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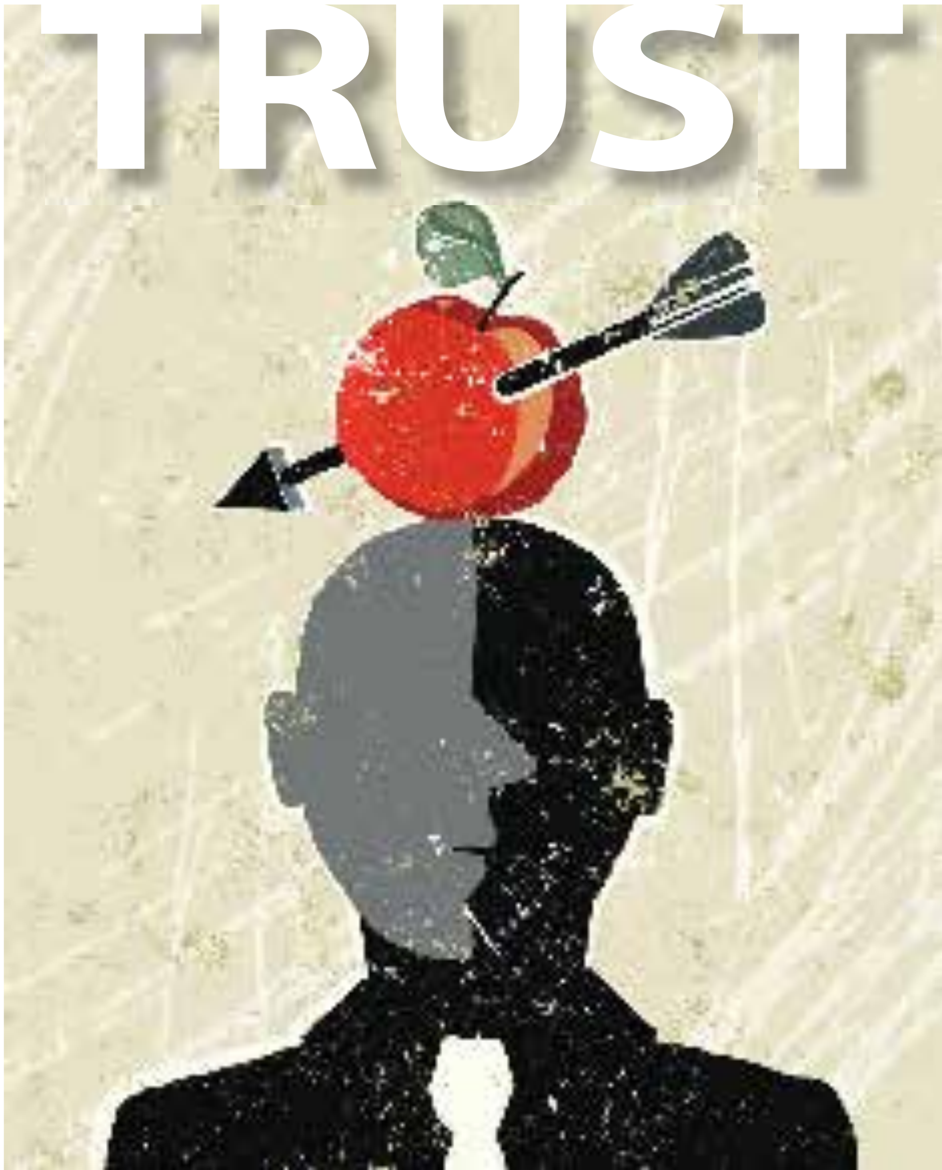

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The trust factor

At some point, you've probably been on a company retreat and participated in a team-building exercise where you were urged to close your eyes and fall backward. While you may have had a knot in your stomach as you gave up on gravity, you trusted that your team mate would be there to catch you before you hit the ground. Indeed, trust in your co-workers is an essential element to moving a company's goals forward.

Trust hasn't always been an element in supplier relationships; all too often buyers have been encouraged to carry a big stick and get tough with suppliers to get the best price—no matter the cost.

That approach to procurement is beginning to change. Manufacturers like GM are learning that in today's environment, developing a trusting, culturally-aligned relationship with suppliers is crucial to gaining access to the new technologies and innovations that win in the marketplace before the competition. Those close-knit relationships can also lead to better financial performance. In this issue of *Supply Chain Management Review*, GM describes how it launched a Strategic Supplier Engagement initiative that is delivering results on both fronts.

Trust is also a theme that runs through two other articles in the issue. Ryan Fernandes and Lisa M. Ellram explain how supply chain working capital finance can improve—or degrade—the relationship between a supplier and customer when it is not appropriately applied. Similarly Frank Mobus and Staples' Brad Young write about the value of leverage as a tool to improve contracts and relationships.

We round out the issue with a look at how to collaborate with suppliers on innovation and why so many retail supply chain transformations fail to deliver—and how to do them right.

I'd like to finish this column by saying goodbye to special projects editor John Kerr and hello to Gary Forger. John edited articles for *SCMR* for 17 years—almost since its inception—and is one of the best editors I've had the pleasure of working with. Every writer who was lucky enough to work with John, including the co-authors of the supply chain finance article, will tell you that he enriched the writing. Gary Forger and I have been colleagues since 1984, when he was my editor on *Modern Materials Handling* magazine. Like John, Gary knows how to bring out the best in authors and their articles. I'm looking forward most to having him on board.

As always, I look forward to hearing from you with any comments or suggestions for future stories in *SCMR*.

Bob Trebilcock, Editorial Director
btrebilcock@peerlessmedia.com

SUPPLYCHAIN MANAGEMENT REVIEW

EDITORIAL OFFICES
111 SPEEN ST., SUITE 200
FRAMINGHAM, MA 01701-2000
1-800-375-8015

Bob Trebilcock
Editorial Director
btrebilcock@peerlessmedia.com

Frank Quinn
Editorial Advisor

Patrick Burnson
Executive Editor
pburnson@peerlessmedia.com

Sarah Petrie
Executive Managing Editor
spetrie@peerlessmedia.com

Chris Lewis
Creative Director
clewis@peerlessmedia.com

Wendy DelCampo
Art Director
wdelcampo@peerlessmedia.com

John Kerr
Special Projects Editor
johnkerr@ergoeditorial.biz

Jeff Berman
Online News Editor
jberman@peerlessmedia.com

Kelly Jones
Production Manager
kjones@peerlessmedia.com

Brian Ceraolo
President and Group Publisher
bceraolo@peerlessmedia.com

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PO Box 677, Northbrook, IL 60065-0677

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May/June 2017 Volume 21, Number 5

SupplyChain Management Review

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Too often, working capital pressures roll over supplier relationships without regard for what happens to supply chain risk. With new supply chain financing tools and techniques, companies have a fresh chance to apply those approaches as part of a coherent business strategy.

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 BY LARRY LAPIDE

Lessons for planners from the 2016 campaign

Business forecasters and planners can learn from the mistakes of the pollsters in the 2016 presidential election.

We have just come off of a presidential election year in which the political pollsters concur that they really missed the boat. Few (at best) picked Donald Trump to win the election. Countless articles have since been written trying to decipher how the profession could have been so wrong. Business forecasters and planners can learn from their mistakes. They understand that forecasts and plans are never perfect; thus they would suspect pollsters are being hard on themselves. However, I believe pollsters (as a whole) did not do a good job—and that there are lessons for forecasters in their results.

When an outcome is binary, such as when calling a coin toss, around half of a group would likely be wrong. So if the election was reasonably close, on average around half of the pollsters should have picked the winner. However, President Trump was a long shot—meaning less than 50% should have picked him. The *New York Times* and FiveThirtyEight, both respected pollsters, gave Trump a 15% and 29% chance of winning, respectively. I believe the latter was more accurate, but even if the former was, then around 15% of the pollsters should have predicted Trump the winner. The unbelievably minuscule number of pollsters that did predict him to win lends some credence to the pollsters being biased.

My assessment

During one year of my tenure as a business forecaster, I forecasted a substantial change in the annual revenue trend of my division. That was a good year for me in that I forecasted a revenue turning point—from low double-digit annual percentage growth to flat revenues. It was a bad year because the executives, managers and co-workers refused to believe the forecast because the division was coming off of multiple years of revenue growth.*

I took away four lessons from that experience. The first was: Do opinion-less forecasting. Forecasters should watch out for hidden agendas and strive to provide unbiased forecasts. As mentioned earlier, campaign pollster bias against Trump might have affected their accuracy. Perhaps pollsters who forecasted a Trump win refused to defend it to peers.

The second lesson was: Provide an estimate of forecast accuracy instead of a point forecast. Most pollsters do this, but it is usually in the form of the confidence in a survey's results, not on the chances of a candidate winning, such as was done by the *New York Times* and FiveThirtyEight.

The third lesson: Stay out of politics. Why? Because when business declines, corporate politics get nasty (though certainly not as nasty as experienced by pollsters because politics is precisely their profession).

The fourth and final lesson: Be professional. During my year, whenever colleagues questioned my forecasts, I calmly defended the facts, figures and assumptions that drove them. Had the pollsters acted more like professionals during the campaign, I suspect substantially more would have admitted that they predicted a Trump win. It seems that some of them likely backed down from defending a Trump win when faced with backlash from peers.

I once recommended** a book written by the statistician Nate Silver, "The Signal and the Noise: Why So Many Predictions Fail—But Some

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.

Don't." As part of that recommendation, I discussed the concept of signals versus noise, as well as some of the lessons learned from researching the use of downstream supply chain data—our industry's long-standing Big Data initiative. The major lesson was to identify a few key signals from the Big Data upon which to focus, and consider the other data as noise that adds no useful information toward improving decision-making. Thus, I advised managers to focus their search of downstream supply chain data on identifying "a few good signals."

Interestingly, in this election the pollsters missed the key "signal in the noise" that seemed obvious once the election results were in. It was the fact that after the 2008 Obama election—that gave Democrats a federal government mandate—the Republicans incrementally increased in congressional, state and local power in the succeeding elections of 2010, 2012 and 2014. So did the pollsters consider that this Republican momentum might win the presidency as well? Because pollsters rely on survey data, it's unlikely many would have noted this signal, and even if they did, they were likely so biased against Republicans to give it credence.

Finally, in a prior column***, I discussed the consequences attributed to the models that had been put in place by the so-called Wall Street "quants," or math whizzes, to make trading decisions—especially for the imploding mortgage market. While not triggering the 2007-2008 financial meltdown, they sent the trading markets into a rapid tailspin. I recommended learning from the quants' experiences and living by a modified "Modeler's Hippocratic Oath." The oath reminds modelers not to have over-confidence in sophisticated, elegant models that no one understands. I speculated that the models used by the pollsters were sophisticated and complicated because state-by-state electoral votes had to be forecast. If so, some pollsters might have been too confident in their predictions of a Clinton win because they were enamored by the elegance of their modeling and large-scale data. Apparently their state-based models added no value to predicting a winner in comparison to just using the simple Republican momentum signal.

Their view

Since the election, a number of publications have written about the 2016 campaign polling. Generally, the authors have noted that pollsters were unable to understand voters well using classical polling techniques. One *Washington Examiner* online discussion by Michael Barone, titled "Barone: Is This Why the Pollsters Failed?" discussed observations such as those below.

The "Asymmetry of the Double Negatives" pointed out that 2016 was the first year since 1935 that most voters had negative views toward both major candidates. Voters that have positive feelings traditionally vote along partisan lines. It appears that "double-negative" voters voted for Trump almost twice as often as Clinton—apparently voting for change. Pollsters failed to adequately drill down on the preferences of this important voter segment.

"The failed attempt to replicate the Obama coalition strategy" meant pollsters generally assumed that the Obama campaigns were models for the 2016 election. However, Obama was a unique candidate. The better model might have been the Bush-Gore election in which the former won the Electoral College vote, and the latter the plurality of voters.

I advised managers to focus their search of downstream supply chain data on identifying "a few good signals."

Clinton failed to target the key voter segment that Trump did. Writing in *Newsmax*, Marc Rodov called this segment "the forgotten, neglected, frustrated, patriotic citizens," and pointed out that the "pollsters and pundits relied on models and calculations in their ivory towers," using "sterile data analyses" devoid of human emotion. Simply put, I'd say the "virtual world" view that was projected by the media and social networks during the campaign was disconnected from the real-world's conditions on the ground. For example, some pollsters did Survey Monkey polls not realizing that the key voter segment is not particularly computer-savvy, thus their polls did not

adequately capture its perspectives.

The "narrowness of the Obama Democratic Coalition" meant that the Democratic voters were concentrated in central cities, with Republicans voters spread out more evenly around the country. Realistically, polling state-by-state voters required the use of sophisticated segmenting schemes. The rural areas needed adequate representation in surveys, yet this was difficult—some rural voters did not admit that they would be voting for Trump. They may have not answered the phone or not responded to an internet survey.

The lesson for supply chain professionals is simple: Forecasters and planners must learn that customer requirements need to be understood and well-modeled to better represent the real physical world.

To summarize: Recall that the pollsters were under pressure from having played on a politicized stage during a chaotic campaign. Of course, after the fact it's always easier to identify what the pollsters could have done better. This includes the greater understanding of voter segments such as the "double-negatives" and the "disenfranchised" voter segments, as well as not using the Obama elections as models. Another includes not over-relying on Big Data from the virtual world of media and social networks that were disconnected from the realities "on the ground."

