the acquisition and transition were transparent. All of the planning and risk mitigation efforts meant that supply chain upsets were kept to a minimum. Another measure of this effort's success is that HP is now positioned as a visionary—and poised to be a leader—in Gartner's Magic Quadrant for Data Center Networking Infrastructure. Our supply chain improvements have been a key to this achievement. For a supply chain professional, this type of recognition is truly rewarding.

Of course, we are not done yet. Integration on such a huge scale can always benefit from further evolution and improvement. We are busy working on other ways to increase supply chain velocity, find and destroy other POIs, and, most importantly, deliver value to customers.

A final word about the collaboration that made our project a success: Building an effective and successful partnership is not easy, particularly on such a scale. The history between HP and Menlo gave us a head start. The two companies' familiarity with each other created a shared purpose and a clear understanding of short- and long-range goals. This, in turn, established an atmosphere of trust best exemplified by open communication, compatible value systems, and complementary skill sets. Finding that kind of chemistry can be difficult, but when it happens there is no limit to what can be accomplished.

Can You Measure Your Supply Management Goals?

By Joe Sandor

Joe Sandor is the Hoagland-Metzler Professor of Purchasing and Supply Management at the Eli Broad School of Business and the The Eli Broad Graduate School of Management at Michigan State University. He can be reached at sandor@broad.msu.edu. For more information, visit www.broad.msu.edu.

Today's procurement leaders aim to be their suppliers' Customer of Choice, to deliver a Sustainable Competitive Advantage, and to be an Indispensable Business Partner. If those are going to be meaningful goals, there need to be metrics we can apply to measure our progress.

By now, all major multinational companies understand that their cost structure is dominated by what they spend on purchased goods and services. Further, an increasing number of firms recognize the opportunity from the sheer size of outside spend relative to the cost of goods sold (COGS) plus the historically limited attention to the supply function. When these two factors—size and neglect—are combined, it becomes evident that improved supply management may be the best way to improve overall competitiveness. Accordingly, supply management leaders are articulating grand visions for supply management that I refer to as "illustrative goals." The most common are:

1. be the Customer of Choice (CoC);
2. deliver an absolute and Sustainable Competitive Advantage (SCA); and
3. be an Indispensable Business Partner (IBP).

I call these goals illustrative for three reasons. First, no one ever really expects them to be completed or the goal to be fully reached. Second, there is rarely a "hard number" attached to them. Third, they seem to have the flavor of a moral platitude as opposed to a well-defined objective—like cod liver oil, they must be good for your organization.

Although few organizations assign a metric to track their success, these illustrative goals have grown steadily more ambitious as supply management has increased its scope and organizational influence. Still, for these goals to be more than moral platitudes, we must be able to measure our progress.

In celebrating my 40th year in supply management, I want to examine the way I believe we should measure progress against some current, long-range, illustrative goals routinely espoused by private sector supply management leaders. In addition to my own musings around overarching supply management objectives, I've also included some of the experience passed on by three icons of the supply management world; R. Gene Richter, Wayne Vaughn, and Dave Nelson.

Three Illustrative Goals

Let's start by defining the three illustrative goals.

1st Illustrative Goal: Customer of Choice—Supplier Relationship Management (SRM)

SRM is essentially a set of organizational processes and attitudes intended to enhance collaboration with suppliers for the mutual benefit of the buying and selling firms. The best examples of successful SRM extend beyond individual buyer/supplier relationships to include entire supply networks. When done properly, open and trusting collaborative processes achieve better results than can be achieved through traditional combative price negotiations and unilateral bullying. As the U.S. auto industry learned, beating up a supplier on price might make supply managers feel

as if they are doing their jobs, but the resulting cheap price may end up costing the organization more in the long run than the initial savings. Simply put, combative negotiation is seen as a zero-sum activity while collaboration is non-zero-sum. Some examples are shown in Exhibit 1.

At the most basic level, non-zero-sum collaboration (collaboration that adds shared network value) rests on the simple concept that two heads are better than one. The recent explosion of interest in SRM reflects our increasing reliance on external constituencies (usually suppliers of some type or another) as firms buy more than they make or do, along with the growing recognition that outsiders may have more knowledge and better perspective than insiders.

EXHIBIT 1

Combative Negotiation Vs. Collaborative Negotiation

Zero-Sum (moves network costs with little, no, or negative revenue impact or network profitability)	**Non-Zero-Sum** (eliminates or reduces network costs, improving network profitability and/or enhancing revenue)
Extend Payables	Reduce waste & network total cost of ownership
Combative negotiations	Reduce inventory
Hold harmless clauses	Reduce lead-time & enhance flexibility
Transferred warranty obligations	Improve manufacturability & design
Imposed performance fines	Accelerate continuous improvements
Extracted concessions	Increase speed to market
Redundant audits	Advance innovation

Source: Joe Sandor, The Eli Broad Graduate School of Management at Michigan State University

Think of collaboration in terms of a working relationship continuum between buyer and suppliers Tier-1 through Tier-n for the four "Cs" in the following hierarchy:

- **Level 1: Communicate.** Tell one another what we want.
- **Level 2: Coordinate.** Better sequence events for greater efficiency.
- **Level 3: Cooperate.** Support one another for mutual benefit.
- **Level 4: Collaborate.** Work together in ways that earn preferential treatment from others that delivers Sustainable Competitive Advantage to all parties.

2nd Illustrative Goal: Deliver Sustainable Competitive Advantage (SCA)

Collaboration results are closely linked to the second illustrative goal of delivering a Sustainable Competitive Advantage. Goals one and two share relationship outcomes: Is the result of the collaboration innovative, unique, exclusive, differentiated, desired by customers, difficult to copy, confer an absolute cost advantage, and is it sustainable? Absent these desired outcomes, the buyer/supplier relationship probably does not deliver genuine strategic advantage. Now, this definition severely limits the use of the word collaboration. Such collaboration provides the RIGHT good at the RIGHT cost (the costs that best motivate and reward a given supply network). Exhibit 2 illustrates the difference in positioning, activity, and outcome between the typical "6 Rights" of holistic supply management.

3rd Illustrative Goal: Be a Destination Function and an Indispensable Business Partner

I like to position the goal to be a sought-after, Indispensable Business Partner as part of supply management talent enhancement. To a large extent, talent determines how well the above 6 Rights are realized. Differential talent combines commercial supply management expertise and cross-functional/cross-supplier network integration acumen. The need to attract, develop, and retain supply management talent has always been a key objective for exemplar supply management organizations. Rigorous processes are used for skill gap identification and closure. Identifying, monitoring, and tracking high-potential employees have become commonplace among winning firms, as has defining explicit cross-functional assignments for advancement. All organizations can improve their talent management processes and the best firms are continually vigilant in staying ahead of the talent maturity curve (Exhibit 3).

What's striking about talent management today is the view that senior supply management heads clearly regard

EXHIBIT 2

6 Rights of Holistic Supply Management

	Right Quantity, Place, Time & Price	Right Thing & Cost
Focus	Efficiency	Effectiveness
Knowledge	Accurate: react and exploit	Create: predictive & value-driven
Process	Implement Best Practices	Shape Demand
Relationships	Coordinate/cooperate	Collaborate
Outcome	Required to stay in the game	Game changer to win the game

Source: Joe Sandor, The Eli Broad Graduate School of Management at Michigan State University

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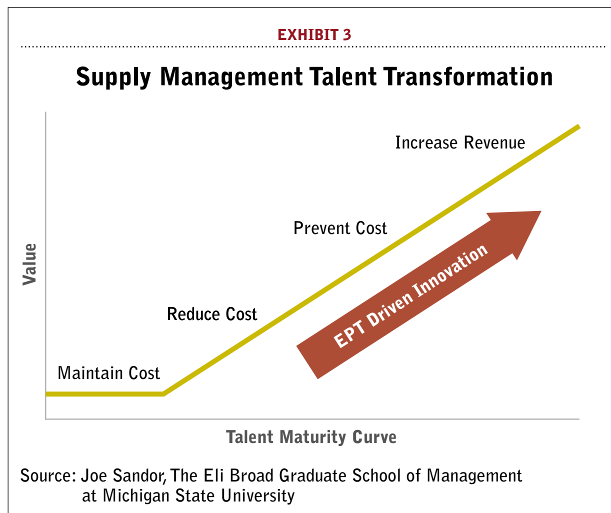


talent as the critical enabler of their other two illustrative goals—Customer of Choice and Sustainable Competitive Advantage. In the process, supply talent management is being articulated in a profoundly different way. In the past, sets of skills were matched to such needs as analysis, process, systems, quality, and negotiations—the skills required to perform commercial operations and technical/market assessments. Now, the emphasis has expanded to include integrative skills that not only tackle cost but address the value of a firm's products and services to its customers. Thus, supply management leaders see the desirability of their people by other functions in the organization as proof of talent enrichment.

One way to look at the "business partner role" is through a value/cost ratio. Traditional supply management talent skills attack the denominator, while business partnership talent focuses on the numerator. Being an Indispensable Business Partner demands boundary spanning skill to become gateway functions that link supplier networks to firm problems and opportunities in ways that drive innovation and accelerate new product development. Nowadays, there is an additional expectation that supply managers can simultaneously attack and create. Both require interaction with multiple stakeholders inside and outside of the firm to effectively orchestrate cost leadership and revenue enhancement.

Developing Appropriate Measurements

Now that we understand them, can we measure our progress toward these three illustrative goals? I contend that we can. For instance, to understand how well suppliers perceive their relationship and accordingly extend preferential treatment to their best customers, ask suppliers. To understand if supply management is delivering an absolute, Sustainable Competitive Advantage, look at the firm's financial statements and assess the quality of supply management process execution. To understand the role of talent to supply management's illustrative goal to become an Indispensable Business Partner, ask key internal stakeholders. The next three sections elaborate on these straightforward notions.

How to Measure Customer of Choice (CoC) Illustrative Goal

If networks, rather than firms, compete, it follows that the most competitive network is the one that works most collaboratively with its suppliers and customers from mother earth to end consumer. That concept underpins the Customer of Choice (CoC) goal: Supply management leaders believe that supplier collaboration and supplier loyalty drive revenue growth, reduce costs, enhance innovation, and mitigate risk. Understanding how relationships work, developing trust and openness, and measuring the quality of supplier perceptions are thus seen as vital components for the long-term health and success of the firm and its extended networks.

Most buyers honestly believe that they are superior customers, and that their suppliers and other potential suppliers covet their business over others. As a result, they think they are their supplier's CoC. As mentioned earlier, the desire to be the CoC, to delight suppliers, and to earn preferential supplier treatment, is becoming the new mantra for enlightened supply management executives.

But, in my experience working with numerous firms, candid supplier feedback tells a different story. Maybe we don't know what we don't know:

- only 5 percent of all customers receive preferential treatment;
- 75 percent give allocation preference to top customers (top not necessarily biggest);
- 82 percent give most preferred customers first access to new products and technologies;
- "key account" does not necessarily mean preferred;
- perceived willingness to collaborate secures preference over time; and
- low-cost-to-serve customers are as attractive to suppliers as low-cost suppliers are to buyers.

Suppliers learn to tell buyers what they want to hear. Often, what the buyer wants to hear is at odds with what the seller actually believes. Sellers are justifiably suspicious. As one example, witness large multinational company buyers who are unilaterally extending payables and demanding across the board price reductions independent of underlying costs.

As mentioned earlier, if a company wants to know if it is the CoC for its suppliers, the logical thing to do

R. Gene Richter, IBM, SPS & Internal Customer Approval, Top 2 Metrics

R.Gene Richter is a supply management icon. He is the only three-time winner of the *Purchasing Medallion of Excellence* Award (Black & Decker, Hewlett-Packard, and IBM). The prestigious, annual awards for supply management excellence from ISM/MSU are named in Richter's honor.

When Richter spoke to my MBA class at the University of Chicago, he was asked about his greatest achievement at IBM. He could have said his team played a large part in saving IBM from bankruptcy. Or, he could have referenced the over $9 billion in savings his team achieved in five years. Instead, Richter said that his greatest accomplishment was persuading IBM's CFO, CEO, and Board that the two most important activities of supply management were achieving industry leading supplier perception and getting solid internal customer approval and recognition for the value his function delivered. He felt that there was no better way to measure ultimate supply management success. If supplier perception and user approval are strong and improving, Richter said, genuine competitive advantage will follow.

Wayne Vaughn, Harley-Davidson Integrated Plating Services (IPS) Team

When Wayne Vaughn, head of Harley-Davidson's Integrated Plating Services, spoke to my MBA class at Michigan State University, he described Harley's superb supplier relations by recounting how Harley made a quantum leap in chrome. The jewel-like shine and performance quality of chrome is an enormously important and significant product differentiator for Harley-Davidson motorcycles. But, unless something different was done, Harley would not meet demand, quality, or complexity needs for platted chrome parts starting in 2001. Vaughn responded by issuing a challenge to key stakeholders: These included Harley's engineering, operations, styling personnel, and three principal suppliers. With the help of a neutral facilitator, the IPS group developed and executed shared accountability and action plans.

The accomplishments of the IPS team were phenomenal. They not only conquered daunting production problems, they also achieved quality improvements that were considered impossible. In the process of solving capacity issues in the supply base, more robust risk mitigation, production planning, best practice sharing, and warranty reductions were instituted. Profound new knowledge was created. The list of achievements was staggering. But, according to Vaughn, the most important enablers were near total network visibility and genuinely shared commitment.

Dave Nelson, Honda Head of Supply Management

Dave Nelson, another supply management icon, is still going strong despite having "retired" as head of supply management for TRW, Honda, John Deere, and Delphi. He is one of the world's best-recognized supply management thought leaders and chairman emeritus of the Institute of Supply Management.

When Dave Nelson spoke to my MBA class at the University of Chicago, he challenged the widely-held accounting convention that savings are greater than avoidances. But are they really? Nelson asked the class what savings opportunities would exist if you perfectly launched the model year, specified all of the components, configured material flow, and managed inventory.

According to Nelson, the answer was essentially the difference between Honda and Toyota versus GM, Ford, and Chrysler. While the Big Three were claiming significant savings, the Japanese automakers were diligently meeting target costs. What's more, Japanese firms operating in the U.S. as well as their U.S. suppliers were highly profitable while the domestic automotive industry was inching closer and closer to bankruptcy. In other words, savings are often nothing more than fixing a mistake that shouldn't have been made in the first place. Nelson's real takeaway: Preventing cost requires collaboration while savings only needs a hatchet.

is ask the suppliers. The best way to get honest supplier feedback is through anonymous third party administered surveys. But, what questions, which suppliers, and how frequently should the supplier perception survey be administered? Again, the recommendations regarding these three questions come from my experience and not any study.

First, appropriate stakeholders should be tasked with the development of the supplier perception survey questions. Establish a cross-functional survey core team. The quality of the survey along with the organization's ability to learn from it in ways that add value to both the buying firm and its suppliers is partly shaped by internal "buy-in." An introductory notification should alert suppliers of the survey's purpose and timing. This announcement should be personalized, thanking them in advance for their interest and participation. Ideally, this letter should be sent under the dual signatures of the CEO and CPO.

As in most things, keep the survey simple. Don't exceed 40 questions; 20 is a good target. The more questions you ask, the lower the response rate. Try to construct a survey that will be completed in an average of 10 minutes: Survey geeks have loads of advice on question

development. Five-point scales seem to work fine and answers can also include trending direction. Finally, it should be anonymous.

At the least, survey questions should address the following areas:

- trust and openness;
- perceived working relationship quality;
- perceived process quality (technology, administration, IT);
- communications (transparency/honesty, accuracy, timeliness, and adequacy);
- actions that help;
- actions that hurt;
- supplier willingness to invest on behalf of buyer;
- supplier perception of buyer's concern for supplier's gross margin;
- ability to present one face;
- rewarding excellent performance;
- commitment to provide on-going preferential treatment to each other;
- Customer of Choice/degree of preference;
- potentially trending questions; and
- comments (either open-ended, directed to a question or a specific topic, or both).

Next, who should participate? The answer to that question is essentially a question of whose opinions matter. Obviously, the feelings of "key" suppliers matter. Some firm's may, however, define "key" so narrowly that there are too few suppliers surveyed. My rule of thumb is to create a survey invitation list that selects the top 20 percent of suppliers in number that represent around 80 percent of the total spend. It's difficult to do meaningful comparisons and data segmentations without a decent number of respondents. Finally, the survey should achieve a minimum 50 percent response rate. Under 50 percent response rate indicates poor administration, wrong or too many suppliers, inadequate lead time and notice, and/or too cumbersome a survey instrument.