The lesson for supply chain professionals is simple: Forecasters and planners must learn that customer requirements need to be understood and well-modeled to better represent the real physical world (especially for important customer segments) by not relying exclusively on the electronically-based virtual world. Just as important, they must recognize that while forecasts are never perfect, they need to be unbiased and defended by full transparency of the facts, figures and assumptions that created them. Why? Because it's exactly what forecasters and planners are paid to do.

"My Year as a Corporate Cassandra," (*SCMR*, May/Jun 2015).*
"The Promise and Pitfalls of Big Data," (*SCMR*, Jul/Aug 2013).**
"Take the Supply Chain Modeler's Oath," (*SCMR* July/August 2011).***

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Turning disruptive change into a competitive advantage

By James B. Rice Jr. and Mario Dobrovnik

In today's fast-changing business environment, companies need to react quickly and decisively to disruptive market changes. Yet many enterprises lack the ability to respond swiftly to these competitive threats. The classic case of an enterprise that stumbled in this way is Kodak's failure to adapt to the digitization of the film business. And ironically, Kodak was one of the early developers of digital photography.

James B. Rice Jr. is deputy director, MIT CTL. He can be reached at jrice@mit.edu. Mario Dobrovnik is a research associate at Vienna University of Economics and Business. He can be reached at mario.dobrovnik@wu.ac.at.

But Kodak's missteps are far from unique. For example, IBM failed to recognize how the locus of value changed from assemblers to component providers such as Intel and Microsoft, and lost their dominance of the personal computer market. Moreover, as the pace of change continues to accelerate, more companies are prone to being caught unaware when a transformative market change appears out of left field.

Today, this is happening in the auto market, which is witnessing a potentially dramatic shift in the locus of value creation away from global OEMs such as Ford, GM, Honda, Toyota and Volkswagen, and toward companies that are supplying technology for self-driving, connected and electrified vehicles. It's unclear who will prevail, especially as a number of tech companies are making big investments in auto technology suppliers. Intel recently acquired Mobileye for $15 billion, Samsung acquired Harman International for $8 billion, and Apple and Google are making forays into producing their own vehicles. One pundit characterized this competition as the race to create "servers on wheels," as computing takes precedence over the transportation function of vehicles.

How do companies reorient themselves to be vigilant and reactive to such transformative threats? Our studies and intuition tell us that the supply chain management function has a key role to play, especially in facilitating a swift response to unexpected market shifts. After studying numerous current and historical cases in multiple industries, we believe that companies need to take a more structured approach to identifying and dealing with market changes. They need to assess related business challenges and opportunities as well as the impact and role of supply chain during industry transitions.

Reflex actions

Our research at the MIT Center for Transportation & Logistics (MIT CTL) identified three main types of developments that can trigger the emergence of new business models in an industry.

- **Commoditization of the core business.** When this happens, companies need to find new ways to differentiate their products. This occurred recently in the personal computer marketplace.
- **Changing customer preferences.** Nokia missed the shift toward smart phones and especially the introduction of the iPhone a decade ago and lost its market leadership.
- **Innovation.** This trigger can render established business models obsolete or create new opportunities. Often, a product platform changes, but sometimes operational shifts drive the innovation.

In each case, the supply chain management function can be a key enabler of the response. Speed is critically important when reacting to market shifts—adjusting the supply chain or creating a new one speedily, changing product types on a dime, getting a new product to market before competition and scaling operations when needed as soon as possible. Supply chain is a central player in meeting every one of these goals.

The function can also help companies react speedily when product innovations fail. A perfect example is the failure of the Samsung Galaxy Note and the disastrous fall out for its manufacturer. The company's supply chain needed not only to be fast in getting the Note 7 into the market place, it also had to speedily return failed phones and deliver replacements. The episode highlights a problem that companies in fast-moving markets face: the need to gain first-mover advantage by getting products to market without delay, while ensuring that new offerings are marketplace ready.

Companies respond to market inflections in many ways. We identified several common responses to disruptive changes, and the consequences for those companies involved.

Paralysis. Inaction, or deferring a reaction to a market change, causes companies to lose competitive ground. FedEx was caught flat-footed when its arch-rival UPS acquired the shipping chain Mail Boxes Etc. in 2001. UPS decided to increase its on-the-ground presence in anticipation of the growth in e-commerce sales channels—a game-changing development. The acquisition immediately brought 3,000 franchises under UPS control. FedEx was forced to react hastily, and purchased Kinko's at a premium price for fewer outlets.

Partial channel integration and partnering. This course of action brings capabilities needed to navigate a period of change. When consumer demand for non-carbonated beverages increased, soda manufacturer PepsiCo acquired two of its largest bottlers. The move enabled the company to develop new products faster and in smaller batches, thereby competing more effectively in non-carbonated drinks markets. Commoditization of its core business persuaded Hewlett Packard to become less reliant on hardware manufacturing, and to introduce more value-added services. HP partnered with various companies such as Cisco Systems and Microsoft to implement the strategy.

Full channel integration and transformation. By gaining complete control of the supply chain, a company can fend off competitive threats. Zara has effectively created a new dominant design in the fast fashion/apparel industry by vertically integrating almost all elements of its supply chain. Importantly, the company has integrated these elements with real-time visibility from design to individual store operations, enabling Zara to replenish stores with new product designs within two weeks.

Capability-based diversification. Companies under threat from market changes can counter by finding ways to leverage existing competencies. Fuji Films reacted very differently from Kodak when the digitization of the market for film changed the competitive landscape. The company used its expertise and capabilities to penetrate other markets: For example, it used its library of over 200,000 chemical compounds as well as synthesis and analysis technologies to identify skin care products.

Looking for answers

How can companies choose which action to take—assuming they are on the lookout for competitive threats and receptive to change? Based on our research, we believe that enterprises can start to prepare themselves for disruptive change by answering a set of interrelated questions.

How can your industry be disrupted? Study the characteristics of the market, paying attention to its dominant design. Dominant design refers to the product functions and components that dominate a market. These features tend to standardize the design of products until a disruptive change.

How can you disrupt your industry and other industries? In what ways could you disrupt the dominant design? Look for ways to redefine these designs, and include adjacent markets in your search.

What would you like to/can achieve? In light of the potential ways to disrupt the industry, consider your current capabilities and business objectives to determine what new product offerings can be accomplished.

Who is your target customer? Identify and define prospective buyers for the potential new offerings.

How would you characterize product/service offerings? What product portfolio will meet the needs of customers, and what is the market size and earnings potential? Include value-add services in your analyses.

How would you design and configure a supply chain to support the disruptive changes? What supply chain strategy will you need to execute the changes you have identified for the potential new product portfolio, and how do existing structures and processes meet these requirements? This critical step defines how the products will be delivered to customers.

Which competencies and capabilities do you need? For example, will you need to go outside your organization to acquire new expertise, such as the ability to implement rapid prototyping and small scale production ramp up?

When should you act? Timing is everything—which is why this is one of the most difficult questions to answer. An issue to watch out for is action inertia; the inability to act when a change signaling transformation becomes evident.

Taking the initiative

Reacting to a sudden market turn has never been easy, but the extreme levels of volatility that companies must now deal with make the challenge more difficult than ever. Some changes are seemingly unfathomable; a decade ago who would have predicted that apparel and consumer electronics companies would come together to create a global market for wearables? Answering the questions above can help highlight potential threats and activate the response mechanisms every company needs to develop.

Blockchain coming of age

Supply chain managers have yet to fully embrace the power of blockchain technology, say analysts, but the advance seems all but inexorable.

Patrick Burnson is executive editor at *Supply Chain Management Review*. He can be reached at pburnson@peerlessmedia.com

Two blue chip players in today's global supply chain marketplace recently announced that they plan to introduce a "transformational" service designed to expedite ocean cargo shipping and mitigate supply chain risk.

Maersk, which has partnered with the Chinese e-commerce provider Alibaba, is now joining IBM in a widely celebrated effort to introduce blockchain technology to link supply chain managers, freight forwarders, other ocean carriers, ports and Customs authorities. The blockchain solution based on the Hyperledger Fabric and built by IBM and Maersk is designed to help manage and track the paper trail of tens of millions of shipping containers across the world by digitizing the supply chain process from end-to-end to enhance transparency and the highly secure sharing of information among trading partners. When adopted at-scale, the solution has the potential to save the industry billions of dollars, says Maersk.

"We expect this to not only reduce the cost of goods for consumers, but also make global trade more accessible to a much larger number of players from both emerging and developed countries," says Ibrahim Gokcen, Maersk's chief digital officer.

In an interview, analysts noted that the Danish super carrier is positioned to identify the best ocean lanes for the initial launch of this collaboration.

"Maersk will certainly know where the potential choke points are in the supply chain," says Martha Bennett, Principal Analyst at Forrester Research, London, UK. "The regulatory barriers will also have to be addressed," she says. Just how soon this strategy will be implemented is "the $64 million dollar question," says Bennett.

There are other questions, she adds. "Then there's the industry 'buy in' to consider. How many other ocean carriers will want to join? Finally there's getting official approval."

Closing the deal

Bennett is optimistic about the deal, however, and feels that once the "solicitation for participation" has been made, real traction will move it forward.

Bridget van Kralingen, senior vice president, Industry Platforms, IBM, is even more bullish on the prospects. She told *Global Links* that blockchain technology can potentially provide "massive savings" when used broadly across the ocean shipping industry "ecosystem."

In a nutshell, this is how it works:

- Each participant in a supply chain ecosystem can view the progress of goods through the supply chain, understanding where an in-transit container is located. They can also see the status of Customs documents, or view bills of lading and other data.
- Detailed visibility of the container's progress through the supply chain is enhanced with the real time exchange of original supply chain events and documents.
- No one party can modify, delete or even append any record without the consensus from others on the network.
- This level of transparency helps reduce fraud and errors, reduce the time products spend in the transit and shipping process, improve inventory management and ultimately reduce waste and cost.

The solution enables the real time exchange of original supply chain events and documents

through a digital infrastructure, or data pipeline, that connects the participants in a supply chain ecosystem.

"We are not terribly concerned about government regulators creating obstacles for its implementation," says van Kralingen. "They are not in the business of making money, after all. They just want to ensure that we are providing another layer of security and financial settlement."

Holy Grail?

In an interview with The *New York Times*, Walmart's vice president of food safety said he is convinced "that maybe we were onto the Holy Grail," when driving a separate deal with IBM in recent months. He added that much of his faith is driven by the belief that blockchain brings together digital marginal economics, unit level entity identification and cutting edge cyber-security.

A new study conducted by Deloitte, "Industry 4.0 and cyber risk: Security in an age of connected production," also finds that blockchains have the potential to help mitigate current cyber-security risks by streamlining the flow of goods and information.

But skeptics abound, including Kevin O'Marah, chief content officer of SCM World, who surmises: "It feels a bit like RFID déjà vu."

While blockchain may now be at the peak of Gartner's "hype cycle," its next stop could be the "trough of disillusionment." O'Marah notes, however, that blockchain does not require devices like RFID, nor does it need reading hardware to be effective. "Understanding blockchain is now imperative, but this does not necessarily mean you should hurry into any projects or even pilots at this stage," he cautions.

Maturity issues

Gartner's brand manager, Kasey Panetta, agrees, observing that the consultancy estimates that 90% of enterprise blockchain projects launched last year will fail in the coming months—if they are not already dead.

"Confusing future blockchain technology with the present-day generation blockchain platform technology is limited in scope, and falls short of meeting the requirements of a global-scale distribution platform that can enable the programmable economy," adds Panetta.

The good news, however, may be that simply knowing where the frequent points of failure exist can help enterprises avoid falling into the same traps.

"For a project to utilize blockchain technology effectively, it must add trust to an untrusted environment and exploit a distributed ledger mechanism," says Panetta. "Private blockchain deployments relax the security conditions in favor of a centralized identity management system and consensus mechanism that obviates the trustless assumptions."

To correct this, analysts agree, enterprises must create a "trust model" of the entire system before the existing platforms out there reach any real level of maturity.

Unlocking the Potential of Supply Chain Working Capital Finance

Too often, working capital pressures roll over supplier relationships without regard for what happens to supply chain risk. But now that new supply chain financing tools and techniques are proliferating, companies have a fresh chance to implement a coherent business strategy that balances the legitimate concerns of the buyer's finance department with those of the company's supply chain management experts.

Ryan Fernandes is a financial services professional experienced in supply chain finance based in Melbourne, Australia. He can be reached at mr.ryan.fernandes@gmail.com. Lisa M. Ellram, Ph.D. is the Rees Distinguished Professor of Supply Chain Management at Miami University. She can be reached at Ellramlm@miamioh.edu.

IT MUST HAVE BEEN A HUGE SHOCK FOR SUPPLIERS. During the heart of the recession in January 2009, beverage giant Anheuser-Busch InBev extended its payment terms from 30 days to 120 days with less than a month's notice, giving suppliers no time to prepare.