How often should supplier perception surveys be done? There are always trade-offs in survey frequency. If the survey occurs too often there may not be enough time between surveys to do anything meaningful that would or could move the perception needle. Also, survey fatigue can limit responses if done too frequently. On the other hand, if the supplier perception survey occurs only rarely and irregularly, this is a clear signal to suppliers that the buyer is not particularly concerned with their perceptions. Yearly survey frequency is the best option for most firms. Survey results should be shared at a high level with suppliers. It is also a good idea to position survey results as a major agenda item for annual supplier meetings. Regardless, maintain a regular drum beat for the supplier perception survey even if it is every other year.

And, obviously, show suppliers as well as internal stakeholders that the survey results matter. What's done as a result of the survey is more important than idiosyncrasies of the survey instrument, audience, and timing.

How to Measure a Supply-Driven Sustainable Competitive Advantage (SCA) Illustrative Goal

Measuring the illustrative goal of delivering a Sustainable Competitive Advantage (SCA) is easy for one reason and hard for two. It's easy because the metrics are well established and credible. It's hard because it is difficult to separate and quantify supply management's contribution to overall firm performance and it requires steady process faith distinguishing between activities and achievements. As previously stated, supply management leaders believe there is a strong link between superior supplier relationships and competitive advantage. Therefore, a supply-driven SCA ought to reduce the firm's total cost of ownership and increase the firm's revenue and innovation (add value) as shown in Exhibit 4.

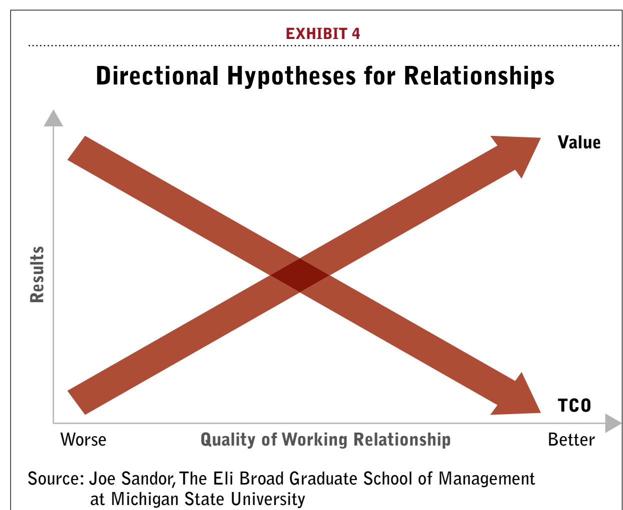
The easy metrics for SCA are overall firm numbers like stock price, earnings per share, and price earnings ratio. Supply management positively affects costs and revenues as follows:

1. Revenue grows while costs remain the same.
2. Revenue grows while costs go down.
3. Revenue remains the same while costs go down.
4. Revenue goes down but costs decrease more and faster.

A firm improves its stock price and P/E ratio versus the relevant peer group directly as a result of one of

EXHIBIT 4

Directional Hypotheses for Relationships



Source: Joe Sandor, The Eli Broad Graduate School of Management at Michigan State University

those supply driven results. Now, the sticky part—how much credit (or blame) can supply management claim? Remember the old saw, success is more often achieved when we pass credit and take blame.

Translating supply management results into the language of finance is necessary but not sufficient. Sustainable competitive value in the context of supply management is the result of structured process execution. So long as supply management organizations continuously improve their talent, enhance supplier relationships, and increase their internal customer approval, they will also improve their relative contribution to firm performance over time in both the cost and value arenas.

Although the criteria for process evaluations can vary by spend pool, general components are similar to well-known lean diagnostics and business process engineering (or re-engineering) activities. Time and space aren't sufficient to cover the wide range of these features. But, the point is fairly straightforward. We know how to build and evaluate processes. All that's required is the managerial mindset that adds and/or elevates robust and ongoing evaluation of commodity team performance as our SCA metric.

How to Measure Supply Management's Status as an Indispensable Business Partner (IBP) Illustrative Goal

The metrics recommended for internal approval are similar to those for supplier perception. In this case, we don't ask suppliers, we ask the supply management's customers how well their needs are being served. According to results of various studies, along with the griping supply management folks seem to constantly do, it's believed that less than half of the internal stakeholders understand or appreciate the value of supply management. Most supply management leaders feel this lack of internal customer appreciation prevents them from properly staffing or training. Clearly, supply management leaders must do a better job of communicating their value (and/or provide more value) in order to secure appropriate resources to execute their mission.

In addition to results from an internal customer approval survey, we could also look at some data covering the extent to which supply management personnel are sought by other functions; poached by other companies; increasing in relative Hay points; and seeking and obtaining advanced degrees or certifications. But, these indicators are anecdotal. A structured survey is a better metric.

Here are several internal customer approval survey suggestions. Ask key internal stakeholders to rate supply management effectiveness against a list something like the following:

1. Supply management people are knowledgeable in their commodities—suppliers and industry cost structures—and are regarded as an effective gateway for supplier ideas.
2. Supply management people treat me and our suppliers professionally and ethically.
3. Supply management understands my business needs and selects suppliers that meet my requirements.
4. Supply management negotiates effectively with our suppliers.
5. Supply management manages supplier relations effectively, thus delivering superior delivery, cost, technical support, and supplier innovation.
6. Supply management routinely benchmarks best practices and uses this information to enhance the value delivered by our suppliers.
7. Supply management helps me meet my business objectives.
8. Supply management processes and systems improve my productivity and are user-friendly, up-to-date, and appropriate.
9. Supply management provides accurate and timely data to support my business.
10. Supply management effectively engages all significant internal stakeholders in strategic sourcing, planning, and execution.

Finally, ask for advice by allowing survey respondents to provide comments. There are lots of ways to do this. Here is a version of one of my favorites: If the supply management department could make one change this coming year that would make your life easier, what would it be? Finally, open-ended, unstructured comments are often illuminating.

Everything Gets Better

The three observed illustrative goals—being the Customer of Choice to Suppliers, delivering an absolute Sustainable Competitive Advantage, and developing talent that is considered indispensable by internal customers—are powerfully connected. These holistic illustrative goals require new metrics, or at least a more outward focus to existing metrics. The interconnection and similarity of these expanded goals require an evolving and expansive set of complimentary metrics. Look closer still, and what really matters with regard to supply management performance is superior talent development to drive enhanced supplier perception and internal customer approval.

These goals are overarching to the extent that all of our historic measurements, such as quality, inventory, delivery, design, and cost are directly correlated. When supply managers pull these three levers correctly, everything gets better.

The Tip of the (Inventory) Iceberg

By Sandeep Gupta and Charanyan Iyengar

As every sailor or fan of the movie "Titanic" knows, it's not the tip of the iceberg that gets you; the real danger is the ice hidden below the water's surface. Even though you navigate around the visible ice, the hidden ice can still sink your ship.

High levels of inventory can have the same effect in the retail supply chain. As a Kurt Salmon analysis noted, most retailers carry anywhere between 20 to 40 percent surplus inventory. The reason for this build up, in our experience, is that retail professionals are convinced that if they have inadequate inventory for customers, their businesses are bound to fail. In order to avoid such possibility, the mantra of "keep it filled" conveniently becomes the platform for a second objective of "buy it cheap."

The failure to manage inventory and contain this surplus becomes the source of what we call hidden costs. These are not the typical costs like inventory carrying costs. Instead, they are costs that do not get associated directly with inventory, but are caused by moving, storing, and handling excess inventory in the enterprise. They affect an organization's profitability and productivity. What's more, they could have been avoided by better inventory management.

We strongly believe that most retailers bleed cash because they fail to identify hidden costs. This leakage is a huge, untapped area for organizations to add a few percentage points to operating profits—points that could equate to millions for some organizations. That's the payoff.

In this article, we will first share a few examples of the root causes of hidden costs; then we will delve into how these root causes translate to various challenges/issues that are visible; lastly, we will propose a few initiatives to address the root causes for longer term business benefits. We hope that this will help retailers discover, diagnose, and capitalize on opportunities to improve their operating margins.

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Charanyan Iyengar is a supply chain professional with seven years of experience across consumer goods, online retail, hi-tech, and oil and gas sectors. He is currently the inventory manager for a leading e-commerce retailer in New Delhi, India and can be reached at charankvi@gmail.com.

Are You Looking at the Complete Picture?

Beyond the usual reporting and monitoring through financial metrics, inventory is rarely treated as a source of strategic advantage. Equally, managers whose actions affect inventory levels are rarely held to account. It is not surprising to see large volumes of inventory getting pushed into business operations to achieve the twin mantras of buying cheap and keeping the shelves filled. That is especially true when a retail business is growing rapidly.

We saw this first hand during an engagement with the subsidiary of a large and successful UK retailer. This client was seeking a step-change in its operating margins but it did not have sufficient visibility or clarity on where to find such opportunities. In fact, the client didn't know if it even had any problems.

While the retailer had consistent revenue growth over a five-year period, our analysis uncovered that revenue growth was supplemented with an even

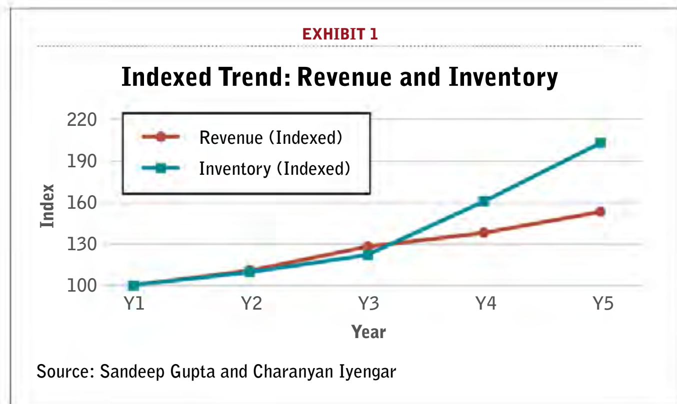
While most retailers focus on the inventory that is visible in their stores and distribution centers, too few pay attention to the hidden costs of high inventory.

sharper increase in the average level of inventory on hand (Exhibit 1).

When pressed, the client offered a few natural hypotheses to justify such a dramatic rise in inventory: Opening new stores and expanding into new geographies and markets and/or building up supply capacity before creating customer demand in the market through launches, advertisements, and promotions. There is, of course, some truth in each of those responses, which is the reason that managers often accept them. We believe, however, that there are other reasons why inventory builds up in retail organizations.

EXHIBIT 1

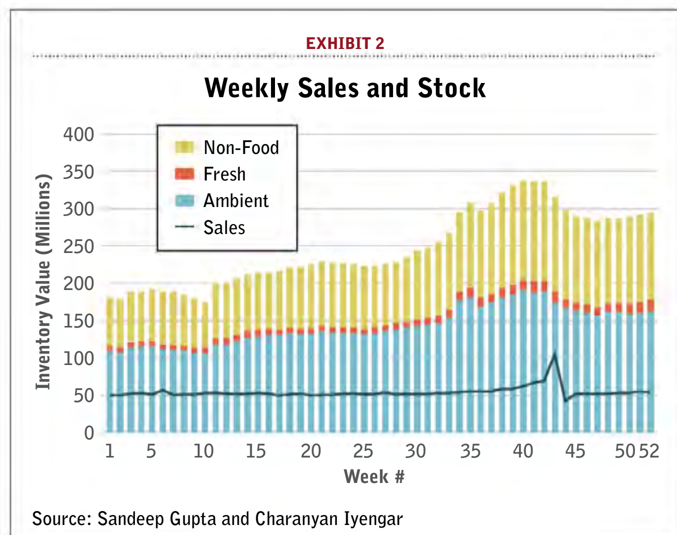
Indexed Trend: Revenue and Inventory



Source: Sandeep Gupta and Charanyan Iyengar

EXHIBIT 2

Weekly Sales and Stock



Source: Sandeep Gupta and Charanyan Iyengar

Why Do Inventory Levels Build Up More than Demand Requirements?

Working with a number of clients, we have identified three root causes that lead to the build up of large inventories, which, in turn, result in hidden costs.

1. Lack of ownership of inventory. On the premise that "what gets measured will get done," every manager has metrics or key performance indicators (KPIs). At regular frequency, top management decides business targets that percolate down the organization and manager bonuses are dependent on achieving such targets. Hence, anything that falls outside of their line of sight (or KPIs) takes a back seat.

Unfortunately, inventory falls in the category of the ignored. Just to pick a simplified example—the metric of annual sales has a clear owner, the sales function. However, there is rarely a clear owner for inventory levels.

Take the case of our client. This retailer had been profitable and had continued to increase its market share through revenue growth. Interestingly, as illustrated in Exhibit 2, inventory levels also continued to grow. The sales and stock holding over a 52-week period showed that while sales remained stagnant (barring the pre-Christmas period), inventory continued to grow. Every month, corporate management reviews continued to reflect a poor performance on inventory compared to target. At the end of the fiscal year, inventories were 35 percent higher than budget.

As inventory monitoring was always at a subsidiary-country level, there was little or no awareness of where in the supply chain inventory was sitting and who was making decisions that caused a continuous rise of inventory.

When we looked closer, we found that by focusing on macro level data, the retailer's headline metric never highlighted the fact that there were some product categories with appalling levels of inventory cover; two product categories carried enough stock to cover demand from six months to more than a year.

Clearly, the drive for on-shelf availability and forward buying had taken priority. In all likelihood, the retailer considered itself very effective—achieving customer satisfaction by high on-shelf availability; yet its performance was nowhere near efficient. The opportunity cost of capital tied up in inventory alone was almost $64 million per year; even a small improvement would have made a big difference to our client's profitability.

The strength of these insights lends credibility and robustness to our view that high inventory reflects a lack of ownership.

2. Absence of enterprise-wide perspective. In our article "Eight Building Blocks for Successful S&OP," (*SCMR*, November 2013) we highlighted the importance of an enterprise-wide view. For instance, in organi-

zations with a successful S&OP process, every function from sales to manufacturing to distribution knows the forecast and connects with each other in a synchronized manner.

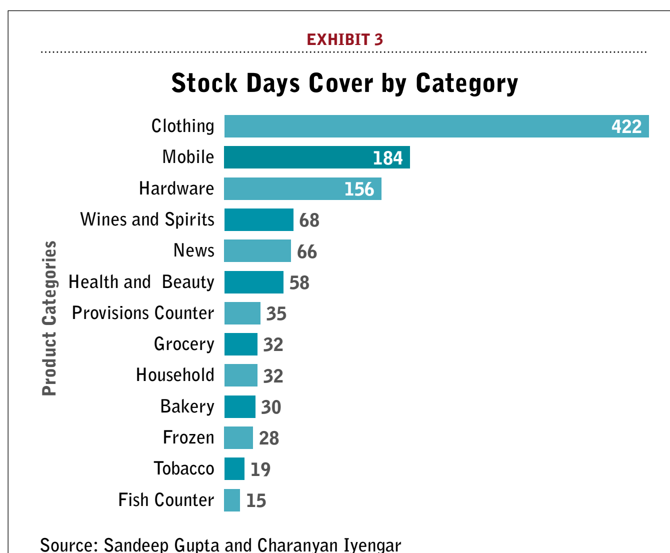
Yet, despite best attempts, only a handful of organizations have the discipline to develop and sustain this end-to-end perspective. In most cases, each function operates almost in isolation. That was the case with the way our retail client's buyers approached replenishment.

In almost all retail organizations, a standard KPI for the commercial buying/merchandising team is gross margin—the cheaper the organization buys, the higher the gross margin. One obvious consideration is to buy in bulk, or forward buying, for price discounts. Our client's merchandising/buyer team thought no differently; it went all out to buy in bulk, get that price break, and maximize gross margins. Since little of what the retailer sold was seasonal, the buyers believed that everything they bought would get sold eventually.

The result? The buyers achieved their gross margin targets, and their individual performance bonuses. Meanwhile, inventory continued to build up in the supply chain. If the business needed 500 plasma TVs and the vendors extended a "not to be refused" price for lots of 750, the buyers ordered 750, achieved superior gross margin, and exceeded their KPI. But, the business received 50 percent more TVs than it needed.

A few key questions reared their head:

- Is the buyer organization speaking to the fulfilment organization?
- Are the savings from forward buying greater than the hidden costs of holding inventory rather than replenishing as needed?



Source: Sandeep Gupta and Charanyan Iyengar

The answer in this instance was no. That's why an enterprise-wide, seamless approach is critical—it ensures a cross-functional view and creates a common language for use across departments, systems, external partners, and suppliers. When consistent and high-quality end-to-end process flows get created, it eliminates gaps and duplications and enables the enterprise to identify opportunities for cost and performance improvement.