We don't know exactly how the suppliers responded, but looking at Anheuser-Busch InBev's financial statements, we know that its trade accounts and other deferred expenses payable went from $4.833 billion to $5.657 billion between 2008 and 2009. That freed up $824 million in working capital for the company. Assuming that it was InBev's smaller, less powerful suppliers that collectively lost that working capital, they probably also incurred financing costs of around $123 million, all told.*

Around the same time, global beverage giant Diageo went from 30 days to 60 days payment, with no warning or offsetting compensation for its suppliers. Many other large companies, including Johnson & Johnson and Tesco, used the global financial crisis as a rationale for extending terms—even on previously negotiated contracts—and for aggressively monitoring collections from their debtors.

BY RYAN FERNANDES AND LISA M. ELLRAM

These large companies were, and are, hardly alone in making such moves. A survey by the American Productivity and Quality Center (APQC) reveals growing financial pressure on suppliers as buyers push for longer days payable outstanding (DPO) terms. Over a three-year period, nearly 66% of those surveyed found that one or more key buyers have noticeably stretched the time between receipt of invoice and transmission of payment, according to the APQC survey. The pressure on suppliers is intensifying: nearly 60% of those surveyed by APQC said they will likely have to leave the market because of such extended payment terms.

When large buyers unilaterally impose new payments terms on their suppliers, they are essentially shifting the working capital burden further up the supply chain. But in doing so, they add significant risk to the supply chain.

Of course, buyers cannot be faulted for striving to free up cash, and delaying payments is a great way to deliver on shareholders' expectations. At a 3% interest rate, Wal-mart earns about $2 million each day on its accounts payable owed to suppliers, according to a report in *Forbes*.

Increasingly, working capital ratios are a core metric for gauging an organization's performance. Typically, investors and market analysts applaud when companies bolster working capital by extending their DPO terms.

This assumes that small and medium-sized suppliers had a financing cost of around 15% at the time (15% x $864 mil). In contrast, InBev would have saved around $30 mil (3.5% x $864 mil). *

But what investors and analysts don't so easily see are the knock-on effects of those new terms—notably the upsurge in supply chain risk at the very time when it is increasingly important to lower such risks. Research shows that investors punish companies when their supply chain suffers from major interruptions—the kind of interruptions that make the news, such as natural disasters and supplier problems.

So what's the answer? What can supply chain leaders do to minimize risks while meeting the financial needs of both buyers and suppliers?

One area that is attracting markedly more attention these days is supply chain working capital finance (SCWCF.) This financial tool—augmented by technology such as cloud-based computing platforms—is being provided by new financial technology ("fintech") specialists as well as by operations set up recently by traditional financial services companies such as Citi Group and Deutsche Bank.

Overall, supply chain financing is on the rise, with enormous room to expand; recently, Treasury & Risk noted that in 2015, only about 17% of 100 companies surveyed (most with annual revenue exceeding $1 billion) said they were using supply chain finance, with a very small percentage saying they made "significant" use of it. Meanwhile, fintechs in general are proliferating at an astonishing rate: venture funding in the sector swelled by nearly 11% in 2016, to more than $17 billion worldwide, according to data from PitchBook.

Wal-mart recently used SCWCF services to good effect when it extended payment terms from 20 days to 90 days for 10,000 suppliers of slow-moving items. The retailer negotiated a low-interest credit line with third-party lenders. With its stated goal of "Everyday Low Prices," Wal-mart appears to have understood that "…the additional financing costs that suppliers incur because they aren't being paid promptly work their way back into higher prices for consumers."

For most organizations, implementing an effective SCWCF program is a strategic decision—one that calls for close collaboration not only between buyer and supplier, but also among a number of functions within each business. In this article, we outline how SCWCF can help organizations collaborate and create a win-win outcome for both sides. We will provide a clear definition of the tool and explore how it compares to more traditional approaches to managing supply chain working capital. And, we will outline practical considerations for supply chain managers to consider before embarking on the SCWCF journey.

This assumes that small and medium-sized suppliers had a financing cost of around 15% at the time (15% * $864mil). In contrast, InBev would have saved around $30 mil (3.5% * $864mil). *

Shifting the burden—the wrong way

When large buyers unilaterally impose new payments terms on their suppliers, they are essentially shifting the working capital burden further up the supply chain. But in doing so, they add significant risk to the supply chain, including business continuity risk, supplier viability risk, material cost inflation, relationship deterioration, lack of support from suppliers and more.

The problems are exacerbated by the cost and volatility of debt for many small and mid-sized suppliers; it can often cost more than twice what comparable debt would cost their large buyers. During the global financial downturn, banks tightened their funding significantly, particularly for small and medium-sized enterprises (SMEs), increasing the pressure on their cash flows. In the United States, SME loans as a percentage of all bank business loans fell by nearly one-third. In the Eurozone, borrowing costs for SMEs versus those for large corporations increased by 150%.

At the core of the problem is the dissonance between the goals of the buyer's finance department and those of its supply management group. The finance people are incentivized to improve working capital while supply management wants to cement relationships with suppliers to gain the best possible quality, pricing, availability, delivery terms, responsiveness and new ideas—and those sets of objectives can collide when it comes to paying suppliers.

The authors of this article saw the challenges up close during recent research on the impact of the recession on buyer-supplier relationships. The buyer—a global consumer products company—had extended payment terms significantly; doing so in ways that adversely affected a supplier that it had declared was valued highly. The buyer's purchasing team was powerless to change the situation. (See sidebar: Hard feelings, ruined relationship.)

Sharing the burden—the right way

Factoring has long been a costly "last resort" way for suppliers to get paid—at least in part—when buyers' payment terms have stretched too far. It typically involves selling a firm's account receivables to obtain about 80% cash immediately, usually with recourse

Hard feelings, ruined relationship

RECENTLY, THE CORPORATE OFFICES of a global consumer products company issued a mandate that payment terms to all of its global suppliers would go from net 30 days to net 60 days unless prohibited by law. The company did not distinguish between suppliers—and it learned the hard way why it should have done so.

Caught in the extended payments net was a high-end packaging supplier that designed and manufactured distinctive packaging for the consumer products corporation. The purchasing team characterized the packaging specialist as its "preferred supplier" and "a company that is very good to do business with…a supplier we would hate to lose."

But purchasing's perspectives were not part of the decision to stretch payment terms. The purchasing director disclosed that he was "not given a choice" in implementing this mandate; it was his job to notify its suppliers. The purchasing chief's hope was that his suppliers—in particular the packaging specialist—would understand that he and his team were "forced" by top management to extend payment terms, and that supplier relationships would remain solid.

Not so. In fact, the extended payment terms were only one of the unilateral moves pushed onto suppliers; the corporate office also mandated greater use of reverse auctions.

Although it is difficult to separate the impact of the extended payment terms on the buyer-supplier relationship from those of the reverse auctions, there is no doubt whatsoever that the packaging supplier viewed the extended terms negatively. The supplier understood that the purchasing director was not to blame, but that did nothing to assuage how it now saw its relationship with the consumer products corporation.

Actions had spoken louder than words. The packaging specialist's executive team saw that, far from being treated as a preferred supplier, they would be squeezed to reduce costs further and would not be valued for bringing innovative solutions. They declared that they felt "hurt" by the buyer's moves, and indicated that their company would have to start charging for services previously provided without fee as part of the relationship.

The consumer products company quickly felt the impact of its actions. It soon found itself paying for new product trials for new product and packaging changes. Furthermore, the packaging supplier acquired some of its specialty competitors, giving it more leverage and reducing the buyer's options. In short, the packager began treating the consumer products company more like a price-buyer than a collaborator.

That wasn't the end of it. Within a couple of years, the buying company's purchasing chief quit—leaving for a new organization where he could have more sway in decision-making. The relationship between his former employer and the packager never fully recovered.

FIGURE 1

Example: Buyer-led SCWCF can make extended terms attractive to suppliers

Assumptions	Conventional terms	New extended terms: Without SCWCF	New extended terms: With SCWCF
Invoice amount	**$1,000,000**	**$1,000,000**	**$1,000,000**
Payment terms/days required to fund receivables	30	Net 70	Net 70; any time before that with discount
SCWCF rate	N/A	N/A	2.5% p.a.
Supplier existing cost of funds	12% p.a.	12% p.a.	12% p.a.
Supplier elects early payment	N/A	N/A	Day 10
Interest costs in $ = [Invoice amount] x [Interest rate] x [Number of days/360]	30 days @12% **= $10,000**	70 days @12% **= $23,333**	10 days @ 12% **= $3333.33 +** 60 days @ 2.5% **= $4,166.67** *(effectively an early payment discount)* **Total: $7,500**
Benefits			
Payment made to supplier	**$1,000,000** on day 30	**$1,000,000** on day 70	**$995,833** on day 10
Interest "penalty" for supplier compared to buyer-led SCWCF option of payment on day 10	**$2,500**	**$15,833**	N/A

Source: The authors

to the seller of the debt if the debt is not paid. Putting it bluntly: Factoring is one-sided, putting the onus on the supplier.

Now SCWCF is emerging as a way to constructively share the burden of working capital costs between buyer and supplier. The Global Supply Chain Finance Forum (2016) defines supply chain finance as "the use of financing and risk mitigation practices and techniques to optimize the management of the working capital and liquidity invested in supply chain processes and transactions."

Where factoring involves suppliers selling the buyer's accounts at deep discounts, SCWCF balances the various costs of capital available to different supply chain members so a supplier can access funding based on the buyer's credit rating. It allows the buyer to lengthen payment terms or negotiate discounts with suppliers while enabling the suppliers to get paid early at a far cheaper rate than what is typically afforded under the buyer's imposed terms. The supplier has access to "cheap money, fast money" through a third party—usually a financial institution. And suppliers can choose when they want to get paid, and how early, in light of their cash-flow requirements.

In addition, rapid and significant improvements in information technology have simplified this process immensely by affording easy invoice upload and increased online invoice visibility for payment flexibility. This collaborative approach has benefits for both buyers and suppliers and allows them to unlock working capital and reduce costs and risks. The new technologies are coming from a blizzard of new fintech firms (see sidebar New "fintech" firms bring new solutions).

Benefits for buyers—and suppliers

The benefits of SCWCF are clear. Besides being able to increase their working capital, buyers get an additional negotiating lever to use with their suppliers. SCWCF also promotes efficiencies in accounts payable processes, including e-ordering and invoicing systems that connect buyers, suppliers and financing institutions. Giving preferred suppliers new ways to access funds at discounted rates, buyers can also earn suppliers' loyalty and goodwill. The technique also helps buyers to stabilize supply chains that feature many start-ups and other small firms. Furthermore, SCWCF can help differentiate buyer organizations now that ethical procurement has become an issue for investors and end consumers.

Suppliers benefit from SCWCF not only by gaining liquidity but by having more options for when they can receive payment. And because discounted rates are typically pre-negotiated by the buyer, the supplier's financing

transaction costs are lowered too. Any risk of a buyer's insolvency is covered because the funder bears that burden. And suppliers gain visibility and control of cash flow using the newest SCWCF technology tools.

Another potential benefit of SCWCF: Inclusion of many more small suppliers. Until recently, the complexities of connecting suppliers to traditional supply chain financing techniques has meant that they were extended chiefly to big suppliers—those whose financing needs were large enough to be of interest to the banks. But the online technology at the core of new SCWCF techniques is easier to work with, integrating easily with the enterprise resource management (ERM) systems of companies both large and small.

At the same time, the entire SCWCF is open to many funding entrants—not just banks and fintechs but growing numbers of cash-rich buyers that see the mechanism as a tool for getting better returns than they could from a regular deposit account. Typically, SCWCF programs are targeted primarily at investment-grade buyers, but there are very sizeable opportunities—hundreds of billions of dollars' worth—for non-investment grade buyers as well, according to a report from McKinsey.

Two basic models of SCWCF

There are two basic models of SCWCF: One is buyer-led (payables centric); the other is supplier led (receivables centric). The buyer-led model is optimal; it involves the buyer partnering with the funder—traditionally the banks, but increasingly fintechs. (And today, more and more cash-rich buyers are their own funders.) The funder assumes the risk that the buyer can make payment for its orders as a going concern. These types of solutions are also referred to as approved payables finance, supplier finance and reverse factoring. The authors believe that this is similar to the approach that Wal-mart is suggesting for its suppliers.

The buyer-led approach works as follows. The buyer transmits to the funder the electronic files containing data for approved invoices (based on invoices it has received and accepted from suppliers). The data is made available for the suppliers to view and to elect early payment if they wish. If the supplier does choose early payment, the funder will discount the invoice (net present value) based on the buyer's risk grade, paying the supplier the discounted sum.

Let's walk through an example to show how adding a SCWCF option when a buyer decides to extend its payment terms can make this attractive for both parties. In the scenario shown in Figure 1, a buyer extends its payment terms from net 30 days to net 70, but adds in a SCWCF option for early payment whenever the supplier would like it. This early-payment approach (in this example, on day 10) gives the supplier a significantly better interest rate (2.5% in this example) than it could achieve by factoring, and often better than its own costs of funds (12%). If the supplier elects to be paid as early as day 10, it incurs a cost equal to the SCWCF rate of 2.5% for the 60 days "early" that it elects. If the supplier has selected early payment, the funder/SCWCF provider will pay the discounted amount to the supplier. The buyer then pays the funder when the invoice comes due.

Supply chain working capital finance is emerging as a way to constructively share the burden of working capital costs between buyer and supplier. It is being provided by new financial technology ("fintech") specialists as well as by operations set up recently by traditional financial services companies.

The SCWCF rate is set at a combination of an interest rate benchmark (e.g., LIBOR) plus a margin that reflects the risk at the buyer's credit rating and the revenue the funder expects to generate from the program. This compares to about 24% per annum with factoring, or 8% per annum on the bank's typical business loans, or (in this example) 12% for the supplier's own cost of capital. If the original terms were retained and the supplier was paid in 30 days rather than 10 days, this is costlier than getting paid in 10 days and taking the discount because of the favorable financing rate versus the buyer's cost of capital. As expected, getting paid in 70 days is more expensive still. A further benefit of getting paid early: the supplier has an injection of cash into the business on day 10 (via the discounted early payment)—money that can be used

New "Fintech" firms bring new solutions

TRADITIONALLY, MAINSTREAM BANKS PROVIDED supply chain financing. Today, specialty "fintech" (financial technology) firms are proliferating, offering innovative, easy-to-use, online platforms, software services and funding choices.

These non-banking institutions—firms such as PrimeRevenue, Taulia, MarketInvoice, Demica and Timelio (fair disclosure: one author of this article is a Timelio executive)—often work with banks, private investors or even the buying company to fund SCWCF programs.

Some are bringing new technologies, such as blockchain, which have the potential to transform supply chain financing overall.

Indeed, the sheer proliferation of fintechs makes vendor selection an overwhelming task for even the best-informed treasurers and supply chain leaders. This is not the place to explore vendor selection in detail, but it is worth pointing out a few pertinent questions.

- **Financial technology.** Is the online portal easy to setup and use? Can it be integrated into ERP systems to offer seamless processing? Are there capabilities such as e-invoicing platforms?
- **Expertise across regions.** Are dedicated supply chain finance specialists available in all relevant markets? What is the overall size of their portfolios and what volumes are they processing? Does the provider have experience with all relevant currencies? With overseas regulations?
- **Reliable funding at attractive cost.** How does the fintech keep pricing attractive? How does it ensure that funding is transparent to suppliers? How many sources of funding can it provide?
- **On-the-ground implementation.** Does the fintech have Web-based tools to explain the benefits? Can they work with most suppliers and not just the top tier?

to pay bills, re-invest in growth and free up debt for other purposes.

The supplier-led (receivables centric) model relies on the same concept, except that the funder deals only with the supplier. The supplier sends the funder the file containing the accepted invoice data for those invoices for which it wants early payment. The funder discounts these invoices at a rate that reflects the credit rating of the buyer's risk grade to the supplier. At maturity, the buyer either pays the supplier that then pays the funder, or it pays the funder directly.

Under the supplier-led model, the funder is effectively purchasing the receivable and taking on the risk that the buyer might not pay in case of insolvency.

Where SCWCF programs work best (and where they don't)

Very long cash conversion cycles, supply chains with global reach and/or a sharp focus on supplier risk management characterize industries that are best suited to using SCWCF. The supplier risk management factor is of particular preoccupation for sectors such as aerospace, automotive, chemicals, pharmaceuticals, consumer packaged goods, grocery chain, apparel, and technology and telecommunications.

Companies with supply chains that extend around the world lend themselves to SCWCF techniques. With the rise of offshore manufacturing in Asia, Eastern Europe and Mexico in particular, many SME suppliers may struggle to generate cost-effective financing because they are located in countries with relatively undeveloped capital markets. This is especially true because the more traditional form of liquidity through letter of credit discounting by suppliers is decreasing in favor of trading on an open account basis. Suppliers tend to finance their business with short-term loans from local banks, frequently incurring interest rates of 15% or more, which leads to strong credit arbitrage across trade corridors. In such scenarios, new supply chain finance solutions can help reduce supply chain risk.

More generally, SCWCF tends to work best where a supplier's cost of working capital is higher than the buyer's. It is still attractive to many firms where the capital costs of buyer and supplier are on par. The supplier would prefer to have cash on its balance sheet versus accounts receivable, particularly when it is issuing financial statements at quarterly or year-end close. By contrast, there are few benefits to either buyer or supplier in those instances where a supplier has what it perceives to be a significantly better working capital risk profile than the buying organization.

Five steps for setting up an effective SCWCF program

Companies should undertake a SCWCF payables program only after they have a complete understanding of the program's effect on their supply chains, and a clear view of how well it fits with their overall business environments. No supply chain financing program can be expected to be successful if it is applied as a hasty fix to a discrete point problem; given that it touches so many parties, both within the buyer's organization and outside, across its network of suppliers, it must be approached as a strategic initiative.

Nor can any SCWCF succeed if it is viewed as another form of unilateral mandate from the buyer. Each supplier will have its own view of extended payment terms and of the attractiveness of a supply chain payables financing proposal. The acceptance of this solution will vary depending on each individual supplier's ability to access funding, its cost of funding, its growth agenda, its leverage profile and its short-term liquidity requirements. Furthermore, a stable, longtime preferred supplier of major subassemblies or components—engine manufacturers supplying truck companies, say, or a producer of touchscreens for smartphones—will have quite different perspectives from seasonal suppliers or innovative startups with potentially attractive technology offerings. Those differences have to be understood by both finance and supply management groups before they embark on such a program.

The authors envision the following five-step checklist for setting up a SCWCF program:

1. **Establish the business case.** What are the business drivers? What is the company looking to achieve? What savings are being targeted, and by when? What are the necessary key performance indicators?
2. **Ensure alignment.** Who will be the program's sponsor in the C-suite? On the board of directors? Who will be the executives involved on an ongoing basis from the supply chain/procurement group? From finance/treasury? From legal? IT? Audit?
3. **Select SCWCF provider(s).** Which financing partners are best suited to your supplier network, geographically, strategically and operationally? Which have the experience of your industry? The best technology? The credit appetite? The onboarding approach? The regulatory and currency capabilities? Do we opt for specialist technology platforms versus broader platforms offered by traditional financial services providers? What are the potential benefits of going with several providers versus one?
4. **Introduce the program to selected suppliers.** How do we segment our suppliers to get the most momentum from our SCWCF program? How then do we engage the key suppliers in the segments we select? How do we explain the benefits to them? What messages do we send? How best do we target and convey those messages?
5. **Expand and regularly refresh the program.** How do we cement buy-in from all parties internally and externally? Which parties need to hear what messages? How do we identify and recruit other champions for the program? How do we run the program so that it can adapt easily to other business changes? How do we monitor supplier adoption of the program? How do we use the program when adding new suppliers?

An alternative source

SCWCF is emerging as an alternative source of financing because it gives corporations more flexibility and options to fund their growth, improve working capital and mitigate their risks.

But such financing programs cannot be effective unless they are applied as part of a coherent business strategy that balances the legitimate concerns of the buyer's finance department with those of the company's supply chain management experts. That calls for consistent, open collaboration between those teams, and with other groups, such as legal, that can help build the necessary frameworks for such programs to succeed over the long term. And in turn, that collaboration requires unwavering support from the C-suite.

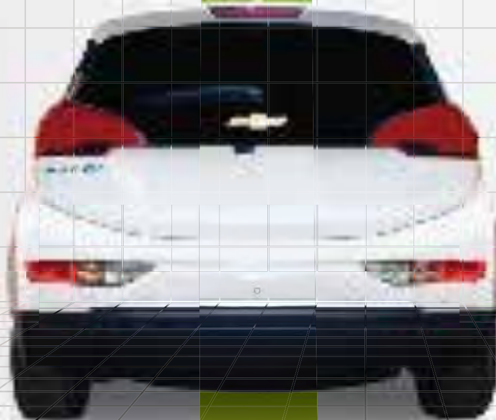
In short: SCWCF cannot be viewed as a temporary fix or a quick patch for a one-off problem; it has to be applied strategically. That's easier said than done, to be sure. But the discussion should begin now.

HOW THEY DID IT:

Supplier TRUST at GM

In 2014, General Motors launched a new strategic initiative to improve supplier relationships and drive financial performance. Nearly three years later, Strategic Supplier Engagement is delivering solid results.

BY BOB TREBILCOCK, EDITORIAL DIRECTOR, *SUPPLY CHAIN MANAGEMENT REVIEW*



In 2016, General Motors achieved two major milestones: The Bolt—Chevrolet's entrant into the market for all electric vehicles—was named Motor Trend's Car Of The Year after it was rated at 238 miles on a charge, the most for any electric vehicle currently on the market. At the same time, GM improved 11% and moved up to fourth place on the Supplier Working Relations Index, a highly respected annual survey that measures supplier trust in the automotive industry. It was one of the largest single year gains in the history of the index. John Henke, publisher of the survey since its inception more than 20 years ago, noted at the time that "only General Motors—a historical laggard—showed significant improvement in this year's study" and that "only GM's purchasing VP and buyers appear to be working together to build trusting relations." *

GM believes that both achievements are the fruits of Strategic Supplier Engagement—or SSE—an initiative the automaker launched in 2014 to improve its financial performance and the performance of its vehicles: The Bolt's mileage rating, for instance, is the result of a strategic relationship with LG Electronics, the supplier of the propulsion technology behind the Bolt EV. That type of innovation—and strategic relationship—were both lacking at GM for years before it began to see improvement in the index.

This is the story of how they did it.

From cost cutting to cost sharing

With Strategic Supplier Engagement, GM's goal was to build a foundation of trust and transparency. Yet, when it comes to its suppliers, adversarial rather than strategic was likely the first word that came to mind in the automotive industry prior to its introduction. Despite its storied past, GM perennially came up short on Henke's Supplier Working Relations Index, often battling for last place and typically finishing behind its U.S. and Japanese competitors.

Bruised supplier relationships and mistrust can be traced as far back as the 1990s, when GM brought in Ignacio Lopez as its purchasing chief with a mandate to cut costs. While he stayed only briefly in the position, reports at the time credited Lopez with saving GM more than $1 billion in purchasing during his one full year on the job. Yet those gains were the result of tearing up existing contracts and extracting cost reductions while simultaneously demanding improved quality and performance from suppliers. It was a difficult time to be a GM supplier.

That said, there were gains from the Lopez era, according to Beverly Gaskin, executive director, propulsion systems for global purchasing and supply chain (GPSC). "We had a global sourcing table, a common approach and a consistency of purpose," recalls Gaskin, whose team worked with LG on the development of the subsystem for the Bolt.

Over time, that common purpose fractured. Each subsystem management team had its own cost centers and was focused on that team's material targets. There was little recognition of the impact of one team's strategy on suppliers that were shared by other teams. The result was that every group had a different approach to suppliers—including relationships. Suppliers experienced inconsistent behavior and had limited exposure and access to top leadership.

The consequences of that approach were evident in Henke's index, especially in the 2002 to 2006 timeframe. The sense within global purchasing was that GM was far from the customer of choice when it came to the sharing of new, potentially game-changing technologies. There was also a recognition that the game had changed. As with most heavy manufacturers, OEMs like GM are assemblers that rely more than ever on their suppliers. "Seventy percent of the cost of manufacturing an automobile is purchased," says Jeff Morrison, executive director of strategic planning and development, GPSC. What's more, car companies today compete on technological innovations—car buyers no longer lift up the hood to check out the engine, but are swayed by the bells and whistles on the dash. "To be successful, we need our suppliers' A teams. Becoming the customer of choice is increasingly an imperative," Morrison says. The question was how to create an alignment of purpose between GM and its suppliers.

By 2010, the recovery was coming faster than anticipated.

GM realized how important suppliers were to its success and that it needed to improve how they worked together. One example of this was the change made to synchronize its purchasing and engineering organizations so they could be better strategic partners to GM suppliers. The goal was to involve suppliers earlier in the development process, and to make sure their voices were heard. To do this required changes to the traditional GM purchasing model. "We wanted to move to a more strategic and transparent cost-sharing model, and that requires a new kind of relationship and trust," Gaskin says.

"The idea was simple, a supplier could now see the areas where they were improving or not, and if they were not improving they could talk specifically about an action plan to reverse the trend."

—Beverly Gaskin, executive director, propulsion systems for global purchasing and supply chain (GPSC)

It was not just important to GM's ability to compete for customers in the market, but also to the financial performance as measured by Wall Street. "We had to improve and do so in a way that was collaborative and not adversarial so that suppliers wanted to do business with GM," says Gaskin. Lastly, there was pressure from the board, which included members who believed strongly in supplier engagement. "There was a sense that we could no longer battle for last place," Gaskin adds.

Toward engagement

The release of the 2013 supplier index, in which GM again scored poorly, was another wake-up call. Gaskin, Kim Brycz, the executive director for global product purchasing, and Matt Joshua the executive director who over sees procurement of electrical systems, met to review GM's approach to supplier relationship management, including its score cards and communication. The conclusion: The scorecards that had been used for years weren't informative, transparent or bi-directional. Suppliers knew how they were scored, but they couldn't get answers as to why they had come up short in some areas; nor could they report back to GM on its performance as a customer. That became the starting point for Strategic Supplier Engagement (SSE).

Over the course of 2013, a team of GM purchasing executives developed a new supplier engagement tool that would eventually be rolled out to some 400 suppliers that serviced over 100 commodity teams and their buyers worldwide. The goal was to create a tool that would help build a foundation of "transparency and trust" with suppliers. It would measure business performance and how well the suppliers met the automaker's cultural priorities.

Business Performance built on a foundation of "transparency." It measured and provided feedback on a supplier's target and actual performance across four key areas: Quality, Launch, Material Cost and Supply Chain. Scores ranged from 1 to 5, with 5 being the best. Scores were also color-coded red, yellow or green; the best performers were in the green zone.