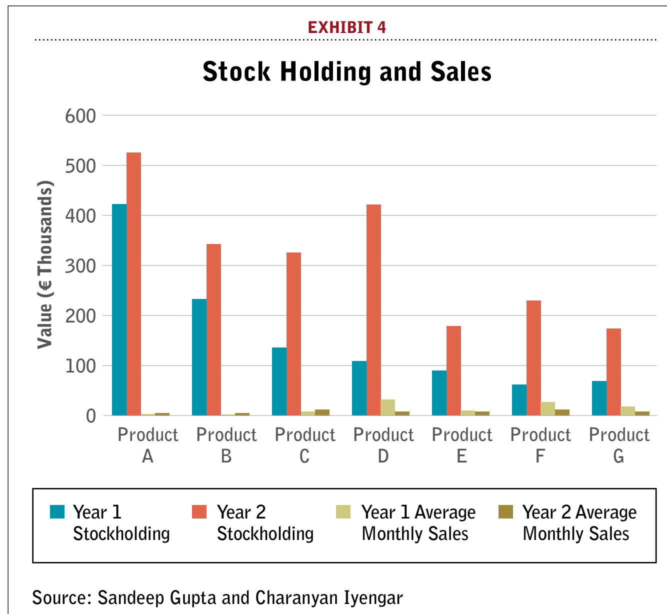
3. Multiple interventions in replenishment. One of the tools from Lean methodology is the Replenishment Pull System (RPS), where "products are created at a pace that matches customer demand." The theory behind RPS suggests that "demand [will] pull the inventory for its replenishment;" like filling our gas tanks, we will replenish what we need, when we need it, and only in the quantities that we need. When applied correctly, as is the case at Wal-Mart, the benefit of RPS is enormous.

If our client had adopted a meaningful process for replenishment, we would not have seen the continuous build-up of inventory cited in Exhibits 1 and 2. The natural fluctuations in demand would surely have a short-term impact on the inventory levels, but the variation would have been within reasonable boundaries. You would also expect that if a product was not selling, additional procurement would not happen unless it was backed by specific reasons such as a major sales promotion.

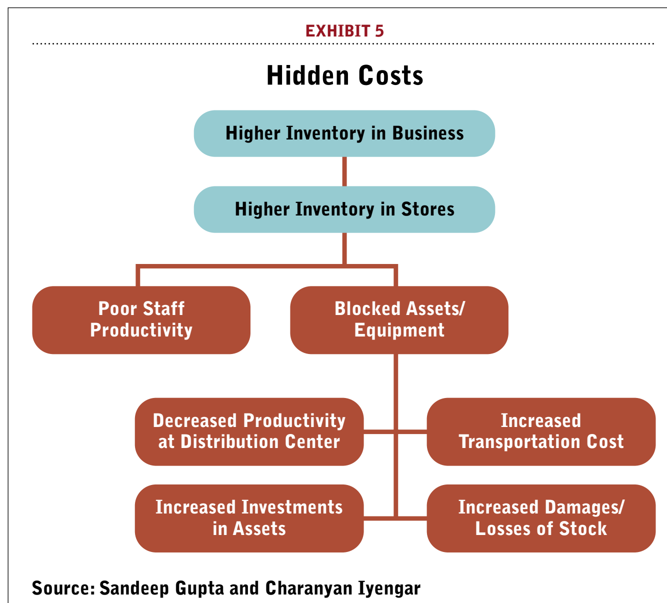
However, we discovered in this engagement that the pull signal from consumer demand was distorted as it moved upstream from the stores to the buyers. Some significant interventions are discussed below.

- ***By stores:*** Store managers knew the neighborhood market better than anyone else. They attempted to include their knowledge of local events, shopper tastes and preferences, the local competition, and seasonality. As a result, the managers would modify the information on volumes for replenishment.
- ***By buyer's team:*** Unfortunately, the store managers' perspective were ignored by the buyers; the latter were driven by the aim to get the cheapest landed cost, increase gross margins, and maximize bonuses. What's more, the buyers would also purchase based on plans for marketing promotions. Unfortunately, these promotion plans were rarely communicated to the stores until the launch date was near.

For this client, the actions of the buyers created a snowball effect, all leading to increasingly



Source: Sandeep Gupta and Charanyan Iyengar



Source: Sandeep Gupta and Charanyan Iyengar

inaccurate information flowing through the business. Procurement continued to buy additional volumes even for products that weren't selling at all or were extremely slow movers. We found that hundreds of thousands of dollars were tied up in non-moving stocks (Exhibit 4.)

As we identified the root causes of high inventory in our client's supply chain, we began to look at the financial impacts beyond the amount of capital tied up in non-moving stock. That is, the hidden costs of high inventory.

What are the Hidden Costs of High Inventory?

The Japanese have an expression: "Inventory is a narcotic." It makes you feel good, but it hides problems. Those problems as far as inventory goes can be quality issues, long lead times, production problems, and inefficiencies.

In the retail supply chain, high inventory may make buyers and managers feel good because they achieve improved gross margins while keeping the shelves filled, but there is a cascading effect across the value chain that triggers other hidden costs that rarely get directly attributed to inventory.

Exhibit 5 summarizes such effects. The red boxes identify some hidden costs.

1. Poor staff productivity. There is no bigger crime in retail than having product in the back room while the shelves are empty. In most retail outlets, the back stock room is a small area that is getting smaller all the time. Product is pushed out onto the floor as retailers maximize their displayed shelf space to drive sales.

Too much inventory, however, blocks the back-store space, reduces the visibility of products available in stock, and slows down the staff. They know that stock is available somewhere because their inventory records tell them so. But the effort required to locate the product requires moving things around and shuffling other products to create access to the far corners of the stock room. Soon enough, a five-minute job takes 20 minutes of non-value add activity and on shelf-availability takes a dive.

Solutions to this problem typically involve overtime or adding more staff, driving up payroll costs. Simply put, the symptoms of the pain get attention, but not the root cause.

We validated this in our clients' Value Stream Map. Some categories had >34 percent of non-value-added activities. These non-value-adds implied:

- increased time to find the right product-holding trolleys for replenishment;
- increased time to complete gap scans because stock in the back-room could not be found;
- increased time to perform stock counts and hence increased frequency of stock counting;
- increased time for investigation to resolve availability/shrinkage issues; and
- decreased ability to follow FIFO or FEFO as difficulty in locating stocks, resulting in write offs.

The productivity of store staff has a direct and negative correlation to the volume of inventory managed. The irony, however, is that the staff does not have any influence over how much inventory it has to manage. This adds fuel to the fire and creates a significant hidden cost through the various non-value added activities that now need to be performed.

In light of the above, we encourage every retail professional to consider the following:

• How much extra spend do you incur in the extra hands, extra time, and extra effort that goes into managing excessive stock?

• How much of avoidable disguised unemployment exists in your stores?

• How could such resources be freed up for better usage?

2. Blocked assets/equipment. Inventory movements from upstream to downstream are facilitated by a variety of materials handling equipment (MHE), including forklifts, pallets, dollies, reusable plastic containers (RPCs), roll cages, and wheeled racks. They are all used to handle and ship stocks from DCs to stores, with some assets. The RPCs, roll cages, and wheeled racks, make regular return trips.

When the inventory supplied to the stores is higher than forecast, the volume of RPCs and roll cages coming into the stores is higher than the volume emptied by replenishment. This is because replenishment is driven by customer demand. Because the stores need to hold the stocks somewhere and have limited space in the back room, RPCs, roll cages, and wheeled racks become the most convenient option to hold extra inventory. You can guess what happens next.

• ***Decreased productivity at distribution centers.*** When stores start using RPCs and roll cages for storage, the circulation of such equipment comes down. The larger the network, the more the volume of such RPCs and roll cages are pulled out.

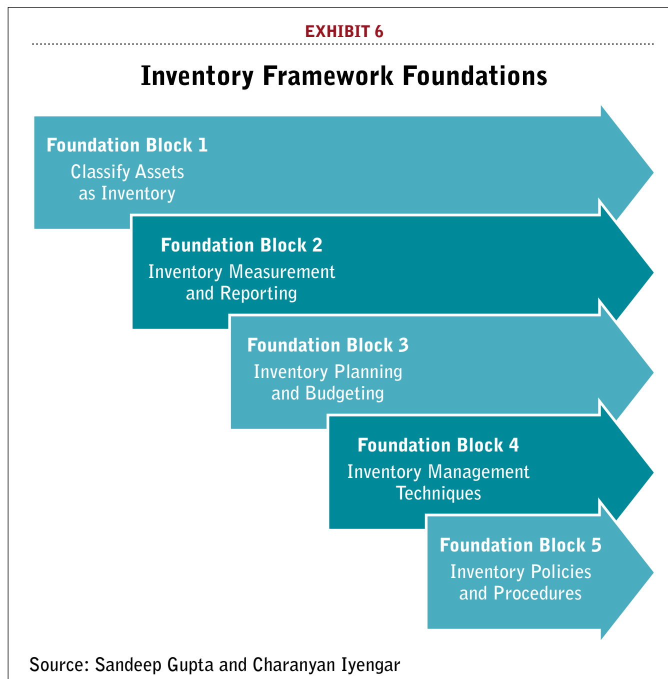
DCs do not get a clear view as to why the stores are holding back these assets. They only see fewer and fewer assets being provided to them. To make it up, they use their available (alternate) assets for applications for which such assets are not designed. That might mean that products can't be stacked beyond a reasonable height. As a result, it takes more of such alternate assets to stack similar volumes of inventory. With more storage assets to handle, the DC staff needs more time for picking and productivity drops; often more floor operatives are drafted into the picking activity to ensure that vehicles are loaded on time for onward journey to the stores. The time taken to accomplish the same task becomes higher and the productivity decreases.

• ***Increased investments in assets.*** As the inventory flow increases, the DCs feel the need for additional equipment. In parallel, as the circulation of RPCs/cages slows down, management finds itself approving a CAPEX business case to buy more RPCs/cages.

All of this costs money. The business case presented to management would show various trend charts for increased volumes from suppliers, increased transportation to stores, and hence the justification for the request of additional capital spend. Yet, most of this additional investment could have been avoided—if the root cause was known to the decision makers.

• ***Increased transport cost.*** Vehicle utilization is a key performance measure for retail operations. As an extension to the reduced productivity of staff at the DC, the same volume of stock now requires more RPCs/cages to be moved. No matter how much the transport team tries to optimize its task, they need more vehicle trips to the stores. While this might be (wrongly) interpreted as a sign of increased business, the reality is that transportation costs will increase. If the haulage is an outsourced activity, typically, most retailers sign up for annual contracts with haulers. Based on historical data, negotiations and commitments are made. The volume of increased movement leads to higher commitments by retailers, all adding to operational costs. Similar situations, perhaps with worse consequences, could happen if the retailer operates its own fleet, incurring more CAPEX cost on buying additional vehicles.

• ***Increased damages/losses of stock.*** Our client's DC held significantly large volumes of inventory. As staff moved around the warehouse with aisles full of stocks, product was damaged. Worse, was the method by which an operator was measured on his or her performance: the KPI of "picking rate." The lack of appropriate RPCs/cages together with unsuitable metrics formed a dangerous combination to destroy value. Forklift trucks crashing into pallets or cartons falling around the pick lines became a frequent occurrence. Frequency of picking errors reported by stores was on the rise, too. What's more, there was always a strong chance that some of these damaged products would make it to the store, but not in good, sellable



shape. That led to mark downs in order to move the merchandise.

How Can We Uncover Hidden Costs?

We have just identified some of the root causes of excess inventory as well as the hidden costs associated with handling too much stock. What can organizations do to uncover and address hidden costs? Consider the following three messages.

Message 1: Establish a formal, documented Inventory Management Framework. Consider adopting a formal, documented Inventory Management Framework. Organizations that have adopted a framework for any business process would confirm the potential benefits. In general, a framework will:

• Ensure a cross-functional view by creating a common language for use across departments, systems, external partners, and suppliers. This will reduce the cost and risk of system implementation, integration, and procurement.

• Help adopt a standard structure, terminology, and classification scheme for business processes to simplify internal operations and maximize opportunities.

• Apply disciplined and consistent business process development enterprise-wide, allowing for cross-organizational reuse.

• Enable the understanding, designing, development, and management of IT applications in terms of business process requirements so applications will better meet business needs.

• Create consistent and high-quality end-to-end process flows, eliminating gaps, and duplications.

• Support identification of opportunities to reduce costs and improve performance.

The framework should be formal, documented, and published to avoid any misinterpretation or ambiguity in understanding. It becomes a point of reference for any user, something that any employee can go use to navigate their queries. Such a framework could be built using the foundational elements seen in Exhibit 6.

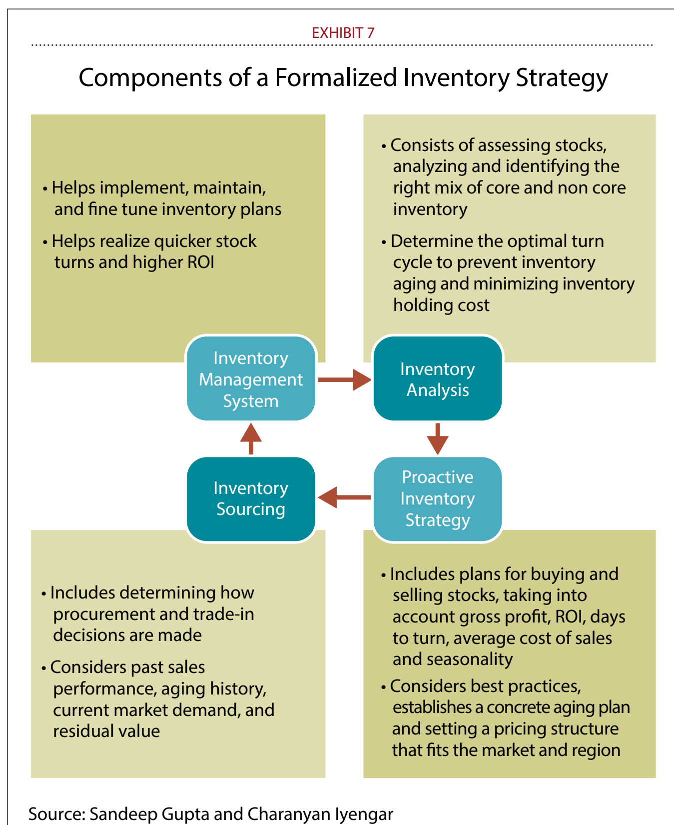
Every framework is rooted in strategic inputs, policies, and guidelines. This holds true for an Inventory Management Framework as well—its roots are anchored in an Inventory Strategy. This strategy itself would have some key components as illustrated below:

Some benefits of an inventory strategy are:

• defines senior management expectations for maintenance, inventory management, and supervision;

• establishes performance measures that support the strategy; and

• enables an organizational configuration that supports inventory strategy and business objectives.



Message 2: Create horizontal, enterprise wide views that cut across functions/departments

Let's don our hats as consumers of a product or service. Now, think of what you experienced when the product or service was delivered.

Different verticals within an organization, such as product development, manufacturing, logistics, warehousing, pricing and packaging, and marketing communication have all come together to deliver that product or service to us. Would your experience be positive if even one of those functions failed to do their part of the job properly? In other words, customers do not experience a vertical. Their experience is the culmination of a horizontal journey; an end-to-end seamless act of actors within an organization.

This is the reason that organizations need to build an enterprise-wide perspective and plug any cracks between the joints. It takes effort to think horizontally, cut across suppliers' suppliers to customers' customers and bring each piece of the jigsaw puzzle to fit alongside the rest. This is a powerful recipe to achieve high performance.

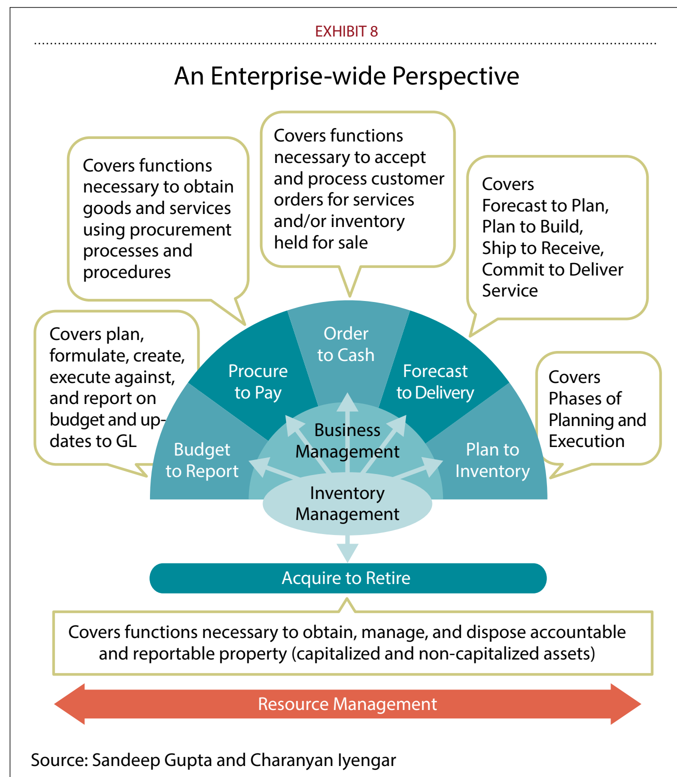
An enterprise-wide perspective is critical because it inculcates knowledge downstream about what happens upstream and vice versa. This supplier-customer orientation within the organization needs to be recognized and acknowledged; treat everyone like a customer and capture the voice of your customer.