Cultural Performance was built on a foundation of "trust." That component of the scorecard measured Total Enterprise Cost, Transparency, Communication & Responsiveness, and Innovation and Engineering. The theory was that the combination of business performance and cultural alignment would set the stage for the new relationship model. Similar to Business Performance, a supplier received a score of from 1 to 5 across the four areas of Cultural Performance. The score was tabulated by one individual but included input from a variety of sources, such as engineering, quality and procurement. If a low score was given, the specific reason and contact name had to be entered. This reinforced transparency and provided the opportunity for a dialogue on the feedback. In all cases, suppliers could see on the dashboard if they were in a red, yellow or green zone for individual categories as well as composite scores.

During the development stage, which included several iterations, GM reached out to its supplier council for advice and conducted pilots with small groups of suppliers to work out the bugs. The new scorecard went live in January 2014 (Figure 1). While simple, the supplier dashboard gave suppliers a view of their performance and the ability to click on a box to review specific quality or shipping issues that they needed to address. Hence, transparency.

Gaskin and Morrison concede that suppliers were initially skeptical as to whether this was a new way of doing business or the flavor of the month. "I'm sure there was a

FIGURE 1

Supplier dashboard

Source: General Motors

concern about how we would use the scores," says Morrison. However, once suppliers realized that buyers weren't using the tool as a club, the response was positive. "Suppliers told us they may not agree with our score, but they now had transparency into what was important to GM and how they could better align with our priorities," says Gaskin.

Later that year, GM introduced supplier trend charts that measured performance over a six-month period (Figure 2). "The idea was simple," says Gaskin. "A supplier could now see the areas where they were improving or not, and if they were not improving they could talk specifically about an action plan to reverse the trend."

As it exists today, performance, or operational, metrics are updated once a month. Initially updated every six months, Cultural Priorities are now updated once a year.

The feedback loop

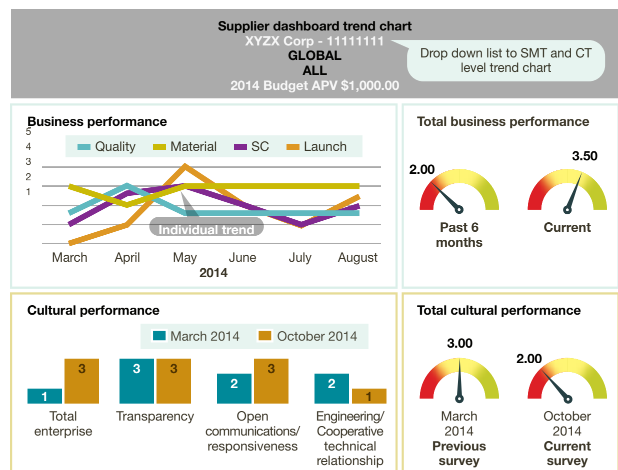
Step 2 in the SSE plan was introduced in 2015. Known as SSE 360°, it provides the feedback loop that allows suppliers to tell GM how it is doing as a customer. After all, the objective was to improve trust and move toward becoming the automotive supply base's customer of choice. "We wanted quantitative and objective data across a number of areas by commodity team," says Morrison. Similar to the Cultural Priorities dashboard for suppliers, the automaker wanted actionable information so that it could understand which of its teams was over-performing or under-performing. Last, in the messaging, it was important that suppliers knew that there would be no retaliation for poor scores.

The SSE 360° survey asks suppliers to answer a series of questions related to the same four Cultural Priorities (Total Enterprise Cost; Transparency; Communication & Responsiveness: and Innovation & Engineering) as GM teams are asked about suppliers. They then assign a score of from 1 to 5 to each area as well as an overall Cultural Priority Score. Just as a GM employee puts their name to a supplier's composite score, a supplier representative signs off on this score. The feedback loop also includes a chart that compares suppliers' SSE 360° scores to GM's SSE score of suppliers.

Before the first survey was completed in August of 2015, there was anxiety from both the GM and supplier communities. Suppliers were concerned about providing what could potentially be negative feedback about the teams with whom they worked; commodity teams were concerned that negative feedback would reflect on their performance. "We already knew we were near the bottom of the supplier index, so the collective GPSC team was committed to face the issues and address them," says Gaskin. And, adds Morrison, if you're a commodity buyer and the survey results are bad, it might

FIGURE 2

Supplier trend charts



Source: General Motors

be time to look in the mirror and make a change. "If you look at the questions on the survey, a lot of them are about behaviors we want to reinforce going forward around openness, innovation and transparency," he says. "To score well, you should be doing these things."

> **"Suppliers could have downgraded us because of the work we did to take cost out of the system, but we believe we took the cost out in the right way."** —Beverly Gaskin

As it turned out, the first supplier feedback results were within 10% of GM's survey of its suppliers. "What it showed is that we were both more aligned than we may have thought," Gaskin says. "However, we weren't having a dialogue and addressing our gaps."

Taken together, the SSE performance and cultural performance scores along with the SSE 360° feedback, created the platform for that dialogue going forward.

Top supplier framework

One of the last steps in GM's journey to Strategic Supplier Engagement was the introduction in 2016 of a framework for working with GM's Top 36 suppliers—those that were deemed critical to the automaker's success and survival.

The Top 36 management framework—later expanded to the Top 50 suppliers—was designed to provide one touch to GM by assigning a senior executive champion to each of the critical suppliers. "We were getting rich data from the SSE and SSE 360°," says Gaskin. "The questions were: Now that we have it, what are we going to do with this data and how are we going to manage it?" The supplier champion was tasked with working with a counterpart at the supplier organization to use the information being updated monthly to the benefit of both organizations.

The expectation is that the executive champions will meet regularly—or, in Gaskin's case, weekly with her counterpart at Bosch, the supplier she champions. The meetings are structured around a one-page executive summary of the three or four items for that meeting. Those typically include a joint review of the SSE scorecard; a business overview, including opportunities the supplier has recently won and lost; and any business or cultural issues that need to be addressed. "For a supplier like Bosch, that supplies numerous commodity teams, having one touch point adds consistency and oversight to the relationship," Morrison says. "The champion, enabled by data, can be an advocate if the supplier is struggling with a commodity or has a conflict with a purchasing team. Similarly, we might encourage a supplier to grow their business with us in several areas, suggest a fix in another and encourage them to exit something else."

Part of the role of a champion is to help get their supplier into the green zone in the chart through tough love or enthusiastic encouragement. "They're entrusting us to represent them in critical conversations at GM just as I count on my counterpart at Bosch to make sure that we're seeing innovation and protecting the high revenue products we purchase from them," Gaskin says. "Similarly, if I know they have an issue that is important to their business, I talk to our people about what we can do to keep them healthy."

There have been further refinements to the process, including two new awards for companies that are exceeding expectations. One is the Overdrive Award created to recognize companies that go above and beyond the call of duty, including excellence in areas such as sustainability, commitment and leadership in cultural or business change. A second award is for Innovation, which LG Chem and LG Electronics both won for their work on the breakthrough battery technology used on the Bolt. LG Electronics also designed and developed the infotainment system in the Bolt.

Even with a commitment to do things differently, supplier engagement did not happen overnight. As Gaskin and Morrison note, GPSC is a large organization, with over 100 commodity teams and team members around the world who had to be brought on board. "Remember that for many procurement professionals, boxing gloves got them to where they are," says Morrison. "It's not easy to tell them to put them away."

Yet two years into a new way of doing business, GM believes that SSE is delivering tangible results. For one, when this article was being researched, the company had experienced more than eight quarters of improving margins, thanks to the supply base helping the company to get its cost structure under control. During that same period, supplier trust scores moved up and not down.

Why supplier loyalty pays

BY JOE SANDOR

We tend to build relationships with suppliers cautiously and can take suppliers for granted. Lasting relationships seem to develop only after years of arms-length dealings. Even then, relationships are regarded as tenuous and temporary, and are more likely to develop between individuals who have discovered they can leverage each other's benefits through close cooperation than whole organizations or departments.

Organizational commitment to strengthening supplier relations is relatively rare. In contrast, marketing and human resources have spent decades driving improvement in customer and employee satisfaction and refining measurements and metrics to track their performance. Recently, however, supplier loyalty has been getting attention. Current supply management literature around supplier relationship management (SRM) and recent trend studies have shown that some organizations seem to have a better cooperative culture that accordingly earns sustainable supply advantage. Part of the effort to improve supplier loyalty requires a solid understanding of current supplier perceptions. This is where I believe GM's Strategic Supplier Engagement/360° Methodology comes in.

For the past couple of decades, business pundits have linked success to customer focus and employee satisfaction. Indeed, every firm aspires to be both the supplier and employer of choice. Pleasing customers and attracting and retaining the best employees remain critical components of success. Arguably, in today's globally competitive markets, loyal customers and employees are even more important. But, there are three loyalty legs to the business success stool: customers, employees and suppliers. And yet, the supplier leg is not only neglected, it is both the fattest and, perhaps, offers the best opportunity for overall business improvement because that's where the money is. In GM's case, over 70% of its cost of goods come from purchases of goods and services. The huge value of purchases means a far greater reliance on suppliers. And, the dependence on suppliers has been growing fast. Clearly, only those customers who earn preferential treatment from their suppliers will thrive.

Unfortunately, most buyers live in Lake Wobegon. They genuinely believe that they are their suppliers' customer of choice. But, only 5% of all customers regularly receive preferential treatment from their suppliers, according to a recent Procurement Strategy Council survey of hundreds of key account managers at Fortune 2000 companies. There is ample evidence that improving your working relations with your suppliers increases supplier driven innovation and reduces TCO. The distinction between collaborative versus traditional buyer strategies is shown in the chart below. As you can see from this article, GM is moving from the center column to the right-hand column and aims to be in this exclusive 5%.

TABLE 1

Hypothetical behavioral outcomes from a supplier's motivational viewpoint

Outcome area	Traditional power-buyer	Collaborative-buyer
Information sharing	As little as possible and biased/ finagled toward "proving" how meager my margins are	Open and transparent–won't be used as a negotiating club but rather a tool to advance continuous improvement
Focus	Price, bidding, auctions, unilateral demands, risk avoidance, legal agreements and compliance	TCO, cost models, joint problem solving, shared risks, process enhancement and innovation
Waste	Move	Reduce or eliminate
Tenure	Potentially very short	Expected to be very long
Queuing priority	No incentive but make-believe	High incentive
Intellectual property	Shopped	Protected
Technical support	As little as absolutely needed	Routinely use "A" team
Risks	Passed	Shared
Benefits	Taken	Shared

Source: 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.

"Suppliers could have downgraded us because of the work we did to take cost out of the system, but we believe we took the cost out in the right way," says Gaskin. And, GM believes it is now getting access to cutting-edge innovation as a customer of choice.

There has been a benefit to suppliers as well: 80% of the Top 50 grew the amount of business they are doing with GM. "We've made supplier engagement an ongoing process," says Morrison. "There are performance expectations, there is a champion to guide you and how to grow your business with GM is clearer. At the end of the day, suppliers want business, and GM wants competitive, defect-free components that represent leading-edge technology and innovation."

**You can read more about supplier trust in "Lost supplier trust" in the May/June 2014 issue of* SCMR.

Creating Leverage

Power in a negotiation is less a product of the situation and more the result of the actions one takes. By thinking creatively, negotiators can find, build and deploy a wider range of leverage opportunities.

BY FRANK MOBUS AND BRAD YOUNG

Frank Mobus is the founder and CEO of Mobus, Inc. He can be reached at frankmobus@mobusinc.com. Brad Young is the vice president of global manufacturing & sourcing for Staples, Inc. He can be reached at brad.young@staples.com.

MOST OF US EXPERIENCE the power of leverage for the first time as children on the playground seesaw: Very quickly we learn that if we place the board in the right place over the fulcrum, a small child can easily lift a much larger kid at the other end. But, there is more than just power involved; there is also trust. After all, if the smaller child jumps off the seesaw, it comes crashing down hard.

Leverage, and the power that comes with it, is a critical element of any negotiation. Yet, too many people are tempted to think of leverage as something they either have or they don't; in other words, they see power as a product of the situation, not as the result of actions they can take. Just like moving the seesaw board forward or backward over the fulcrum to change the dynamic on the playground, there is much either side can do to find, build and develop leverage in any negotiation. By thinking more creatively, negotiators can find a wider range of leverage opportunities. Like most tools, the challenge is to pick the right one for the job: With the right tool, the work gets done faster and with greater success.

When meeting with clients, Mobus Creative Negotiating suggests that there is a spectrum of negotiations that runs from hard bargaining to creative deal making. We also suggest that there is a ***leverage spectrum***. At one end of the spectrum is the ***consequential leverage*** that comes from showing the counterparty why they need you: Buyers may point out how important they are to a supplier's business while presenting the options—or consequences—if the supplier does not cooperate. This is especially the case in one-time or highly contentious transactions. At the other side of the spectrum there is the ***positive leverage*** of cooperation: offering help and new opportunities to the counterparty, with the expectation of reciprocation over time. This type of leverage is most common in the context of a mutually beneficial, long-term relationship.