Cross-functional processes such as Order to Cash, Procure to Pay, Record to Report have existed for many decades now. Most are not discrete or stand-alone; they cross connect with each other. Interestingly, a number of such enterprise-wide processes have inventory as a common element in some shape or form.

We have been on the journey of introducing such processes in different organizations through the medium of establishing process frameworks that bring and bind the organization together. The authors of this article are confident that organizations will find success through this approach.

EXHIBIT 8

An Enterprise-wide Perspective



Source: Sandeep Gupta and Charanyan Iyengar

Message 3: Functional objectives/KPIs should tie in with each other, driving behavior in a unified manner toward overall organizational goals. We believe that the right metrics will drive the right behavior. The pursuit of achieving defined metrics drives related behaviors; the quality of behaviors has a direct, positive correlation with the quality of metrics. This powerful principle is at the root of success or failure for any organization.

As part of performance management, employees define their goals and then set out on achieving the defined targets. Appropriate mechanisms need to be built within the firm to enable the outline of the correct metrics. It helps to ask the right questions. For example:

• If "on-shelf availability" is the right metric, then how does the organization avoid a myopic approach toward achieving it? Can the organization define a counter balancing metric to manage any potential of undesirable behavior?

• Who is driving the metrics performance and who plays a supporting role in its achievement?

• Could/should the metric be shared by those for whom it influences?

In fact, it may be a bit unprecedented, but some Lean tools such as FMEA or 3Cs supported by brainstorming could actually add significant value to the process of defining appropriate business metrics.

The retail industry will continue to be competitive, with only the fittest enterprises surviving. Unless each function is in sync with others, survival is a question mark. In this competitive environment, inventory management will continue to remain a critical focus area because of its linkage to cash flow, assets, space, and other costs. If retailers are to make the cut, they need to concentrate on eliminating or minimizing hidden costs and avoiding the iceberg.

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The DNA of Supply Chain Executives

By Kai Hoberg, Knut Alicke, Christoph Flöthmann, and Johan Lundin

Who are the professionals who make supply chain management the engine of the firm? We find that many roads lead to Rome: The diversity of supply chain talent resembles the extraordinary, cross-functional nature of the supply chain profession. Here is an overview of the education, career paths, and success factors of supply chain executives.

The daily life of supply chain managers is full of challenging tasks: negotiating last-minute order changes with sales due to new customer requests; defining working capital requirements with the CFO for the next budget period; or reviewing network structures for new emerging markets with suppliers. This diversity is particularly driven by the cross-functional nature of the job: Supply chain managers interact with many departments and people within and across the firm. In a recent discussion, a plant manager in the machining industry, a passionate athlete, shared his view on the role of supply chain managers. "I am an operations guy," he said. "I really need tenacity to bring my production forward and achieve my annual cost reduction target; I need a limited set of capabilities, in particular, staying power like a marathon runner. A supply chain manager is a different type of athlete. He needs all these cross-functional skills, should be versatile, and must coordinate well with all departments. I admire people with these skills. In athletic terms, a supply chain manager should be a like a decathlete—the king of the athletes."

Still, little is known about the backgrounds, careers paths, and success factors of these "decathletes" who intend to make supply chain management the performance engine of the company. In a joint project, our research group from Küehne Logistics University and McKinsey & Company intensively analyzed the gene pool to shed light on supply chain professionals' origins and evolution. We studied the career paths and educational backgrounds of thousands of supply chain managers and hundreds of supply chain executives. In addition, we conducted numerous interviews with supply chain executives.

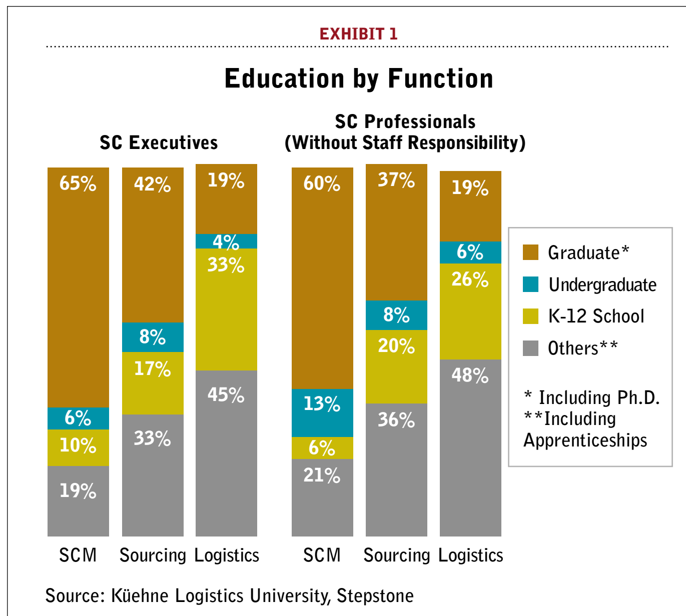
In this article, we provide an overview of our findings. We summarize the educational backgrounds of supply chain professionals, detail the careers that led professionals into a supply chain executive position, and present fac-

tors that enable a successful career in supply chain management (SCM).

Supply Chain Education

To understand the educational background of professionals in supply chain functions, we analyzed the data of a large-scale survey using the online job platform StepStone, with more than 40,000 participants, most of whom work in German-speaking countries. We focused on employees in SCM and the related functions of sourcing and logistics.

University education has become essential for supply chain professionals. Considering the challenging tasks of supply chain managers, it is not surprising that the average level of education is high. Exhibit 1 shows that the proportion of professionals with graduate university degrees is significantly higher among supply chain executives than among their logistics or sourcing peers. We find that 71 percent of supply chain executives hold university degrees, compared with only 50 percent of executives in sourcing and 23 percent of executives in logistics. The numbers for supply chain professionals without staff responsibility are comparable (Exhibit1). In industries such as automotive (78 percent), manufacturing (79 percent), and FMCG (85 percent), the average educational level is even higher.



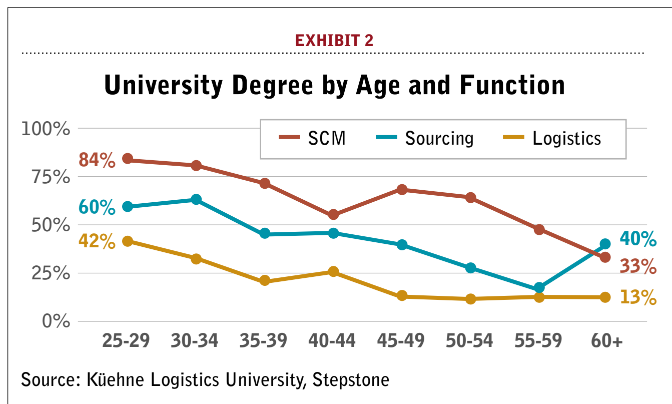
Source: Küehne Logistics University, Stepstone

If we consider educational breakdown by age, we find that a university degree is almost essential for young professionals in SCM, as their overall educational level has significantly increased. While only 40 percent of 60+-year-old SCM professionals hold a graduate degree, 84 percent of the 25- to 29-year-olds do (Exhibit 2). While the level of education is significantly lower in logistics and sourcing, the trends are similar.

There are various reasons for the high educational standards in SCM. In many firms, SCM is a highly visible endeavor with strategic priority. Frequently, SCM is responsible for managing the material flows from multiple international production plants through numerous 3PL-managed distribution centers to thousands of customer locations around the globe, coordinating an inter-cultural team of experts from all functions. To do this job, SCM needs nothing less than the best talent—and that best talent most frequently pursued university education.

This was not always the case. In early days, on-the-job training was the most important source of knowledge and skills to fulfill the majority of daily tasks. In particular, anyone with a decent track record in manufacturing was eligible for planning tasks. Other functions such as engineering, finance, or marketing were already more advanced and hiring well-educated university graduates was much more common. However, as SCM matured and skills requirements increased, learning-by-doing was no longer sufficient. The increased need for the best talent has been fueled by the rapid evolution of the SCM profession since the end of the 20th century. Today's supply chain managers need analytical and mathematical skills that were shaped at a university to cope with challenging tasks such as real-time decision-making in production planning, reviewing SKU profitability, or re-designing a supply chain process for end-to-end visibility. Presenting the analysis results to peers and communicating the implications to top management requires another set of skills. Higher levels of education are often associated with providing this broad portfolio of skills.

Having a well-educated workforce in place is also essential to boost the acceptance of SCM among peers in other functions. Experts and executives in other core functions may respect advice and opinions from colleagues with higher educational levels more than from hands-on practitioners.



Source: Küehne Logistics University, Stepstone

Business administration and engineering background leave largest footprints. Examining the fields of study, we are not surprised to find that only a fraction of university graduates have earned formal degrees in SCM; until recently, there were few formal academic programs in SCM. Previously, firms filled positions with relevant professionals who possessed good analytical skills or prior knowledge in adjacent fields. As illustrated in Exhibit 3, the majority of supply chain executives studied business administration (44 percent), followed by engineering (19 percent) and industrial engineering (14 percent). Although state-of-the-art supply chains are dependent on high-end IT infrastructure and software packages, only 2 percent of supply chain executives studied computer science. Here, we see differences between industries. In the technology industry, only 25 percent of supply chain executives studied business administration, while 53 percent have an engineering background. In the FMCG sector, this trend is reversed: business administration graduates constitute 63 percent of the total, and 16 percent are engineers.

That is changing as the demand grows for supply chain professionals. Universities such as Stanford and the University of Tennessee reacted to the increased demand with dedicated programs for supply chain education. For example, executive education programs with multi-day seminars helped bring executives without formal SCM background up to speed on the related concepts and approaches. The University of Arizona and the University of Houston have recently launched dedicated MBA programs for supply chain management.

If we consider the challenges ahead, including ensuring the same-day delivery of goods, leveraging Big Data for more accurate forecasts, and predicting the impact of 3D printing on future manufacturing processes, well-educated and diverse educational backgrounds will become more essential than ever. Combining the state-of-the-art knowledge of young professionals with their specific studies and the experience of supply chain veterans seems to be the most promising path to address these challenges.

Supply Chain Career Paths

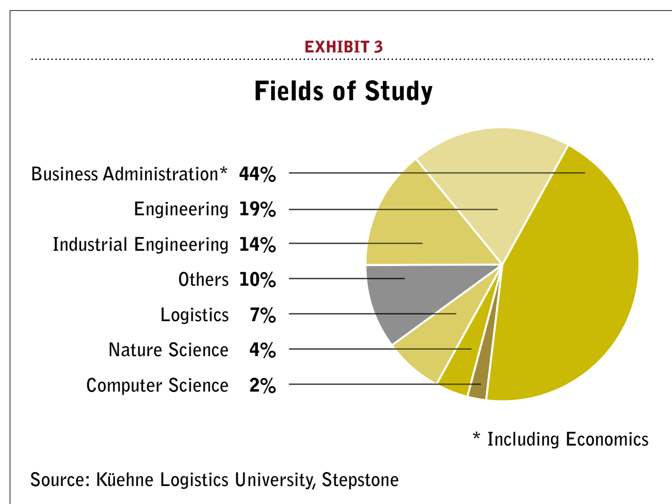
Formal education is an important basis for successful business careers. However, it is typically only the starting point. Accordingly, we decided to analyze how professionals moved into the role of a supply chain executive. To investigate their career paths and its characteristics, we gathered detailed resumes of 300+ supply chain executives. By supply chain executives, we refer to supply chain managers who are directly responsible for staff. We were interested in their career path, including all job positions until their current executive position in SCM. To our surprise, we found that (i) supply chain executives have limited prior functional experience in SCM, (ii) there are many transition opportunities from other functions into SCM, and (iii) we can identify six common career patterns that lead into supply chain executive positions.

Low formal SCM experience. Our research indicates that supply chain executives spent the largest portions of their careers prior to moving into executive SCM positions in logistics, procurement, and sales/marketing. While this might be partially intuitive, we find that a surprising number of supply chain executives are appointed without any previous exposure to SCM. Often, they have much more experience in other functions; in our sample, supply chain executives spent 88 percent of their previous career span outside the SCM function. Even if we include the adjacent functions logistics and manufacturing, we find that still only 40 percent of the prior business experience is SCM-related. Companies seem to be willing to recruit executives from other functions for a number of reasons. Many firms seem to value prior positions with staff responsibility more than extensive SCM knowledge—having broad management skills beats having deep content knowledge. In particular, if the position requires a strong focus on leading personnel or managing projects, extensive SCM expertise seems to be less relevant. As an executive climbs higher up the hierarchical level and is less involved in day-to-day operations, the importance of functional knowledge decreases further.

Regarding communication, professionals from sales/marketing and finance often communicate better. Typically, supply chain analysts are very focused experts who dig deep to solve challenges analytically. However, to take the next step on the career ladder, one must sell oneself to senior management. SCM devotees often seem to lack this skill, while selling and negotiating should be part

EXHIBIT 3

Fields of Study



Source: Küehne Logistics University, Stepstone

of the daily routines for sales.

Another challenge is that SCM is frequently perceived as being below "classic" management functions. SCM still partly suffers from its former image as a support function in charge of ordering trucks or stacking pallets. Therefore, sales or engineering often appear more attractive to young graduates with more formally defined career paths. However, SCM is cross-functional by definition; thus, it is easy to enter it with a different functional background.

Transitions. As discussed, many supply chain executives spent a large portion of their career in other functions such as logistics, sourcing, or sales/marketing. For this reason, we analyzed the transition frequencies between different functions (Exhibit 4). The chord-chart shows how many professionals are moving into and out of SCM functions. The size of an outer segment (function) illustrates how much experience professionals gathered in different functions (e.g., much time was spent in logistics, and little was spent in HR). The thickness of the ribbon relates to the number of transitions between functions. For example, many people switch from logistics to SCM (thick tie), but few HR personnel switch to SCM (thin tie).

While many job transitions occur internally, we find many transitions from logistics (24.8 percent), sourcing (15.6 percent), and reasonable transitions from production (8.9 percent) into SCM. Obviously, personnel with these adjacent backgrounds are more likely to adapt quickly to their new environment and tasks. For instance, because the majority of SCM activities at a large retail company in essence involve managing physical flows, a former logistics manager can rather easily take over related SCM tasks. In the pharmaceuticals industry, however, SCM personnel need a better understanding of chemical products and quality requirements. Accordingly, a person with a manufacturing background is a good fit to manage and optimize the flow of products. In the machining industry, a technical background in engineering and product development might be valuable.

Despite many transitions from these adjacent functions, we also find many transitions from other functions such as sales/marketing, consulting, and project management into SCM. Apparently, SCM requires people with this special expertise because many large-scale projects need to be conducted. And, we find that 63 percent of supply chain executives were promoted internally.

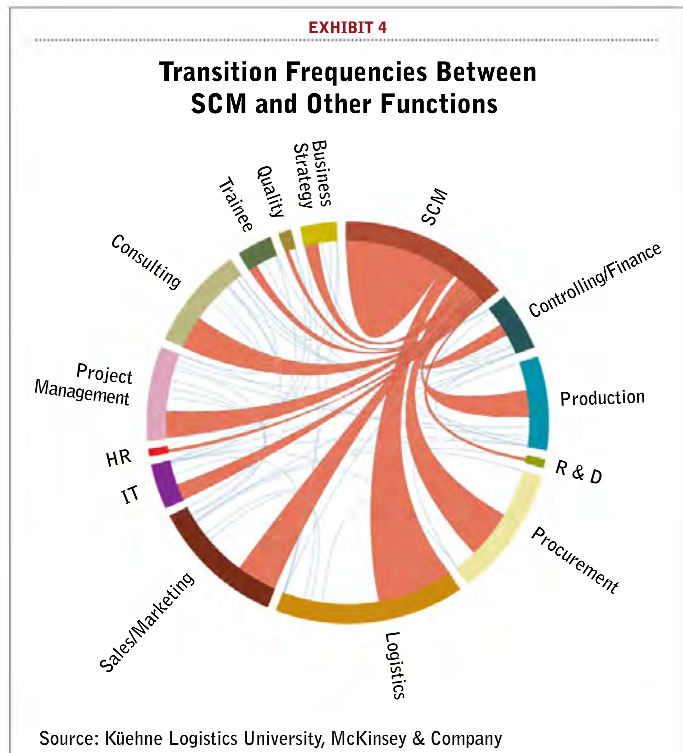
Our transition analysis indicates that SCM is not only cross-functional by its job description but that it is also truly cross-functional in the experience of the staff. The door is open to anyone to switch into SCM and contribute with external knowledge right from the start. In the end, each supply chain executive position requires specific skills from other disciplines, and such positions are filled with people whose profiles match those needs.

Six career patterns. While each career seems individual and unique at first glance, we identified six different career patterns among all career paths, using a methodology from DNA sequencing. We compared all career paths with each other as if they were DNA strands of different animals. Career paths can look very different at first glance. While some supply chain executives started off as "supply chain analysts" and worked their way straight upwards through SCM until they became "director of supply chain applications," others started as "buyer" and passed through "senior sales agent" and "regional director of sales Asia" positions until they became "head of supply chain processes." Still, our methodology is able to capture similarities among career paths and expose six patterns. Exhibit 5 illustrates the details of these career patterns.

We characterize the first career pattern as the "Neighbors." It is the largest cluster, with 69 percent of one's business life spent in logistics, procurement, and production. The "Homegrown" pattern corresponds to native supply chain leaders; the majority of their previous career was spent in SCM, and the second largest fraction was spent in logistics. Despite being the third-largest cluster in

EXHIBIT 4

Transition Frequencies Between SCM and Other Functions



Source: Küehne Logistics University, McKinsey & Company

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our study, the next pattern is labeled "Outsiders." Within this cluster, only 12.9 percent prior business experience was spent in SCM, logistics, production, and procurement combined: The largest share of their career was spent in consulting and project management functions.

The next pattern is labeled "Demand-siders" because the majority of the prior business experience of these managers was spent in sales/marketing and in business strategy—two functions that usually put great focus on customer orientation. The "Engineers" have the greatest proportion of individuals with a production background. Its members possess the strongest engineering background among all clusters. "Sourcing Specialists" is the smallest cluster; these individuals spent the longest time in procurement.

It is interesting to see that these six patterns prevail despite the individual biographies of supply chain executives. The diversity of those biographies resembles the extraordinary, cross-functional nature of the SCM profession—many roads lead to Rome. However, some roads are shorter, and some are longer, as shown in Exhibit 5. Given the straight career trajectory of the Homegrown career pattern, on average, they reach a supply chain executive position in 8.8 years. Surprisingly, the Outsiders are even faster—although they were only exposed to SCM jobs for 2.8 percent of their career. The fact that a high proportion of Outsiders are former consultants could explain their above-average career success as consultants, who are known to pursue exceptionally ambitious career goals and whose broad knowledge and diverse skills are valued by employers.

How to become a supply chain executive. How then does one become a supply chain executive? In addition to education and prior experience, we found that many factors are key drivers behind successful supply chain careers. Career development is shaped by one's performance and behavior on the job and by one's personality and skill sets. For our research, we conducted 20+ interviews with supply chain executives (including individuals leading >1,000 employees) on how they advanced their careers, which covered their specific career paths and what were success factors for them.

Through our interviews with supply chain executives, we identified three dominating profiles: the Number Guy, the People Leader, and the Cross-functionalist.

The Number Guy

Given the analytical side of supply chain management, there is a significant percentage of executives who have risen in the ranks by planning and analyzing data. We refer to this profile as the Number Guy. He loves to detail production schedules, determine correct inventory levels, and optimize service levels. While he focuses on data, he can sometimes miss the big picture and the importance of demonstrating value to peers/senior management. A Number Guy fits companies that do not have direct reporting from SCM to the board because he lacks communication skills. Given these characteristics, a Number Guy must undertake three things to become a supply chain executive:

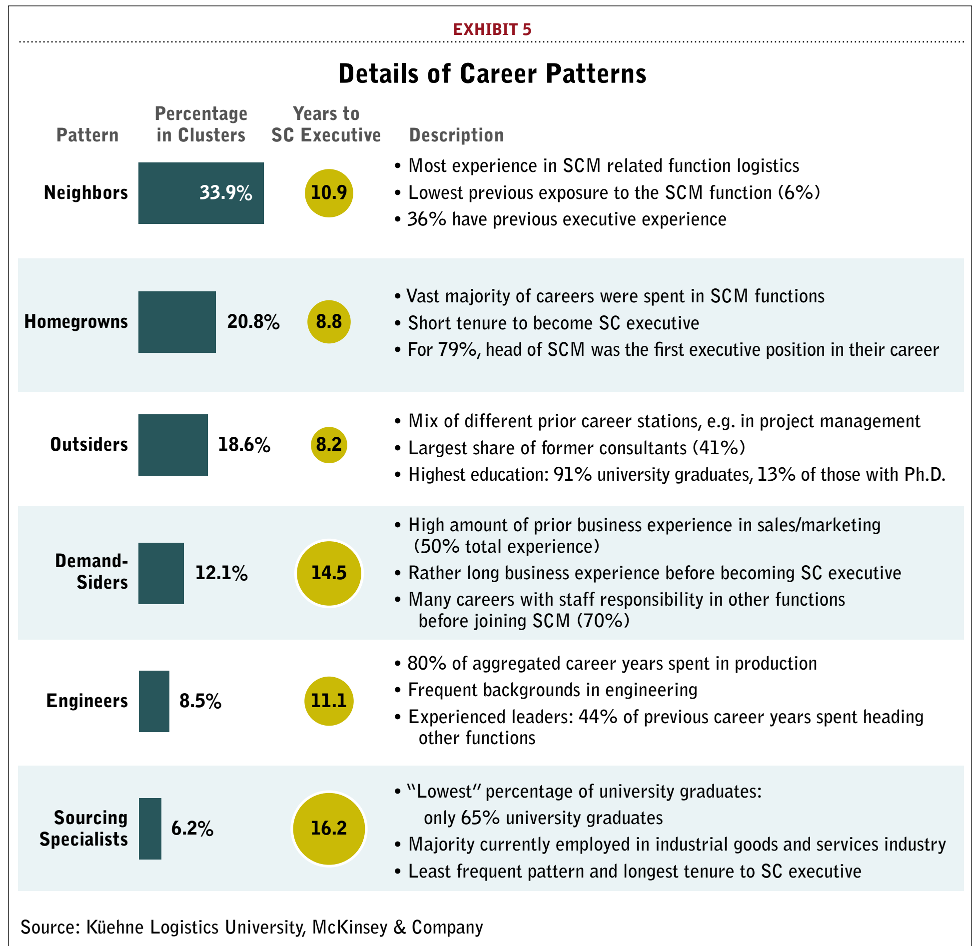

EXHIBIT 5

Details of Career Patterns

Pattern	Percentage in Clusters	Years to SC Executive	Description
Neighbors	33.9%	10.9	• Most experience in SCM related function logistics • Lowest previous exposure to the SCM function (6%) • 36% have previous executive experience
Homegrowns	20.8%	8.8	• Vast majority of careers were spent in SCM functions • Short tenure to become SC executive • For 79%, head of SCM was the first executive position in their career
Outsiders	18.6%	8.2	• Mix of different prior career stations, e.g. in project management • Largest share of former consultants (41%) • Highest education: 91% university graduates, 13% of those with Ph.D.
Demand-Siders	12.1%	14.5	• High amount of prior business experience in sales/marketing (50% total experience) • Rather long business experience before becoming SC executive • Many careers with staff responsibility in other functions before joining SCM (70%)
Engineers	8.5%	11.1	• 80% of aggregated career years spent in production • Frequent backgrounds in engineering • Experienced leaders: 44% of previous career years spent heading other functions
Sourcing Specialists	6.2%	16.2	• "Lowest" percentage of university graduates: only 65% university graduates • Majority currently employed in industrial goods and services industry • Least frequent pattern and longest tenure to SC executive

Source: Küehne Logistics University, McKinsey & Company

• ***Communicate and get out of your box.*** You are great at what you are doing, but unfortunately, nobody knows about it. Consider meetings to be a marketplace where you can sell the work about which you are passionate as your product. Communicate your contribution to your supervisor and participate in more group projects.

• ***Improve your management skills.*** Your analytical skills and the depth of your SCM expertise are already sufficient to become a professor. However, an executive needs to learn how to motivate and lead people.

• ***See the big picture.*** You must be aware of the consequences of your decisions to other functions. You might also consider switching to another function (at least for a certain time) to understand another perspective.

The People Leader

The People Leader excels at managing people and projects, while analysis and content are left for others to solve. The People Leader wants to problem solve in teams, is proficient at communicating with peers and senior managers, and prefers to delegate tasks to others. Often, the People Leader has background experience from another company function.

The People Leader works with a top-down approach without going down into details, which results in a basic SCM understanding. He yields the best results in enterprises where the supply chain already performs and where he has Number Guys working for him who complement his strengths with their SCM expertise.

Given these characteristics, the People Leader should consider the following to become a supply chain executive:

• ***Deepen your SCM knowledge.*** You already possess the skills that many SCM peers lack: managing people, networking, and selling yourself. However, in many situations, your limited expertise and knowledge become apparent to experienced peers. You need to work on your SCM knowledge by exchanging ideas frequently with your SCM colleagues, reading books and relevant magazines, and attending SCM workshops and seminars.

• ***Enrich your personal network with relevant SCM people.*** Your communication skills have enabled you to establish a rich network with various people within your firm and perhaps even extending to customers. Take advantage of this talent, and establish contact with new people relevant to your SCM department. For instance, having a strong network and relationship with suppliers can help your department achieve a wider overview of the supply side and the best prices on the market. Become surrounded with people with better functional knowledge than yours.

• ***If it does not fit, you must admit.*** If you ended up in SCM unintentionally and you see your strengths elsewhere, you should consider moving out of SCM.

The Cross-functionalist

The Cross-functionalist has very good end-to-end visibility into supply chains. He has gathered previous experience in different positions and functions. He understands the cross-functional processes, which makes him a true end-to-end thinker with a holistic view of the company. This also makes him a savvy executive with a deeper understanding of the political game and the ability to negotiate with other senior managers in the company.

Furthermore, the cross-functionalist possesses the relevant breadth and depth of SCM knowledge and speaks the language of peers from other functions. He owns the fundamentals that are required to make a true contribution to SCM performance and works best when his company provides end-to-end visibility, motivates open communication and transparency about ongoing supply chain projects, and pursues mid- and long-term targets.

Given these characteristics, here is what the Cross-functionalist needs to consider to become a supply chain executive:

• ***Think step-by-step.*** You already have the best combination of skills and competencies to become a supply chain executive. The only thing standing in your path is you. While you have a great end-to-end view of SCM, you must focus on your own tasks first and prioritize them according to your job description and senior management's assignment. Otherwise, your KPIs will suffer, and you will not live up to your potential. Think step-by-step. Do your job first, and push your extending ideas forward afterwards.

• ***Find a mentor—even if there is no official mentoring program.*** Although you are already a high-potential leader, many interviewees mentioned that career success was subject to external influence, e.g., luck, coincidence, or a mentor. Because no one can influence luck or coincidence, you should try to find an experienced leader as a mentor who can give valuable advice and open doors for promotion. Many interviewees state that they even climbed up the career ladder in the slipstream of their mentor by taking over his position upon the mentor's promotion.

• ***Increase your leadership skills.*** Because you are already a prospect for future supply chain executive positions on paper, you should work on the soft skills required for future senior management positions. In particular, developing leadership skills is crucial for later success. You can gain experience by volunteering as a project coordinator or a mentor for an intern in your department.

Finally, you should always follow your passion and interests. Almost all of the supply chain executives interviewed mentioned that their main motivation always has been their passion for the job.

Viewpoint: Fair Trade and Human Rights in the End-to-End Supply Chain

Doing well by doing good has never been more important. Consumers and businesses alike seek to do business with ethical, environmentally sustainable, and socially-responsible partners. At the same time, the proliferation of labels and certifications means that doing the right thing has never been more complicated. That is the viewpoint of ***Andrew Pederson****, who asks us to reconsider conventional thinking toward sourcing labels. It is also the view of* ***Andreas Wieland*** *and* ***Robert Handfield*** *who describe a new approach to ensuring safe and ethical work conditions across a supply network. Not everyone will agree with these viewpoints, but they may start a conversation about the role of social responsibility in your supply chain.*

Looking For a Fair Deal

Certification programs purport to offer poor farmers in emerging markets a better deal and to lift them out of poverty. Recent research suggests that the cost of managing these programs leaves little left over for the farmers.

By Andrew Pederson

In 2013, a debate took place on the trade publication Confectionarynews.com about new labeling rules proposed by Fair Trade USA, an organization that certifies commodities like cocoa and coffee, often produced in impoverished economies with irregular labor practices. Although the organization has its share of passionate supporters, several detractors emerged in this debate, including one NGO that labeled the proposed changes "a hoax" and a premium chocolate maker who contended that the changes would damage "the integrity of the Fairtrade system." Six months later, NGOs gave lukewarm approval to a new round of proposed changes, while adding that the organization's policies don't go "far enough to

Andrew Pederson is an independent supply chain evaluator in San Francisco. Previously, he managed the global sustainability programs for a major candy manufacturer. There, he designed the first system to collect field data directly in West Africa via mobile devices and co-authored the team's technology policy. He also worked with the Ivorian government to digitize its field monitoring of over 300 community development projects and co-designed his company's first digital "dashboard" to monitor its progress in promoting viable economic lives for cocoa farmers and their families in West Africa and Asia. He can be reached at a@pedersonevaluation.com.

combat exploitative sugar sourcing."

The debate underscored just how difficult it is for supply chain managers to do what they perceive is the right thing. Without question, consumers want to purchase products that are created without exploiting the farmers and workers who have a hand in their production. As an example, 85 percent of the respondents to research by Lake Research Partners found that the Fair Trade Ingredients label "would help them make better choices," according to Confectionarynews.com. Responding to consumer demand, more large CPG manufacturers are implementing certification programs across a variety of products—and using multiple labels and certifications. In fact, while many consumers and supply chain managers conflate the term "fair" with product certification generally, there are over 200 different ethical and sustainable certifications available in today's marketplace.

Their appeal is simple. Domestic and global organizations like Fairtrade argue that by enforcing higher prices to cooperatives, money will trickle down to farmers and their communities to alleviate poverty and improve their lives. Here's the problem, in my view: While not

illogical, Fair Trade's approach has yet to be empirically validated. In fact, recent research has cast serious doubt on Fair Trade's ability to deliver on that central message and alleviate rural poverty in low-income countries.

In 2010, Dr. Sushil Mohan, an economist with the Institute of Economic Affairs, concluded: "Fair Trade… is not a general, long-term development strategy." He further found that its programs "cannot target marginalized producers effectively." More recently, the University of Manitoba's Ian Hudson, Mark Hudson, and Mara Fridell reported both positives and negatives in their 2013 book *Fair Trade, Sustainability, and Social Change*, writing that: "While Fair Trade does generate substantial non-income benefits and it does provide a modest income increase, it does not appear to generate sufficient revenue to lift producers out of poverty."

While not illogical, Fair Trade's approach has yet to be empirically validated. In fact, recent research has cast serious doubt on Fair Trade's ability to deliver on that central message and alleviate rural poverty in low-income countries.

As many of these certification programs focus heavily on product marketing campaigns in the developed world, core field activities have often failed to generate significant benefits for the poorest farmers. Because these certification programs compete directly with other public and private agricultural development programs, rigorous impact evaluation is vital to direct scarce financial and management resources to activities that will most benefit the millions of impoverished farmers who require direct assistance to break out of intergenerational cycles of poverty, malnutrition, and deprivation. In this spirit, I believe that any supply chain manager considering certification must ask: "What value does Fair Trade provide to participating farmers and is this value worth its high cost?" As someone who once managed global sustainability programs in West Africa for a major candy manufacturer, I argue that there is a better way to accomplish those goals.

Marketing Driven Business Model

Ever since the Max Havelaar Foundation launched the first Fairtrade Certification label in the late 1980s, "ethical" and "sustainable" product certifications like Fair Trade have steadily gained popularity across a huge range of consumer products in the U.S. and Western Europe. Fair Trade purports to offer farmers a "better deal" by enforcing additional price "premium" payments to producer cooperatives and a controversial market "price floor." The theory is that the premium payments will allow producer cooperatives to fund a wide range of local development activities while the price floor protects producers against market volatility. Over the long term, certifiers like Fair Trade claim that by advertising and building their labels' brand equity in the developed world's consumer markets, the market for certified products will grow and, by extension, increase producers' social, economic, and environmental benefits by providing greater financial resources via the premium payments.