Movement along either the negotiation spectrum or the leverage spectrum has the potential to move the relationship with the other party. That's why we say that the interaction of the negotiation and leverage spectrums produce a third spectrum—the relationship spectrum—that can run from one-time transactions to long-term partnerships. What matters most on the left-hand side of the relationship spectrum—price and

quality—becomes only a part of the picture on the right-hand side of the spectrum.

In this article, we will explore why leverage matters and explore some principles about leverage: Don't exaggerate the other side's leverage, think of leverage as a tool box rather than a just hammer and consider using positive leverage as well as consequential leverage in negotiations.

Why leverage

Negotiations are largely about getting the other party to agree to do something. Many times, the other side starts out with inflated expectations. Leverage is a way to convince the other party to agree to negotiate and then to compromise. Leverage is a way to gain influence to have the other side see things more your way. Leverage is always a factor in every negotiation, though sometimes one, or both, parties do not understand this and so do not use their leverage effectively.

In the modern economy, **as procurement becomes more complex**, leverage matters not only at the point of sale/purchase but also during the course of execution of a deal.

In the modern economy, as procurement becomes more complex, leverage matters not only at the point of sale/purchase but also during the execution of a deal. For instance, buying software involves more than just the purchase of the application, but may also involve ongoing services long after the implementation is complete, such as training, updates and debugging. Those services may be as important to the whole transaction as the initial purchase price of the software. And, of course, there are sole-source agreements and partnering relationships in which the two sides are committed to working with each other over time.

Where on the relationship spectrum any one of these situations lies depends on how much the two sides' interests align and how the relationship has evolved, especially how much each side trusts the other. The further to the right of the spectrum, the more important is the ongoing execution of the deal compared to the initial terms. In complex deals, driving a hard bargain in the initial negotiations may not be as important as setting up a deal in such a way that you have the leverage to ensure that the counterparty is committed to doing a good job over time.

At each point in the leverage spectrum, there are ways to find, build and deploy leverage. However, the techniques used to develop leverage change as one moves along the leverage spectrum. That is, the ways to develop consequential leverage are more contentious, such as pointing out that the marketplace offers other alternatives, while the ways to get positive leverage are more cooperative, such as offering to help build value in their business.

Don't exaggerate the other side's leverage

The most natural and most dangerous approach in any business relationship, including negotiations, is to forget about how things look from the other side. It is easy to see one's own needs and weaknesses. It is not as easy to think about what the other side needs and what they may see as their weaknesses.

That is particularly true for buyers, who often think of themselves as just another customer for the supplier. A buyer should consider why that supplier needs them: why their firm is a great customer and how important their business is to the supplier. The buyer should consider the "value proposition" they offer—something over which sellers typically obsess. If the buyer has a reputation for always paying on time, if the buyer's order is a vital part of the supplier's sales, if the buyer is known for respecting the agreed terms, if the buyer is known for being easy to get along with rather than repeatedly escalating minor differences into huge drama—then the buyer is a valued customer, and that gives the buyer leverage.

The buyer could also point out that there are things the purchaser can do for the supplier besides paying a high price. The obvious issue is whether the buyer can offer the seller additional work. More importantly, the buyer may be able to open the door for the seller to go after other business. Sellers are often well aware that the sale to one particular buyer will impress others in that industry or community; buyers are frequently not as attuned to how much an opportunity their purchase can create for the seller. A buyer's potential order may be a small part of the seller's business, but if that order opens the door to a new and potentially lucrative market for the seller, the buyer

can be an important part of the seller's plans. Rather than ignoring the leverage this provides, a buyer can build on it, advising the seller on other markets where they can sell their products or services. The seller can also offer to help the buyer develop as a firm, pointing out such things as ways to make their products better or lower their cost to be more competitive.

It is often good to point out to the other side that they are replaceable. Even if the supplier is a sole-source, the purchaser might be able to make it in-house instead of buying from them. A large purchaser could buy them out or merge with one of their competitors. This becomes particularly important in long-term relationships, such as a sole-source contract, as a way to overcome the natural shift in leverage that occurs once a deal is signed.

Before the deal is inked, the buyer has the greater advantage: It is the seller who has to persuade the buyer why to do the deal. But after the contract is signed, the advantage often shifts to the seller: Now, it is up to the buyer to persuade the seller to live up to the terms, or better yet, over-perform. That is often a challenge because unexpected things happen, raising questions about the interpretation of the contract when reality turns out differently from what is specified in the contract's terms and conditions. For instance, if the software will not work without being tweaked because of unexpected features in the buyer's hardware, which party is responsible for any extra costs and what is a reasonable time-frame to fix the problem? It is unrealistic to expect that any contract, no matter how carefully prepared, will cover all eventualities. The better approach for each side is to think through what will give them leverage in the complications that will inevitably arise before signing the deal.

In short, in almost any situation, each side has ways to find, build and deploy leverage. Buyers in particular are often not as aware of the leverage they have because they fail to use it.

More than a hammer

It's easy to think of leverage as an instrument of power, like a hammer, to extract a better price. But, even a hammer can be used in a variety of ways, from breaking a window to nailing together the pieces of a wooden sculpture. Similarly, leverage can be used in more creative, and subtle, ways to enhance a relationship. Approaching leverage as a toolbox, and not just a hammer with one purpose, requires you to think about more subtle ways to use power that not only limits destructive resentment but also opens the door to new opportunities. If a purchaser tells a supplier that the buyer's firm is winnowing its supplier base, that is alerting them that they can decide if they want to go the extra mile to be on the team or, if not, the buyer will be searching for others to take their spot.

"We can continue to do business. **We don't need to hurt each other. But we do have future goals and objectives.** If you won't work with us now to meet these goals that's okay, but we will be looking for and developing other suppliers who are willing to perform for us."

A savvy purchasing colleague we know put it this way to a long-term supplier: "We can continue to do business. We don't need to hurt each other. But we do have future goals and objectives. If you won't work with us now to meet these goals that's okay, but we will be looking for and developing other suppliers who are willing to perform for us." Without being heavy-handed, this use of *consequential leverage* is simultaneously an invitation for the supplier to find ways to do better for the purchaser now and to present counter offers of what they'll need in return to help them meet the customer's future goals.

Perhaps the biggest barrier to reaching for a new, unfamiliar tool is that one has to go from demolition to construction. When the two sides are just hammering away at each other, they are in open conflict—seeing who has the most leverage to pry a better price out of the other. The challenge is to shift mental modes from conflict to being open to what the counterparty is proposing. At the simplest level, that means just listening to their suggestions. We described above a variety of ways in which a buyer can point out what they can do for the seller, such as open doors to other sales.

Even though the points are somewhat self-serving—designed to give the buyer more leverage—a smart seller will still listen carefully, because they may be something the seller had not thought of. Leverage is not always a club; sometimes it is a magnet that attracts both sides and offers ways they can benefit by coming together more closely.

If the other side proves trustworthy, a good negotiator should be prepared to open up so that the two parties can search for ways to create new value in the deal. If either party is so tight-lipped that the other doesn't know what their counterparty needs, the result can be missed opportunities. The most successful deal for a buyer is not necessarily the one that delivers the lowest price; the greater profit may come from finding an unexpected way to work with the supplier. Of course, even in that situation, the interests of the two sides may not completely align: Each partner will want the maximum advantage from this win-win solution. Leverage will remain important as the two sides maneuver over how to split the winnings.

The most successful deal for a buyer **is not necessarily the one that delivers the lowest price**; the greater profit may come from finding an unexpected way to work with the supplier.

Positive leverage, valuable partnerships

When approaching a negotiation, there are any number of old sayings, such as, "Which came first, the chicken or the egg?" and "Should we use the carrot or the stick?" While we have yet to form a solid opinion about the origin of poultry, we strongly believe there is a third option beyond the carrot and stick that should be considered for relationships between customers and suppliers. It is the tool of positive leverage. To understand the power of *positive leverage*, consider this anecdote from a real experience we related in *Positive Leverage Can Build Valuable Partnerships*, a blog we posted on scmr.com in December 2016.*

The call came late one Friday afternoon. It was the kind of call no one ever wants to receive while production is ramping up in preparation for the peak selling season. A major mechanical failure had caused a complete process shutdown. They would not be able to fix the equipment for several months, so they had to cancel all orders. They were very sorry, but there was nothing they could do.

Fortunately, this product was multi-sourced. The "how do I deal with this problem" call went out at almost 5 p.m. on a Friday to a factory owner who was in a time zone seven hours ahead. He picked up his cell phone around midnight his time, listened to the situation, and said: "Don't worry about it. I will start my machines tomorrow morning and will take care of this problem for you and I'll hold my prices as-is. You can get me a formal PO next week. I trust you. Enjoy your weekend." Without valuable partnerships, this could have turned into a major crisis for the company. One partner had the courage to immediately call and report the problem. The other had the motivation to solve the customer's problem, not to seek additional opportunistic margin, and to apply some positive leverage to the customer relationship.

The type of positive leverage illustrated in that example only works when one is on the right side of the relationship spectrum—that is a partnership and not a one-off transaction. The two key criteria that make positive leverage a good strategy are the character of the other side and the on-going nature of the interactions.

On the first point—the character of the other side—both parties need to trust each other. That is more than being certain the other side is honest; each side needs to be sure the other will reciprocate and not, like the playground seesaw, jump off suddenly and let one party come crashing down. It would be a serious error to plunge into offering favors when one has little experience with the other side; they may just pocket the favor and expect more in the future. The positive leverage strategy doesn't work if one side proves untrustworthy, or is opportunistic, taking advantage of unexpected situations rather than "looking out" for the relationship and their partner. Indeed, one of the most vital skills in modern business is learning how to choose with whom to partner.

On the second point—is the relationship on-going—positive leverage only makes sense if the two sides will be doing business with each other regularly for quite some time. From a strictly business point of view, there is little reason to do a favor for a supplier or customer with whom

one is unlikely to have any future dealings. By contrast, there is a good argument for going out of the way to help a partner with whom one will be dealing time and again for years to come.

If the two sides are in a mutually beneficial long-term relationship, and they have built up trust among themselves, then positive leverage is a powerful tool. Each side should be prepared to gain credit by doing something that helps the other even while gaining nothing and possibly inconveniencing themselves. Doing the other party a favor is more than a random act of kindness, it generates positive leverage for building a valuable partnership. In such situations, the relationship is more important than the single transaction at hand. If the other side needs help, sometimes the right approach is to use that as a way to cultivate and nurture a beneficial partnership, not to seek additional opportunistic margin at the expense of antagonizing the other party.

Done correctly, positive leverage is a long-term investment from which great efficiency follows: things run smoother, get done faster and with greater success. Remember: Beneficial partnerships don't just happen; they are cultivated and nurtured. The partnership described in the above anecdote existed because the purchasers had spent years applying positive leverage with the supplier through honest, purposeful supplier development activities. They challenged the supplier to improve while providing how-to help along the way. They gave the supplier new opportunities to manufacture new product lines, and as a result the supplier experienced exceptional growth with this customer and others. Positive leverage built a strong partnership.

Positive leverage only makes sense if you are constantly monitoring the state of the relationship. Even in the best of circumstances, the two sides have to divvy up the winnings, and on that, their interests conflict. A common problem in long-time business relationships is that one side gets too close to the other side. If the balance of favors has become unbalanced to the benefit of the supplier, the buyer should point this out, even though that may be an uncomfortable conversation, raising the prospect of conflict with someone who may have become a personal friend. If one side nurses its grievances without discussing them with their partner, eventually there will be major problems.

Multi-faceted leverage

As we've just demonstrated, leverage comes in several flavors. It can also be used in several ways—or as we put it, there is a leverage spectrum. In many situations, leverage is primarily an instrument in a conflict of wills—what we refer to as consequential leverage.

If the two sides are in a mutually beneficial long-term relationship, and they have built up trust among themselves, then positive leverage is a powerful tool. **Each side should be prepared to gain credit by doing something that helps the other** even while gaining nothing and possibly inconveniencing themselves.

But even when the bargaining is only over price, the best way to think of power is not just as a hammer but as a toolbox that helps to not only get a better price, but also to get the other side working to help you.

Sizing up the situation is a vital prerequisite before deciding how to apply leverage. The more the two sides can build trust, the more they can open up so as to search for ways to make the deal better for both sides—that is, to apply positive leverage. If the two sides have invested in creating a long-standing mutually beneficial relationship, then when the other side is in a pinch, their counterparty should put the relationship first above the potential to make a fast buck.

To shift metaphors, sometimes leverage is a club but sometimes it is a magnet, in which your side's leverage comes from the advantages you offer for your counterparty. In particular, buyers would do well to think more about the value proposition they offer the seller.

* scmr.com/article/positive_leverage_can_build_valuable_partnerships

work
idea
idea
research
Supplier
know how
Business
Thinking
plan
strategy
T
E
A
M
team work
Exit

To utilize the full innovation potential of the supply chain, companies need a strategic approach to deal with the obstacles to new product success. Here is a four-step approach to better utilize your innovation potential.

BY CONSTANTIN BRACHTENDORF, STEFAN KURPJUWEIT AND STEPHAN M. WAGNER

Constantin Brachtendorf, Ph.D. is a management consultant, Stefan Kurpjuweit is a research associate and Ph.D.c. and Stephan M. Wagner is a professor of logistics management and director of the executive MBA in supply chain management at the Department of Management, Technology and Economics at the Swiss Federal Institute of Technology Zurich (ETH Zurich). They can be reached at cbrachtendorf@ethz.ch, skurpjuweit@ethz.ch and stwagner@ethz.ch.