However, Fair Trade measures its success primarily by the volume of labeled products bought and sold in wealthy consumer nations rather than attributable outcomes for farmers in impoverished producer nations. Most of its budget and activities center around convincing retailers and manufacturers located thousands of miles away from the intended beneficiaries to label products and bankroll Fair Trade-themed ad campaigns.

Completely separate from the price premium paid to producer groups, Fair Trade also collects high fees per ton of commodities purchased as well as per volume-unit of goods sold; they do not transparently reveal where this extra revenue is spent. Tellingly, Fair Trade celebrates a disturbingly high 53 percent overhead cost, and the 47 percent of their budget they claim goes to "producer services" actually translates into vaguely defined tasks like "guidance," "networking," and "relationships," according to the organization's Website. In fact, many of these activities are required simply to guide producers through Fair Trade's notoriously dense bureaucracy rather than address the fundamental agronomic issues that keep farmer incomes low.

In its most recent strategy announcement, the Fair

The problem: It is rare for any major manufacturer to segregate Fair Trade materials inside the factory, and international exporters and buyers are just as eager to mix everything into one supply chain to accrue greater scale efficiency.

Trade Labeling Organization (FLO) stated that the "model has been shown to work; now we need to take it wider." As the model Fair Trade wants to take wider mainly involves labeling and selling greater volumes of product, it makes financial sense for the organization to continue to push industry to certify and label as many consumer products as possible.

Questionable Claims

"Look for the FAIRTRADE Mark on products. It's your guarantee that disadvantaged farmers and workers in the developing world are getting a better deal."

The question some researchers have asked is whether disadvantaged farmers really are getting a better deal, though consumers have not yet begun to demand that their product labels prove their stated impact.

Indeed, some products labeled Fair Trade may contain little Fair Trade material. Through a scheme known as mass balance, a company may buy a volume of Fair Trade commodity that's mixed into its general supply at the factory and then dispersed throughout many different products. So long as the purchased volume equals at least 20 percent of the target product's total volume, Fair Trade allows companies to label the product. It is also possible to simply buy Fair Trade or other ethical or sustainable "certificates" on the open market without ever even taking delivery of any Fair Trade commodities and still use the label on consumer products.

The problem: It is rare for any major manufacturer to segregate Fair Trade materials inside the factory, and international exporters and buyers are just as eager to mix everything into one supply chain to accrue greater scale efficiency. In most cases, there is still no way to reliably determine where much of the raw materials used in consumer products originated, much less under what conditions, rendering most ethical and sustainable certifications meaningless by the time they reach retail.

Fair Trade also claims to pay money directly to farmers when it has been shown that farmers rarely receive any meaningful portion of the price premium. The Fair Trade organization itself has little information about where this money goes beyond the cooperative, nor how most member farmers actually benefit. In a 2006 case study of Bolivian coffee producers, researchers in Europe concluded that the price premium paid for Fair Trade coffee was largely invested in improved production facilities adding that, "it remains debatable whether this has 'improved livelihoods' as such." As Dr. Mohan observed, the costs of "inspection, certification, and campaigning often consume a major proportion of the Fair Trade price premium" leaving little left over for the farmers themselves.

A report published this past April by the Fair Trade, Employment and Poverty Reduction Project (FTEPR) team based at SOAS at the University of London came to a similar conclusion: "This research was unable to find any evidence that Fairtrade has made a positive difference to the wages and working conditions of those employed in the production of the commodities produced for Fairtrade certified export in the areas where the research has been conducted."

It comes as no surprise that Fair Trade takes exception to those conclusions and disputed FTEPR's conclusions. The organization does have proponents in the research community. At Colorado State University, researchers Douglas Murray, Laura T. Raynolds, and Peter Leigh Taylor have argued that Fair Trade has benefited farmers, families, communities, and organizations in Latin American coffee-growing regions. The University of Washington's Margaret Levi and University of California, San Diego's April Linton have similarly written that: "Fair Trade coffee campaigns have improved the lives of small-scale coffee farmers and their families by raising wages, creating direct trade links to farming cooperatives, and

providing access to affordable credit and technological assistance." Despite their different conclusions, however, both sets of researchers acknowledged the shortcomings of the Fair Trade model.

What Actually Works for Farmers?

While researchers debate the extent to which farmers benefit from certifications like Fair Trade, there is little debate as to whether the consumer wants to purchase products that have been ethically sourced or that business wants to do the right thing. For that reason alone, supply chain managers and the companies they work for have an incentive to invest in sustainable procurement. But, what does actually work for farmers?

The clearest benefit to farmers, as with any other business, is from productivity gains. Those are harder to attain. In fact, research by the consulting firm KPMG found that certification's contribution to productivity gains were mostly attributable to Good Agricultural Practices (GAP) training, with much larger increases possible through input financing, improved planting material, and other agronomic interventions not currently provided by certification.

More concretely, Bradford Barham, an agricultural economist at the University of Wisconsin who studied Latin American Fair Trade coffee producers, concluded that raising productivity is a more effective way than certification to increase net cash returns for farmers. Larger productivity increases are only possible with additional interventions, especially fertilizer/input finance and farm rehabilitation with improved planting material. This is an area where supply chains can play a role.

Supply Chain's Role

Against that backdrop, supply chain executives have shown a real commitment to improve livelihoods for small producers in the developing world; however, these commitments must show tangible results to maintain customer confidence and adequately address severe, persistent environmental and social threats to agricultural supply.

Because I believe that "ethical" certifications have not produced credible evidence to prove that their models effectively help small producers, certification investments should be objectively and rigorously compared by supply chain executives to other viable field interventions to determine which will produce the greatest return for impoverished farmers.

We are beginning to see some programs along these lines, such as the World Cocoa Foundation's newly revamped CocoaAction program, which funds development programs and research that benefits farmers in cocoa growing regions, and the International Cocoa Initiative, which aims to eliminate child labor in cocoa growing communities and the cocoa supply chain through proven participatory development models.

Going forward certification programs will have their place as independent verification systems, but they are not enough on their own to meaningfully reduce poverty in agricultural commodity supply chains.

If we truly want to alleviate poverty among the farmers and producers with whom we do business, mere certification isn't a substitute for hands-on work by supply chains to promote economically sustainable practices.

Because current research shows more promising income returns for farmers from productivity-focused interventions than from certification, industry should prioritize significant funding to increase farm-level productivity and hold any other supply chain sustainability investment to the same high standards of proximate income generation and ultimate poverty reduction.

If we truly want to alleviate poverty among the farmers and producers with whom we do business, mere certification isn't a substitute for hands-on work by supply chains to promote economically sustainable practices.

The Challenge of Ensuring Human Rights in the End-to-End Supply Chain

Certification programs have their merits and their limitations. With the growing availability of social media, analytics tools, and supply chain data, a smarter set of solutions could soon be possible

By Andreas Wieland and Robert Handfield

Few supply chain professionals question the increased emphasis on "ethical" and "green" sourcing being driven both in retail and consumer packaged goods (CPG) channels, as well as industries like apparel or electronics where outsourcing to the least cost country is used. For instance, in the last few months, after the Rana Plaza tragedy in Bangladesh, we have, indeed, seen a number of thought pieces appearing by consultancies such as a recent Ernst and Young study; articles by academics including "The Socially Responsible Supply Chain," an article we co-authored in the September 2013 issue of *Supply Chain Management Review*; and human rights groups underlining this development.

With the introduction of labels, the fair trade movement has created a de facto standard for consumers to recognize that a product is sustainable. But, as Andrew Pederson points out in the companion article, the process used to certify producers in order to get such a label is often flawed. That's not just Pederson's opinion: It was validated by a recent study conducted by the Fair Trade, Employment and Poverty Reduction Project (FTEPR) team based at SOAS at the University of London. Their study identified three major points of concern: First, wage employment in areas producing agricultural export commodities is widespread; second, people who depend on access to wage employment in export commodity production are typically extremely poor; third, there is limited evidence that fair trade initiatives have made a positive difference to the wages and working conditions of those employed in the production of the commodities produced for Fairtrade certified export in the areas studied. In fact, the researchers find that those employed in areas where there are Fairtrade producer organizations are significantly worse paid and treated than those employed for wages in the production of the same commodities in areas without any Fairtrade certified institutions. In response to these findings, the Fairtrade organization has provided a detailed rebuttal, noting that the results are generalized and not adequately covering an appropriate sample.

Regardless of who is in the right in this discussion, our opinion is that a different frame is required to examine this problem altogether. We believe the overwhelming issue of poverty and working conditions in least cost countries cannot be fixed just by sewing a label in a shirt. Rather, we believe that there is a need to generate real-time analytics that provide accurate sustainability assessments. Further, the number of divergent technologies, methodologies, and systems boundaries around what constitutes fair trade make the use of a single label misleading.

In short, labels represent an approach that is too one-dimensional to solve a very real, complex, and challenging problem, as it masks the intricate process characteristics of the upstream supply chain by using a small tag that contains just a single point of information: "This product is fairly produced." Yet, the products we buy are constructed by a set of manufacturers and trading partners in a complex and dynamic supply chain. Consumers who care about sustainability are increasingly aware of the limits of a brand, as with a label, in only representing the final product, and not how suppliers and sub-suppliers are treated in the entire upstream supply chain that is used to manufacture this product.

Companies need to stop thinking that consumers

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are so naïve as to ignore how their products are manufactured. The issue on the table is to focus on how to better capture how a company is working with the supply side to provide safe and ethical work conditions. This is a much broader and more difficult set of challenges to think about. Traditional solutions that focus just on a brand (e.g., Company A) or the labels used with the brand (e.g., a label saying that Company A's product is "fair") are being supplemented by solutions that recognize a brand's network (e.g., Company A's upstream supply chain) and reveal how all entities of that network are treated (e.g., an interactive map of the supply chain on a smart device).

A Transparent Supply Chain

One of the most important innovations in supply chain management to emerge over the last 40 years was the concept of outsourcing. Instead of just managing their own organization, supply chain managers focused on managing their end-to-end supply chain, often relying on production off-shore. We describe this as an evolution from company thinking to supply chain thinking. Back in the 1970s, Nike was one of the first companies to embrace supply chain thinking and recognize the benefits of outsourcing production to lower cost country suppliers. Indeed, Nike has also led the charge to promote sustainable supply chains when they discovered the important impacts on the brand that occurred when labor codes were violated.

While supply chain thinking was initially designed to make products more efficient, there is a good chance that this transformation is now being repeated to make products more sustainable—and more transparent. For example, labels that were linked to a single brand (company thinking) are being replaced by digital maps that visualize the end-to-end supply chain (supply chain thinking). While consumers have to trust the controlling body behind a label, supply chain thinking enables consumers to become their own controlling body. This transformation requires costly data about suppliers' suppliers, but becomes realistic as transaction costs to map the end-to-end supply chain are increasingly reduced due to smarter technologies, newer standards, and improved analytical algorithms. Will this transformation make fairer products more and more affordable?

The implication is that supply chain managers will also need to become much more analytical, and employ individuals who understand the commercial realities of networked supply chains, and can interpret these insights to computer programmers. These individuals will need the ability to construct databases capable

EXHIBIT 1

Tracking the Entire Supply Chain

of storing many types of data that together provide analytical insights into the control functions in the supply chain that provide assurance of compliance to codes of conduct. These analytical control functions will require the capability to capture complex human behaviors and measure them in a format that provides consumers with the confidence that a company's supply chain is more than a representation of what it intends to do. You can't get that from a label.

Such measures will undoubtedly require horizontal collaboration between industries to establish standards that apply to industries such as apparel, food, electronics, and others that are migrating to least cost countries. These standards need to be driven by executives who have deep insight into these issues, and establish norms to ensure that companies operate with integrity and can maintain and improve competitiveness. Indeed, we may find that companies who lead the way will establish a new form of competitiveness, especially if it is valued by the customer. Let's look at some examples.

Technology has emerged to the point where we can now begin to think about how to harness the strength of social media, smart devices, and Web-enabled analytics to provide consumers with the power to make their own decisions.

Leading the Way

The first example is a project realized by NagerIT, a German organization aimed at producing a fair computer mouse. NagerIT understood that a product can only be sustainable if the end-to-end supply chain is managed sustainably. A map of the mouse's supply chain is available on the Webpage. However, even an organization like NagerIT has to admit that "[r]egarding raw materials and components from conventional production [they] cannot say anything about the labor conditions during production." In other words, due to the lack of available data about such components, today, it often still seems to be impossible to create a fair product even if companies actively try. This calls for centrally-managed databases about sustainability available by producers and retailers to consumers who access the data using technological devices.

Technology has emerged to the point where we can now begin to think about how to harness the strength of social media, smart devices, and Web-enabled analytics to provide consumers with the power to make their own decisions. This brings us to our second example by a Swiss company called Switcher that manufactures t-shirts with an individual "Respect Code" included (see www.respect-code.org) that enables consumers to visualize the entire supply chain associated with the product they are buying. The visualization of the supply chain, as shown in Exhibit 1, provides for all supply chain tiers, among others, details on the number of employers, dates of audits, and certificates. This case shows that, contrary to statements by major brands, tracking the entire supply chain is, indeed, possible.

Other technology exploits social media to enable workers to report on working conditions in the factories where they operate, and report on instances and issues they see in real-time.

Still, there is a gap between omnipresent supply chain data, smart devices, and analytical tools. But, first attempts have already been made to close this gap, as our third example shows. In July 2014, IBM and Apple announced a partnership aimed at bringing IBM's capabilities about Big Data analytics to Apple's smart devices to transform enterprise mobility. "Mobility—combined with the phenomena of data and cloud—is transforming business and our industry in historic ways, allowing people to re-imagine work, industries, and professions," says Ginni Rometty, IBM Chairman, President and CEO. Indeed, it is not always just that there is not enough data about the social and ecological status of a certain supply chain entity. It is about how to integrate the data of hundreds of such entities across a fuzzy system as complex and dynamic as a typical electronic or apparel supply chain, about how to gain new knowledge from these combined data, and about potential new ways this data could easily be accessed by final consumers.

Besides these more technological examples, another element is around a sustained development to build industries in the regions where companies operate. More companies are seeking to establish longer-term supplier relationships that enable improved working conditions, and investments in areas that have traditionally been very poor. These companies recognize that investment in these areas will pay dividends in the long term, as workers recognize the companies that are investing in them for the long term.

The New Language of Procurement

Forward-thinking players are setting their sights on advancing the future of procurement with active value management. But there's a long way to go to become an essential part of the enterprise performance conversation.

By John Blascovich and Joe Raudabaugh

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The language of procurement speaks to an agenda driven by delivering value. Leading procurement organizations are well-versed in areas that resonate with financial officers and the performance narrative. They lead with hard value contributions of procurement, can discuss their performance across an array of value drivers, and advance intangible value to their organizations as well. Knowledgeable about how their teams are performing, leading CPOs know what they need to do to improve their organization's performance and are laying out career paths to attract and retain the best talent.

Chief procurement officers who are literate in this new language are building the brand of procurement by making themselves valued partners to chief financial officers and the rest of the C-suite. In 2011, A.T. Kearney began homing in on benchmarking value delivery with Return on Supply Management Assets (ROSMA℠), a performance measurement framework built to help companies understand and measure how procurement contributes financially to the business.

In the inaugural ROSMA Performance Check report, we have gathered the feedback of hundreds of companies. The insights are powerful.

• Top-quartile performers are reporting hard financial results in excess of seven times their costs and investment base in procurement, providing a strong basis for reinvestment and recognition. These leaders generate about $1.6 million in financial benefits per procurement employee each year, with 35 percent of the financial benefits coming from using advanced methods that create hard value beyond unit cost reduction.

• Middle-tier performers are accretive. They typically generating four to five times the investment and costs of their supply management assets, including people and technology, but they have not improved their productivity since tracking began in 2011.

• Bottom-quartile teams are dilutive. The financial benefits they generate do not cover the cost of and investment in their organizations.

• Most organizations do not have the reporting and tracking capabilities to provide ongoing, accurate visibility into procurement's value-creating activities.

• Performance varies widely across all of procurement's key value drivers—spend coverage, sourcing program velocity, sourcing project yields and outcomes, compliance rates, and operating costs—regardless of company size, industry, or spend mix. Organizations with more mature/advanced practices have less variable performance across some of the drivers, but substantial productivity improvement opportunities are being missed.

The lack of tools for procurement-focused capability and resource management may explain the lagging adoption of value management practices in supply management.