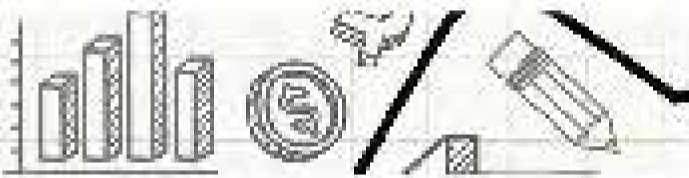
Not every new product is a homerun like the iPhone. Some are underperformers like the 3-D television, or, worse yet, complete flops like the Samsung Galaxy Note 7.

Meanwhile, the number of new products is ever increasing as their life cycles decline. It was only a matter of months between Samsung's complete withdrawal of the 7 and the grand introduction of the 8, which was quickly billed by pundits as more than enough to make people forget about its predecessor.

On a broader scale, between 1997 and 2012, product life cycles of fast moving consumer goods fell by 46% while the number of products increased 62%. In the same time period, the chemical industry's new product introductions increased 313% while product life cycles fell 37%.

Furthermore, the complexity of developing products has increased. Just ask Samsung. Manufacturing firms require a wide range of competencies in fields such as mechanical engineering, electronics, and information technology to develop new products. However, not all companies are created equal in these and other regards, and sometimes it is tough to recognize these gaps.

Today's leading companies combine internal and external sources of knowledge to develop new products and proactively search for innovative ideas outside their organizational boundaries.



Regardless, all companies must chase consumers' rapidly shifting needs and desires and deliver the right products. The question is how do some companies get new products right and others not so much or not at all?

Today's leading companies combine internal and external sources of knowledge to develop new products and proactively search for innovative ideas outside their organizational boundaries. They initiate R&D alliances within or across partners and industries, collect ideas for new products from their customers, and encourage suppliers to share their innovative technologies with them.

BMW, for instance, initiated an R&D collaboration to develop a new in-car control system for its 7-series. The necessary know-how was not available internally. The automaker contacted Immersion, a developer of touch feedback technologies, early in the R&D process, and jointly developed a radically new integrated control system called iDrive.

While such collaboration is not uncommon, neither is it standard practice. Many firms have no established process in place to encourage suppliers to proactively share their innovative ideas. Furthermore, many companies don't realize that the power to build on such collaborations rests in the procurement department. As a result, the full innovation potential of many firms' supply chains remains hidden.

In fact, many firms are unaware of their suppliers' capabilities and technological know-how. Suppliers, in contrast, do not know what their customers actually need or who within the buying firm's organization to ask. In addition, the culture within the buying firm sometimes impedes acceptance of external innovation.

To utilize the full innovation potential of the supply chain, companies need a strategic approach to deal with these obstacles to new product success. Based on interviews with buying firms and suppliers from various industries, we developed a four-step approach to better utilize your innovation potential. They are:

1. build an innovation path;
2. communicate your needs;
3. become the partner of choice; and
4. establish innovation partnerships.

Using this four-step approach changes the game for procurement managers in new product innovation because it requires them take on a new role. They must assume strategic responsibilities with regard to innovation and product development instead of being solely operational buyers. Our research has shown that shift is essential to raising the bar in innovation and management of new product development.

Step 1 Build an innovation path

We started by asking: What is the greatest obstacle to sharing innovative ideas and products across companies? The answer turned out to be fairly simple: difficulty in identifying the appropriate contact person.

One expert explains: "[The supplier] either has

a contact person in the engineering department or a contact person in the purchasing department. If not, the supplier is in a situation in which he has to ask his way through the company … to know which employee is working on which project…that's impossible for an external supplier."

This becomes even more problematic as the size and complexity of the buying firm increases. At large and diversified conglomerates it is difficult even for long-term suppliers to get access to the right person. Even their direct contacts in the procurement department often do not know the responsibilities and needs of their colleagues in other business units. Moreover, few employees have personal incentives to forward innovative ideas to other departments.

As a result, even if an innovative idea gets through the door, it often gets lost inside the organization. Clearly, buying firms must establish processes that facilitate the information flow into and within their organization to elevate the visibility of innovative ideas from suppliers.

To get this done, firms should establish an "innovation hub" within the purchasing department that serves as an intermediary between suppliers and all internal stakeholders (see Figure 1).

Suppliers (or other firms) that lack the appropriate contact person inside a buying firm can submit their innovative idea directly to the Innovation Hub. After an initial assessment, the hub's experts contact potentially interested departments and facilitate the collaboration between supplier and the R&D team.

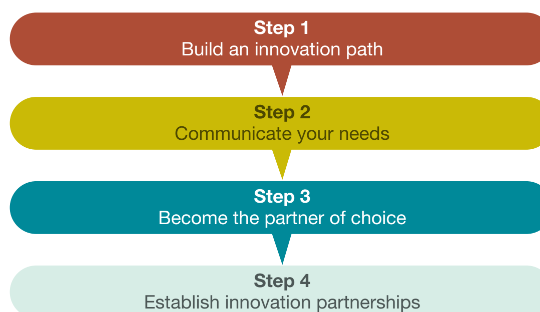
German automotive supplier Bosch, for instance, uses a Web-based interface that allows suppliers and other firms to pitch their innovative products. A dedicated innovation hub that establishes the contacts to relevant R&D departments screens these proposals. To function effectively, the hub's experts must be qualified to evaluate a broad range of technical innovations and know how to advance ideas through their organization.

The success of an innovation hub is not only contingent on its experts, however. It also requires an open culture toward external ideas within the entire organization and—in particular—the R&D department.

An open innovation culture is not built overnight.

FIGURE 1

The four-step approach



Source: Authors

It is a long process to convince a critical mass of people that external innovations are as valuable as internal innovations. Top management must communicate the new innovation strategy and incentive schemes. And the R&D staff should make no distinction between external and internal ideas to avoid a not-invented-here syndrome.

As another interviewee says: "[The contact person] has to convince internal decision makers that it was actually his idea and that he was the one initiating the cooperation with the supplier" in order to personally benefit from external ideas. Our findings emphasize the importance of committed contacts within the buyers' organization. If the contact person can personally benefit and make the supplier's innovation his own project, the odds for a successful R&D collaboration are high.

Step 2 Communicate your needs

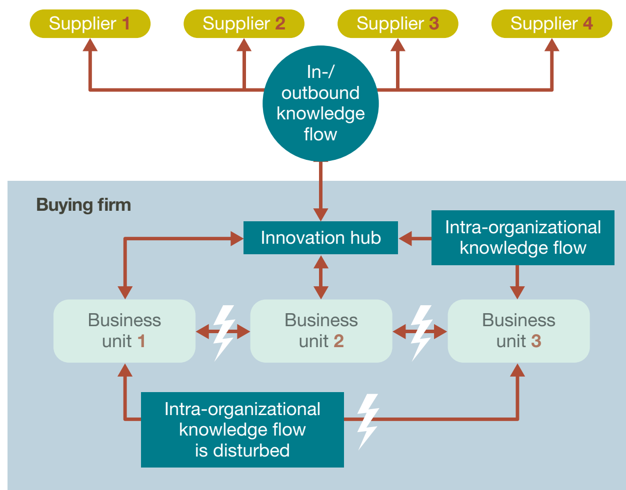
With the process in place, companies should develop a best-in-class supplier innovation model. An innovation hub cannot guarantee, by its mere existence, that proposed ideas are valuable to the firm. However, certain companies have an advantage at advancing ideas if they are already recognized as innovators or account for large purchase volumes. They can influence what innovations are proposed to them and even what kind of development activities are prioritized by their suppliers.

In addition, our findings suggest that many suppliers struggle to understand what their customers

actually need. To avoid developing products that do not meet market needs, companies need to know up front their (potential) customers' technological requirements and focus areas. As one interviewee puts it: "the worm has to be tasty for the fish, not for the fisherman."

FIGURE 2

Supply chain partnerships



Source: Authors

Today, suppliers rely on their personal network for this kind of information. "Everything happens through personal relationships," one interviewee remarks.

To counter this, some non-suppliers try to gain a foothold through aggressive pricing strategies. For instance, one expert says: "Some suppliers offer us products at very competitive prices. They don't do that to sell these particular products—they just want to establish a relationship with us. They want to use this relationship to get access to information and they expect to generate high profits through future products based on that information."

This statement exemplifies the value of strong, personal networks as resources for suppliers. It also says that buying firms lose an enormous innovation potential if they do not communicate their needs to all external stakeholders—suppliers and non-suppliers, alike.

Informing outsiders about what the company needs and focuses on goes beyond the traditional demand-pull mechanism of innovation where precisely specified development tasks are outsourced to suppliers. Firms should communicate relatively broad objectives to allow suppliers to come up with their own solutions.

One interviewee explains: "We don't pull, we orchestrate… we don't have the answer, we have the brief. The brief is: I want this product with 50% of the costs but I don't know how. I am not prescriptive… we are welcoming ideas." In addition, buying firms should inform suppliers about current R&D projects or give them access to technology roadmaps on a regular basis.

This is where innovation hubs become so valuable. Not only can they gather incoming innovation proposals, but they also communicate their firm's technological focus areas and innovation strategy. However, to inform (potential) suppliers about technological needs is most effective with a multi-channel approach. Some firms choose to communicate through their Websites to reach a broad audience, while others invite selected suppliers to supplier innovation days or special topic forums about the firms' current R&D focus.

Swiss-based Bühler Group, for instance, a manufacturer of food-processing machinery, invites selected suppliers to discuss technological opportunities during their annual "Supplier Excellence Days." French pharmaceutical firm Sanofi held a special topic forum, the "Excipients Innovation Days," in 2014 to stimulate supplier innovations with regard to solid dosage form.

Step 3 Become the partner of choice

It is important to realize that firms compete not only for customers but also for suppliers—more explicitly, for suppliers' best products, services and innovations.

High-quality suppliers do not necessarily offer the best products or services to all their customers. Similarly, they are selective in sharing their best ideas and innovations with customers. It is important to be perceived as the partner of choice by suppliers because "suppliers offer their innovations to their

friends. They go to their preferred customers," says one interviewee.

In fact, a substantial research effort in the field of supply chain management is devoted to the ways that firms can position themselves as attractive customers. Naturally, suppliers are looking for profits, and the potential sales volume to a customer is the most obvious indicator for that. However, this is not the only motivation for a supplier to consider one buying firm a preferred customer.

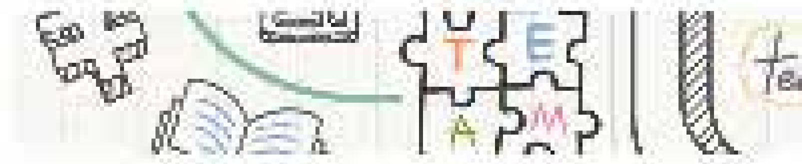
Our findings show that, in particular when sharing innovative ideas with customers, other factors are more important. Suppliers will select customers with whom they expect their efforts to pay off. These are the customers that support development and commercialization of an idea with their expertise and that treat their suppliers fairly.

One interviewee explains: "You are not going to someone who sells the most, but you go to someone who makes it happen. That is why size is not important." For these customers, suppliers are willing to go the extra mile.

A great example of this observation is Toyota, which was significantly smaller in the United States than GM, Ford and Chrysler at the beginning of the century. Nevertheless, the U.S. branch of Toyota was a highly attractive customer for U.S. suppliers. Quite simply, Toyota used its lean management expertise to help suppliers improve their productivity without pushing down prices in upcoming negotiations—an unusual habit among car manufacturers. As a result, Toyota gained competitive advantages with regard to higher quality and improved delivery performance.

Our findings show that such a fair and collaborative approach also endorses the sharing of early stage innovations with customers. According to our findings, the most important reason why suppliers hesitate to share early stage innovations is their fear "that competitors will find out about their plans and strategic moves" and suppliers lose their intellectual property. Some interviewees even reported incidents where customers had stolen ideas and registered patents themselves.

Buying firms must refrain from such actions regardless of how attractive early stage innovations are to them. At this stage, the final outcome of an innovative idea can be easily tailored to the buying firm's requirements, allowing the buying firm to gain a competitive advantage.



High-quality suppliers do not necessarily offer the best products or services to all their customers. Similarly, they are selective in sharing their best ideas and innovations with customers. It is important to be perceived as the partner of choice by suppliers.

It is important to recognize that most suppliers are not willing to accept exclusivity agreements when they jointly develop products with customers. These contracts typically impede scale up of production, which would drive down production costs and prices in the future. However, an exclusivity contract might not be necessary if the innovation is already tailored to one customer.

Step 4 Establish innovation partnerships

The final step in the development of a best-in-class supplier innovation model is institutionalization of knowledge sharing and establishment of continuous collaboration techniques between equal supply chain partners. This enables collaboration partners to benefit from the innovations and benefit from the best tailored solutions to their problems. It is worth noting that this step goes beyond merely tapping the existing knowledge of suppliers. It also creates an innovative environment that facilitates the collaborative generation of innovations.

Bringing together a diverse set of experiences and know-how from different partners can substantially increase innovativeness. In fact, research design firms that develop new products for different industries, such as Silicon Valley-based IDEO (known for invention of the first Apple computer mouse), rely on their employees' diverse set of academic backgrounds and industry experiences to combine and transform existing knowledge into new products.