The CFO community's sentiment toward supply management suggests that only 10 percent of procurement organizations have captured the

respect, understanding, and mindset of their finance organizations regarding the value they contribute. Almost 15 percent are "out of mind" or "inconsequential players" to the CFO community and 75 percent have mixed and yet to be developed "brands." Because CFOs are the de facto scorekeepers, procurement's brand value must be addressed.

Setting the Stage

Over the past 30 years, performance dashboards and active process monitoring (visibility) have rolled across most enterprises: In the 1980s the focus was on manufacturing; in the 1990s it was on supply chain, research, and engineering; and in the 2000s it was on sales and marketing.

In the next wave of management practices, procurement will be enabled with new technologies. Since the 2008 global recession, there has been an uptick in CPO turnover. Now more than ever, the focus is on supply management. Forward-thinking players are measuring, communicating, and institutionalizing the value of supply management to secure recognition and support for the procurement brand and recognition of their supply management professionals.

Investment banking and private equity players have discovered that using procurement to create value is a powerful part of successful portfolio management. Procurement has also enabled success in mergers and acquisitions (think Anheuser-Busch and InBev, Procter & Gamble and Gillette, Walgreens and Boots).

Recognizing these trends, A.T. Kearney embarked on a journey with the Chartered Institute of Purchasing & Supply (CIPS) and the Institute for Supply Management (ISM) to bring common value management visibility and practices to procurement.

CIPS, ISM, and A.T. Kearney will continue to make the ROSMA Performance Check available for free to accelerate adoption and harmonization of the framework so the profession and the finance community can align on a common standard. Procurement teams that use the framework can develop and pursue improvement pathways to nurture and sustain stronger driver performance levels and engage the support of their CFO communities. Each organization would be wise to craft its own assortment of KPIs to create its own unique scorecard. However, all organizations should adopt ROSMA value drivers or CFO-friendly derivatives as part of their financial KPIs.

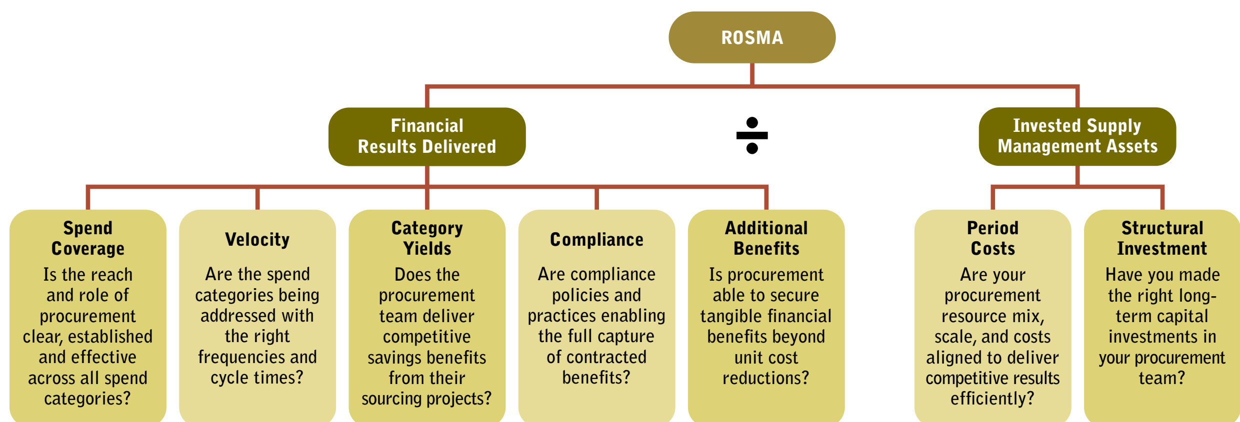
Procurement has undergone a transformation over the past 25 years, evolving from an operation-focused support function to a more widely recognized profession that has seen waves of new technology, innovative methods and practices, and the elevation of some iconic professionals who have brought recognition to the value of procurement. The brand-building pathway ahead is just another step in the transformation—a step we can champion together.

About the Study

This report is distilled from more than 400 completed, qualified, and accepted cumulative benchmarks along with more than 170 submissions focused on 2013 results (see figure). Contributors participated in the free benchmarking through ROSMA Performance Check gateways on the CIPS and ISM websites as well as via A.T. Kearney's 2014 Assessment of Excellence in Procurement (AEP) study, the longest-standing global study of supply management best practices. *To view the full ROSMA Performance Check Report referred to in this article, visit www.atkearney.com/rosma.*

EXHIBIT 1

Return on Supply Management Assets



Source: A.T. Kearney analysis

2014 Warehouse/DC Operations Survey: Combatting Complexities

According to our sister magazine, *Logistics Management*'s annual survey, cost efficiency is still king. However, respondents tell us that the multi-channel fulfillment challenge is pushing them to make more economical moves focused on process improvement and layout changes—steps that analysts say are very encouraging.

By the Numbers

The *Annual Warehouse/DC Operations Survey* gauges trends in warehouse and DC operations, including size and scope of distribution activities, labor factors, expenditures, use of information technology (IT), as well as green initiatives and experience with supply chain disruptions. In September, the questionnaire was sent via e-mail to sister magazine *Logistics Management (LM)* subscribers, garnering more than 350 qualified responses from managers and executives involved in DC operations.

By Roberto Michel, Contributing Editor

The results of the annual *Warehouse and Distribution Center (DC) Operations Survey* are in, and, once again, cost efficiency is king. But this isn't the type of pure cost control seen in recent years when budgets were tight or in decline and DCs could rarely bring in new systems.

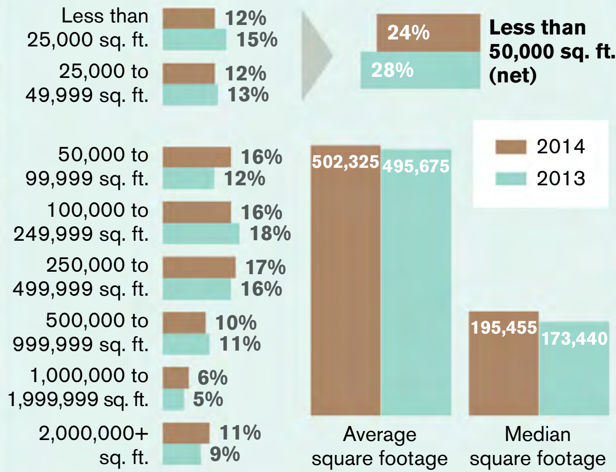
Instead, this year's survey shows a willingness to invest to meet the pressures of multi-channel fulfillment in a more cost efficient way. In short, the survey reveals respondents are more willing to spend a little to gain a lot.

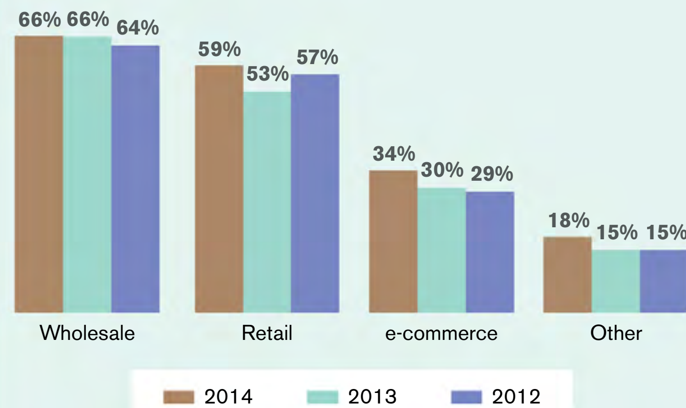
And according to our analysts, these professionals now understand that trying to tackle multi-channel complexities and a stronger economy with the same old systems and processes will not get them to the level of cost effectiveness that their organizations need.

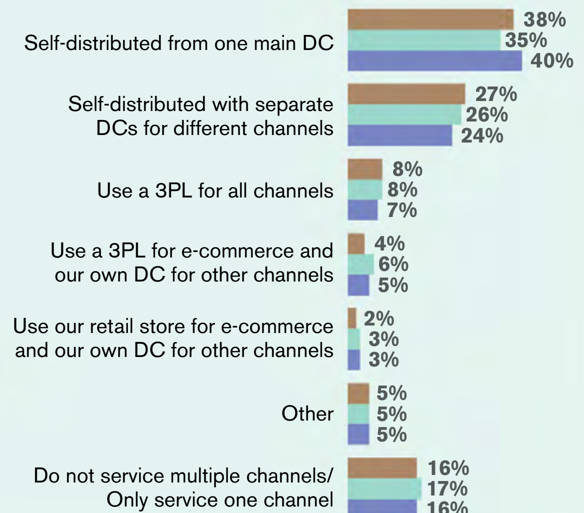
On top of these economically motivated innovations, we also see clear evidence of growth in this year's survey, notes Don Derewecki, senior consultant with St. Onge Co., a supply chain consulting firm and *LM*'s partner for the annual research project. Among this year's findings are:

2014 Warehouse/DC Operations Survey Webcast

Thursday, November 20th @ 2:00 p.m. ET







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• The average number of employees is up slightly, from 236 in 2013, to 249 in 2014.

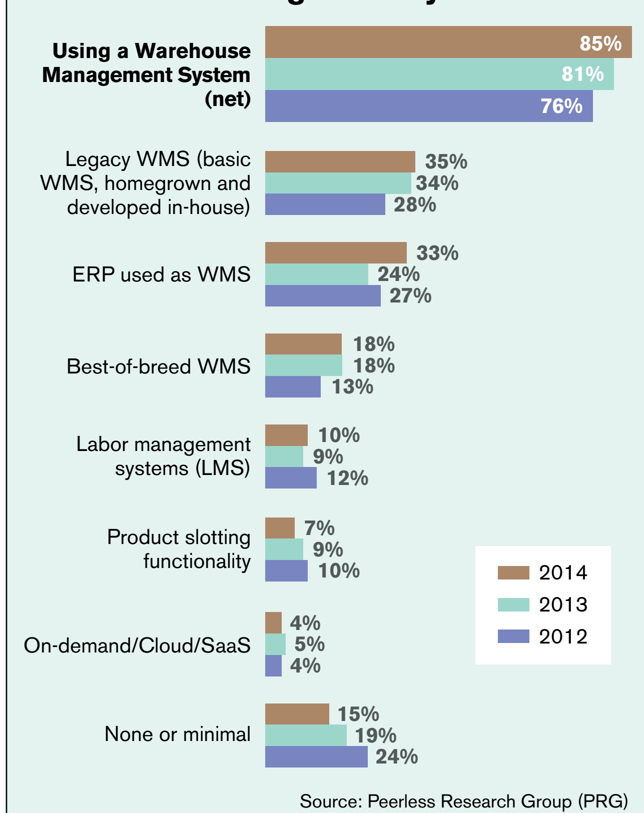
• Square footage within respondent DC networks is up, by 6.4 percent on average.

• Capital expenditure among respondents averaged just more than $1.3 million in 2014, up 24 percent from last year's average of slightly less than $1.1 million.

"When you look at average square footage being up by 6.4 percent, and by 12.7 percent on the median, those are pretty healthy increases," says Derewecki. "People don't go out and get more space when they are cutting back."

When you combine these survey findings with reports of spot shortages for DC labor in some areas, as well as the drying up of excess capacity for warehouse space, it's clear that the warehouse and logistics market is expanding. "There is more activity going on, generally," says Derewecki.

The surge in activity brings with it a slew of different challenges than what was normal for a DC a decade ago when it was common to get full pallets in and full pallets out, says Norm Saenz, managing director for St. Onge. In our 2014 survey, only 16 percent of respondents report receiving only full pallets of a single stock-keeping unit (SKU).



There's also more complexity on the outbound side of operations, with a need to pick individual e-commerce orders efficiently, as well as fulfill leaner orders to retailers or other businesses that, during the recession, got used to ordering in smaller, more frequent quantities. "Many companies had systems and processes that were set up for the full pallets and bigger shipment profiles of the past, but you have a lot more complexity now," says Saenz.

But perhaps the most encouraging trend from the 2014 survey is that respondents are finding multiple ways of dealing with pressures such as more e-commerce orders and growing demand for value-added services.

From more use of IT such as warehouse management system (WMS) or transportation management system (TMS) solutions, to changes to layouts and racks, warehouse and DC operations leaders are pursuing various ways of coping with complexity. There's expenditure involved, but the spending is seen as way of being more efficient given the pressure of today's smaller orders and intensive material handling requirements.

"People responsible for DCs are being very crafty this year," says Saenz. "There seems to be an uptick in focus, in creativity, and in diligence—really just smart management around process changes, layout changes, looking at transportation routings, and making better use of technology to help control costs. And those are all positive signs."

Fundamental Challenges

Most participating companies in this year's survey came from manufacturing (40 percent), followed by distributors (31 percent), third-party logistics providers (11 percent), and retailers (8 percent). Leading product sectors included food and grocery, general merchandize, and health care and pharmaceuticals.

As noted, only 16 percent of respondents deal only with full pallets of a single SKU on the inbound side, and 9 percent on the outbound side. On the inbound side, 30 percent handle mixed case pallets and loose cases, followed by 28 percent who handle full pallet of a single SKU, mixed case pallets, and loose cases. On the outbound side, the most common scenario (33 percent) is mixed-case pallets and loose cases, followed by 26 percent who handle full pallets of a single SKU, mixed case pallets, and loose cases.

In terms of multi-channel requirements, 34 percent of respondents service an e-commerce channel, up from 30 percent last year. Only 16 percent of respondents say they service only one channel. When it comes to how multiple channels are fulfilled, the leading strategy is self-distributed from one main DC, practiced by 38 percent, followed by 27 percent who self-distribute via

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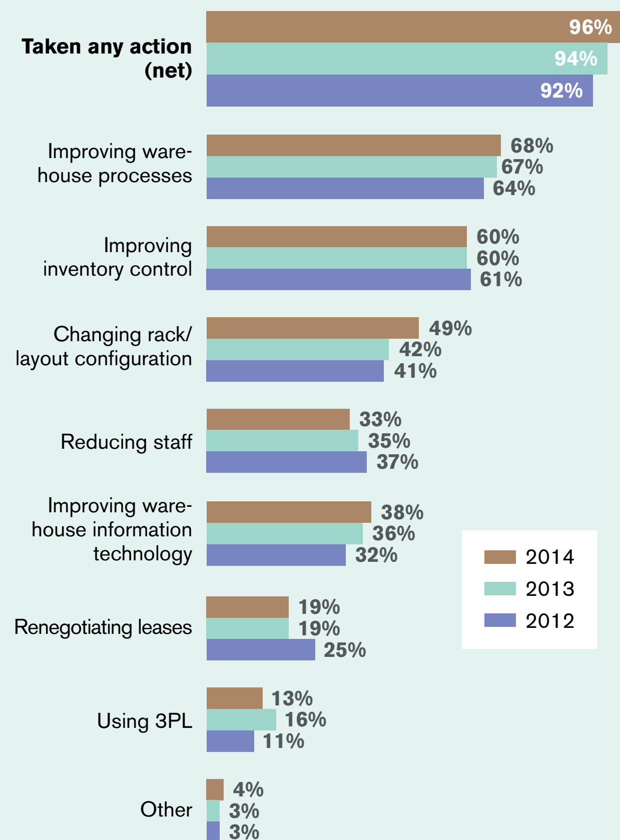

separate DCs for different channels.

While the e-commerce growth is not high, notes Derewecki, it's on the increase, and in effect, 84 percent of respondents service multiple channels to some degree.

As noted, the 2014 survey saw an increase in the number of employees per respondent company, while square footage was also on the rise. Total square footage in the network averaged 502,325, up from 495,675. The median figure for total square footage also climbed, from 173,440 last year to 195,455 this year. When asked if they planned to expand in the next 12 months, 74 percent said "yes"—up from 72 percent last year.

The demand on DCs for value-added services is also on the rise. This year 87 percent said that they performed value-added services including special labeling (56 percent), kitting (29 percent), and promotional packs (29 percent). Overall, value-added services have increased steadily the last two years, from 82 percent performing them in 2012, to 87 percent performing them today.

All these factors—more e-commerce, more handling of small orders, expanding operations and labor forces—add up to greater complexity. "Generally, operations are much more complicated than they were even five or 10 years ago," says Derewecki. "Any little thing that goes wrong can't be hidden—it comes to the surface quickly. This complexity is also leading to the use of more mechanization and technology to be able to comply with all of these requirements."

Actions and Investments

This year's respondents have been proactive. When asked if they had taken action in the past 12 months to lower DC operating costs, 96 percent said yes, up from 94 percent in 2013, and 92 percent in 2012. Leading areas of action included improving warehouse processes (68 percent), improving inventory control (60 percent), and changing rack/layout configuration (49 percent).

Changing rack and layout configuration saw one of the bigger increases, rising by 7 percent. In keeping with the generally stronger economy, the number of respondents saying that they have reduced staff as a means of controlling costs has declined the last two years, while "improving warehouse IT" has risen slightly the last two years.

To both Derewecki and Saenz, the willingness to take action is a major positive in this year's survey. "Those indicators are all good news," says Saenz, "We're seeing more people taking actions, focusing in on process improvements, or on layout changes. It's all encouraging."

Some actions need not entail huge technology investments. For instance, because of the rise in smaller orders and e-commerce, more companies have been changing rack configurations. This is typically done to create more pick slots, notes Saenz.

More respondents are also shifting toward the use of mechanized materials handling systems for both receiving and picking. Mechanized or conveyor-based receiving among respondents reached 15 percent, an increase of 3 percent over last year, while mechanized picking rose to 16 percent, up 2 percent from 2013 and double the 8 percent use rate in 2012.

Meanwhile, paper-based picking has declined from 66 percent in 2012 to 60 percent in 2014, and voice picking is on the rise, with voice assisted picking with scan verification up by 2 percent versus 2013.

Companies have also steadily moved to adopt WMS. While WMS has been around for decades, 85 percent of respondents now use a WMS of some type, up from 76 percent two years ago. Use of enterprise resources planning (ERP) systems for WMS rose from 24 percent in 2013 to 33 percent in 2014, while use of labor management systems software also rose slightly.

"That's a very good penetration rate for WMS,

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considering that there are many smaller sized respondent companies in the survey, and that just two years ago, it stood at 76 percent," notes Derewecki.

With multi-channel pressures likely to increase, says Saenz, it will be interesting to see if future surveys start to reflect more use of "best of breed" WMS. In 2014, use of best of breed held steady at 18 percent, but as Saenz notes, with complexity on the rise, companies will need solutions capable of batch picking in which multiple one line orders can be managed, which may push more companies toward advanced solutions.

"I'm surprised we haven't seen increasing use of best of breed, but I think it will start to happen soon," says Saenz.

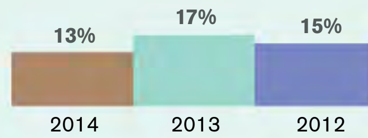
Respondents were also active with initiatives to reduce transportation costs, with 88 percent taking action of some type. Among the most common methods of reducing transportation costs is to renegotiate rates, although a slightly smaller percentage of respondents reported using that tactic in 2014 compared to 2013.

One tactic that did see an uptick (6 percent) was using TMS to optimize routes, an action taken by 22 percent of respondents in 2014. "That shows some real effort in studying the logistics costs and routings to find new ways of getting orders to the customer in the most efficient manner," says Saenz.

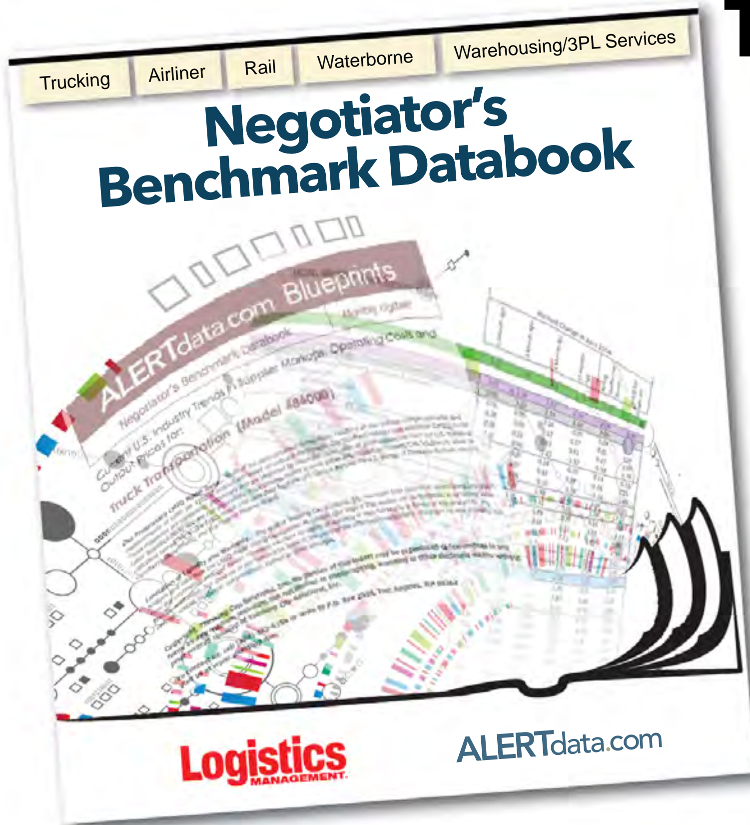
In short, there isn't one silver bullet for improvement, with respondents tapping everything from increased use of WMS to reconfiguring racks. As Derewecki sums up: "The majority of the people are taking multiple actions to improve their operations and lower costs."

Also encouraging, agree Derewecki and Saenz, is the fact that 90 percent of respondents are now using some type of productivity metric within the warehouse, such as tracking units per hour, lines per hour, or attainment rate on a labor standard. That fits with the smart management mentality needed today, says Saenz. "That tells me companies are looking at metrics as a way to help manage the continuing change toward more complex distribution operations," he says.

Organizations that have experienced a catastrophic event



Source: Peerless Research Group (PRG)



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Cause for Concern

The survey also tracks green supply chain and supply chain disruption issues. In terms of sustainable or green initiatives such as recycling, energy efficient lighting, or use of fans to improve air circulation, interest remains steady. Overall for 2014, 94 percent of respondents undertook at least one environmental initiative, up a mere 1 percent from 2013.

The percentage of respondents who experienced a catastrophic event in 2014 actually declined slightly from 2013, from 17 percent to 13 percent. However, the question elicited many individual comments on actions taken, including dual sourcing, more emphasis on domestic suppliers, installation of power protection solutions, and updating or improvement of disaster recovery plans.

"The fact that 13 percent of respondents experienced a disruption is significant," says Derewecki. "Companies know that they have to be prepared, because they know that, sooner or later, an event of some type is going to roll around to hit them."

However, the main day-to-day cause for concern comes back to the pressures of today's smaller, more frequent orders and intensive item handling in multi-channel environments. At the same time, the healthier U.S. economy is seeing more respondents increase employee head count as well as the amount of warehouse space. In effect, today there's more fulfillment complexity, and at a higher volume.

To top things off, the labor market is tighter, with 43 percent of respondents naming workforce retention as a major operational issue, tying with "insufficient space for inventory and/or operations" as the top area of concern.

Just as multichannel complexity is driving changes in DCs, so is the tighter labor market, says Derewecki. Both trends constitute a cost drain if DCs cannot adapt to them in efficient ways, he adds, such as through better technology that makes it easier to get new employees up to speed.

"Companies are realizing that they need to do one of two things, and possibly both, to deal with the tighter labor pool," Derewecki adds. "For one, they may need to raise pay rates to hold on to people; and two, they are going to have to improve their processes and technologies to gain more productivity and payoff from that investment in labor."

Roberto Michel is a Contributing Editor to SCMR

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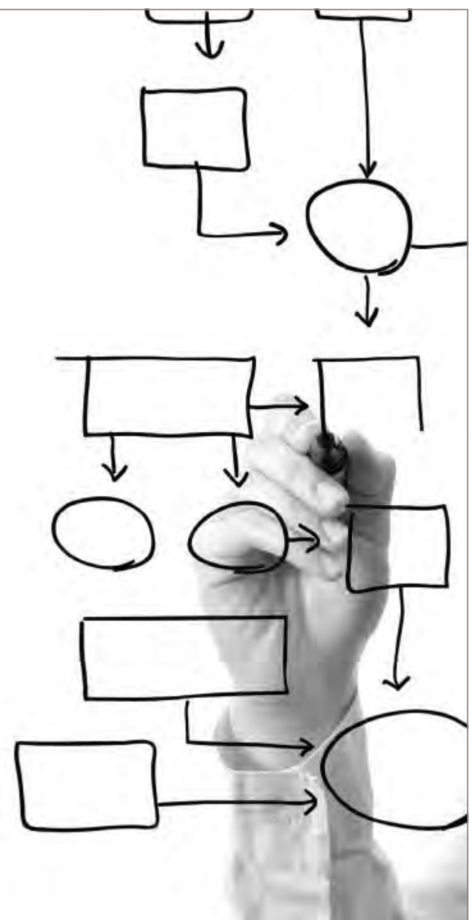


Investment Counts to Respond Rapidly To Changing Market Conditions

Many organizations say they respond quickly to market changes. Yet a majority have not adopted mature practices.

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

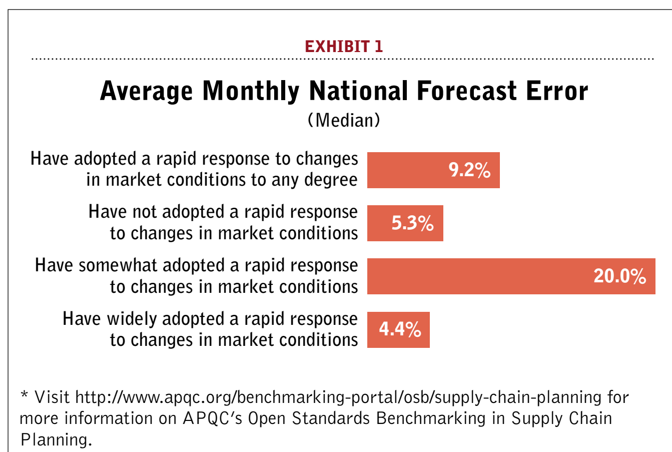
The complexities of doing business in a global market can take a toll on organizations' supply chains. Combine this with more volatile market conditions across the world and many supply chains struggle to keep up. To compensate, organizations are turning more toward data visibility and analysis that can enable them to better anticipate market changes. According to *APQC's Open Standards Benchmarking in Supply Chain Planning**, a sizeable majority of organizations (just over 80 percent) have adopted processes to enable a rapid response to changes in market conditions. Of this amount, 49 percent have adopted such processes somewhat and 32 percent have adopted them widely.

APQC recently examined how organizations that have a rapid response to changes in the market perform compared to organizations that do not have such processes in place. We also looked at whether certain practices necessary to ensure a rapid response (such as collaboration with external partners using electronic means) have been adopted by organizations and the extent to which they have been adopted.

Forecasting Accuracy and Inventory Cost

On the whole, APQC's data shows that organizations that have adopted processes to rapidly respond to changes in market conditions have a higher average monthly national forecast error (measured as the mean absolute percentage error). As Exhibit 1 shows, at the median, organizations that have adopted these processes have an average monthly national forecast error of 9.2 percent. Organizations that do not have processes for rapidly responding to changes in market conditions have only a 5.3 percent average monthly error.

Although organizations that rapidly respond to changes have a higher forecast error overall, we can gain additional insight by comparing the error percentages for organizations that have implemented a rapid response to varying degrees. APQC's data shows that organizations

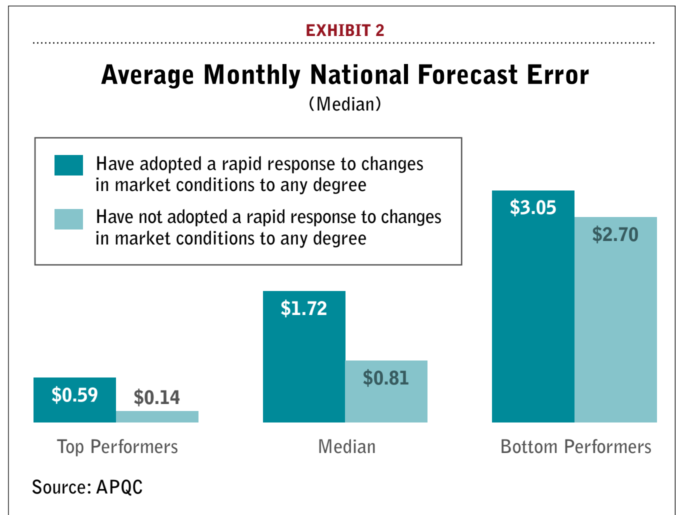


* Visit http://www.apqc.org/benchmarking-portal/osb/supply-chain-planning for more information on APQC's Open Standards Benchmarking in Supply Chain Planning.

that have widely adopted processes to enable a rapid response to changing market conditions have the lowest average monthly error of all: 4.4 percent at the median. However, organizations that have adopted these processes somewhat have a much higher error rate at the median: 20 percent. The organizations that have widely adopted processes for responding to market changes may have a much lower forecast error because they conduct data analysis and communicate with their external stakeholders in order to better predict demand.

Despite having a higher monthly national forecast error overall, organizations that have adopted processes to rapidly respond to changing market conditions have slightly lower inventory carrying costs. At the median, the inventory carrying cost for these organizations is 8 percent of their average inventory value. Organizations that have not adopted such processes have a median inventory carrying cost of 9 percent of their average inventory value. These results suggest that organizations better prepared for changes in the market have taken additional steps to reduce the amount of inventory that they carry.

EXHIBIT 2



Source: APQC

Demand and Supply Planning Cost

APQC's data also shows that organizations with a rapid response to changing market conditions pay more to conduct demand and supply planning than other organizations. As illustrated in Exhibit 2, the difference in demand and supply planning cost between the two groups at the median is $0.91 per $1,000 in revenue. For an organization with $5 billion in annual revenue, this would translate into a difference of $4.55 million associated with the ability to rapidly respond to changes in market conditions.

The difference in the amounts that organizations spend on demand and supply planning is not shocking given that organizations must put additional programs into place to enable the tracking of and quick response to changing market conditions. Organizations conducting data analysis must adopt more advanced technology to store and track data. Those in close communication with external partners must also put forth more effort to ensure that useful information is obtained from these close relationships.

Opportunity for Improvement

The results of APQC's data analysis clearly indicate that organizations want to be ahead of the game when it comes to rapid changes in their markets. However, the data regarding forecasting errors indicates that organizations that have somewhat adopted processes aimed at quickly addressing market changes still have room to improve. Firms can move forward by continuing to enhance their access to and analysis of supply chain data.

Focusing on data visibility and leveraging in-depth data analysis is one major step that organizations can take to better prepare themselves for market changes.

Additional APQC research indicates that most firms have not reached the level of maturity with regard to data access and analysis required for superior forecasting. Over 32 percent of organizations surveyed by APQC have access to their structured operational data but only limited access to basic data from external sources. These organizations also limit their data analysis to past actions and consequences. Slightly more than 37 percent of organizations surveyed have access to unstructured enterprise data but are still limited in their access to external data. For these organizations data analysis

and decision making is slightly more advanced in that it can involve both historic analysis and predictive algorithms. Only 10 percent of organizations have access to real-time internal and external data across the enterprise. These organizations allow manipulation of data on demand and incorporate data-driven decision making within the organizational culture.

Organizations should take full account of the potential costs associated with data visibility and external collaboration to determine an amount that makes the most sense.

Focusing on data visibility and leveraging in-depth data analysis is one major step that organizations can take to better prepare themselves for market changes. Another step is to work with both suppliers and customers to obtain a complete picture of the supply chain. Electronically facilitated collaboration with these partners offers the best opportunity for organizations to get up-to-date information on any changes that occur.

Yet not all electronic methods of collaboration offer the same degree of benefit. Those that offer faster and more agile access to data, such as web-enabled technologies, give organizations the ready access they need to information from their partners. According to APQC's data, a majority of organizations that engage in collaborative planning with their external partners do not do so electronically. Nearly 67 percent of organizations surveyed have not implemented electronic collaborative planning with their suppliers. Of the group that does use electronic means, 65 percent use web-enabled technologies. The data is similar for organizations that conduct collaborative planning with their customers. Nearly 72 percent of organizations surveyed by APQC do not conduct this planning electronically. Of those that do, 59 percent do so using web-enabled technologies.

APQC's data indicates that organizations may not be obtaining the full benefit of their efforts to respond quickly to changes in the market. By improving their access to data and analysis capabilities, as well as adopting fast and agile technologies for external collaboration, these organizations can be better prepared to respond to fluctuations in the market.

Yet organizations must also balance speed with necessary investments in technologies, and this may be even more important given that organizations with processes to rapidly respond to changes in the market spend more on demand and supply planning than their counterparts without such processes. As with any investment, organizations should take full account of the potential costs associated with data visibility and external collaboration to determine an amount that makes the most sense.

APQC is a member-based nonprofit and one of the leading proponents of benchmarking and best practice business research. Working with more than 500 organizations worldwide in all industries, APQC focuses on providing organizations with the information they need to work smarter, faster, and with confidence. For more information visit www.apqc.org.

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