Dedicated partnership programs facilitate the exchange of ideas and close collaboration. Through these programs, buying firms can position themselves as the preferred customer for their suppliers: "The goal of Partner to Win is to become the customer of choice," says the chief supply chain officer of Unilever.

A prime example of collaborative innovation is the multinational, fast-moving consumer goods manufacturer Unilever. In 2011, the company launched its Partner to Win (P2W) program to forge strong partnerships with selected suppliers. Among other concerns, an integral objective of this program was to team up with Unilever's most innovative suppliers and generate innovations collaboratively. Unilever realized that "we need to work closely with our suppliers in order to have best-in-class capabilities, sustainable practices and innovation," according to the company's CEO. Unilever now selects the most innovative companies within its supply chain. Even indirect suppliers or start-ups are selected for the program with great success. Today, Unilever reports that 69% of its innovations come from partnerships with suppliers.

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Actually, the program goes much further. It comprises three distinct components to fully utilize the innovation potential of Unilever's supply chain:

1 Exclusive access to key decision makers in R&D, procurement and marketing departments. Within P2W, suppliers receive preferential treatment and exclusive access to different departments such as R&D, procurement and marketing on a regular basis. This aligns expectations and objectives of the collaboration. Moreover, market requirements and the buying firm's needs are openly shared with the suppliers.

At this point, the marketing team plays an important role for consumer goods manufacturers such as Unilever because they have to convey the brand message of its products. For instance, it is the sound of the chocolate crack that defines the customer experience for Unilever's Magnum ice cream bars.

It is important for chocolate manufacturers to be aware of this when working on their formulation. In addition, Unilever holds regular events to present their vision of the "perfect product," encouraging suppliers to shift their development efforts in these directions.

Access to R&D teams is equally important to understand technological needs and specify the interfaces of the customer's product. Overall, "based on their proximity … [these suppliers] are in the best position to propose solutions to the business," says Unilever.

2 Co-location and preferred access to internal resources. Many suppliers, particularly smaller ones, substantially benefit from preferential access to the buying firm's internal resources. Our research shows that suppliers most importantly require means to test their prototypes under real-life conditions, a problem buying firms can easily support. Unilever goes as far

as letting suppliers use their offices and labs, facilitating the exchange of expertise and deepens the collaboration. In addition, Unilever is more likely to contribute to joint R&D projects with financial resources when suppliers are in the P2W program.

3 Establish a true network of supply chain partners. To combine diverse expertise in a new product collaboration, it is important to build a network of supply chain partners rather than several dyadic buyer-supplier relationships. Only when suppliers know each other and share their expertise can they collaboratively generate innovations.

In most cases, Unilever initiates such collaborations by bringing suppliers together. For instance, Unilever facilitated the collaboration of the MIT spinoff MuCell Extrusion and ALPLA, a supplier for extrusion molded plastic bottles, through P2W.

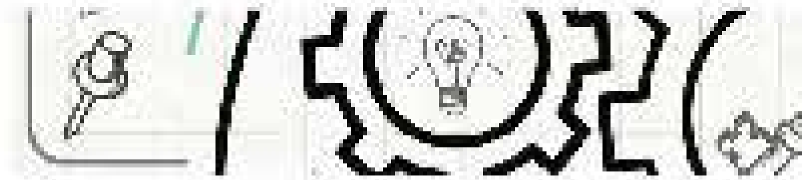
MuCell invented a technology that injected atmospheric gas into extrusion molded plastics. Together with ALPLA, they developed plastic bottles for Unilever's cosmetics products that needed 15% less material, improving the firms' ecological footprint and reducing material costs.

When several suppliers contribute to one product—which is generally the case—it is important for them to coordinate with each other as early as possible, ideally at the so-called fuzzy front end of the innovation process.

One interviewee responsible for the P2W program at Unilever explains: "When you are developing a new product formula, compatibility tests with packaging need to be done upstream at the very early stages to avoid non compatibility issues later in the process and a delayed product launch."

Initially, the Unilever's P2W program was set up as a hub-and-spoke network. Unilever was the hub connecting different suppliers with each other. To facilitate the knowledge sharing between suppliers even further and increase the development speed, this approach was replaced by a true network perspective that lets suppliers know each other and speak with each other directly.

The interviewee explains: "Now the idea is to have



When several suppliers contribute to one product—which is generally the case—it is important for them to coordinate with each other as early as possible, ideally at the so-called fuzzy front end of the innovation process.

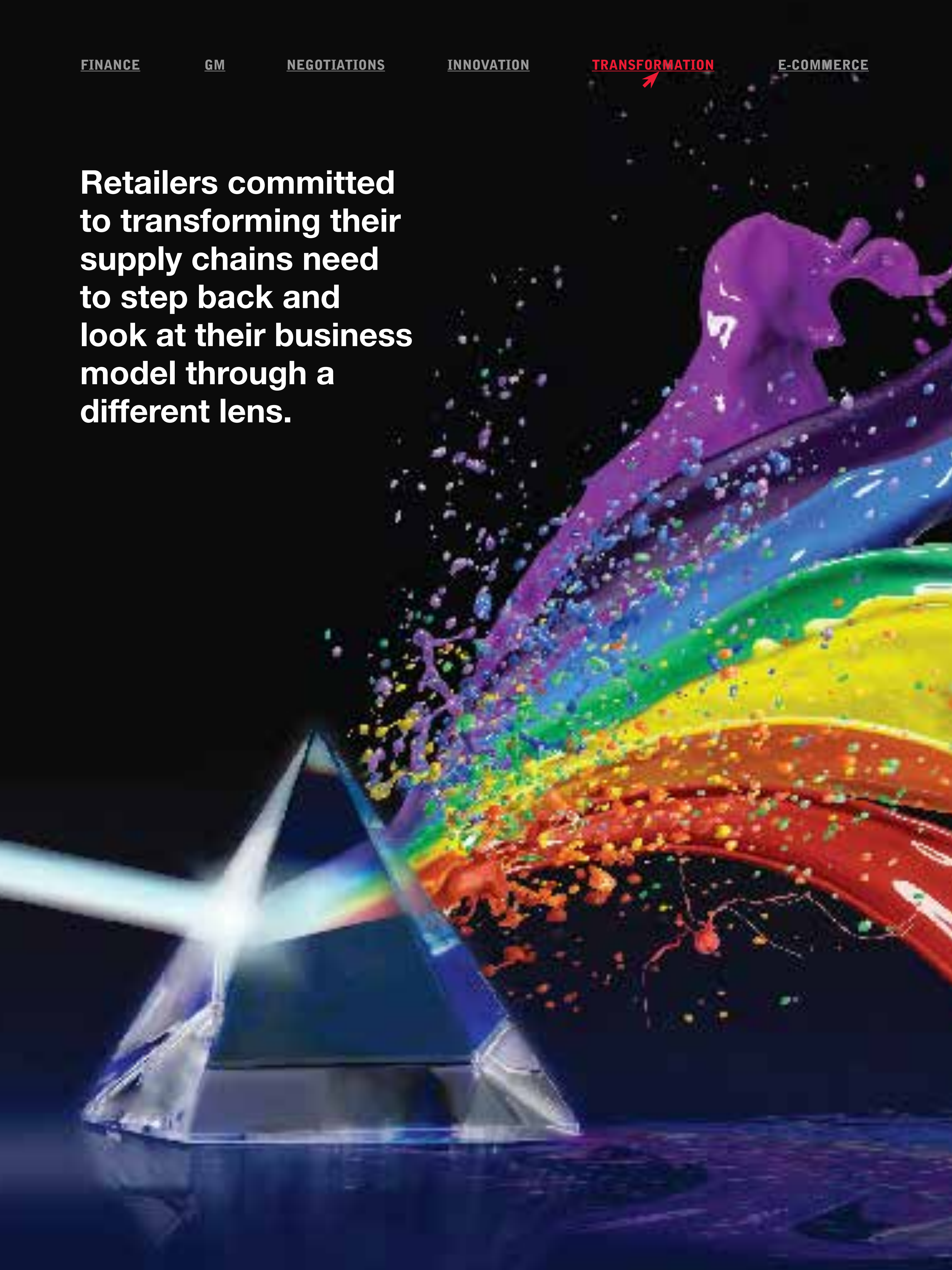
the two people, the pack person and the formula person work together very upstream … so you don't have this problem anymore." To make this work, there must be aligned objectives and clear guidelines of what information can be shared. If done properly, such an approach has the potential to substantially improve development speed and innovation output.

Pulling it all together

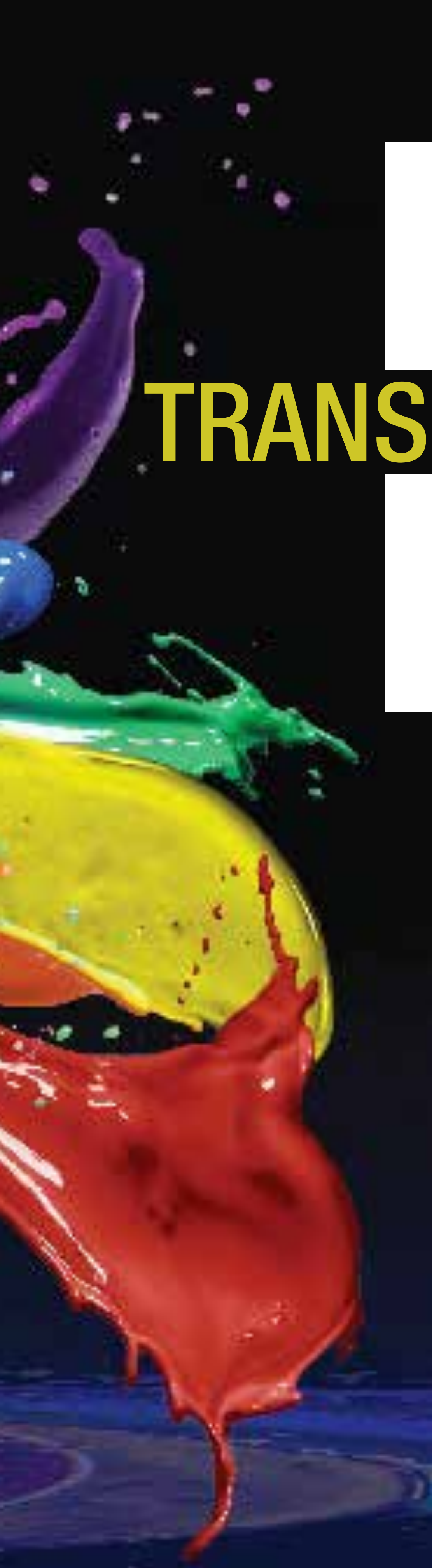
As our interviews showed, buying companies can greatly benefit from the technological know-how and innovations of their suppliers. Making this happen, however, is not a casual process or event.

It requires development of an innovation path including creation of an innovation hub. Improved communications are also essential to positive outcomes. Essential here is improved information sharing with suppliers to identify new opportunities and communicate these to all involved. A best-in-class supplier innovation model should additionally focus on developing partners of choice, connecting different suppliers and emphasizing collaborative innovation partnerships.

Aside from the process, there is also the matter of the key drivers of such programs. Procurement departments are ideally positioned to coordinate and manage of innovation across companies and industries. By taking on this more strategic role, procurement also positions the company for greater success as new product introductions steadily increase and their life cycles shrink.



Retailers committed to transforming their supply chains need to step back and look at their business model through a different lens.



Why RETAIL Supply Chain TRANSFORMATIONS FAIL—and how to GET IT RIGHT

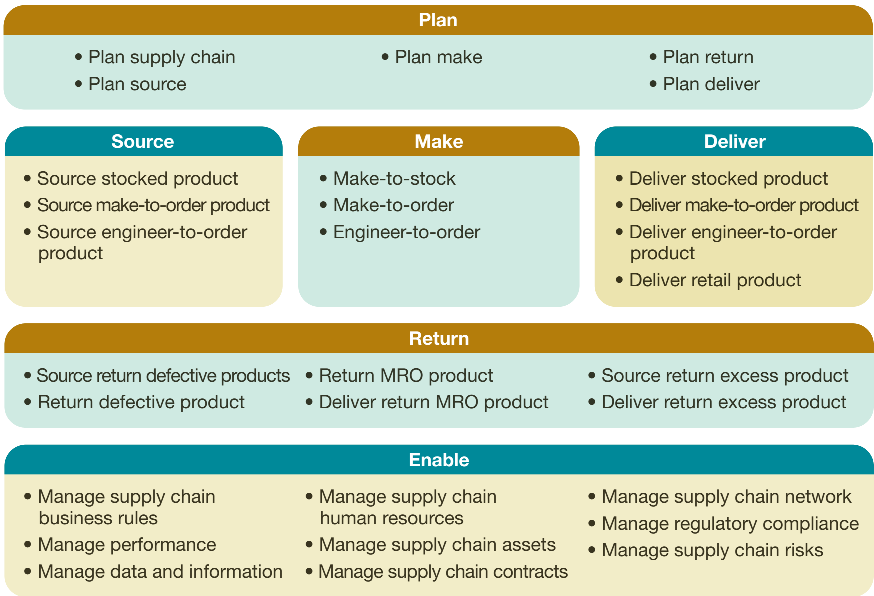
BY SANDEEP GUPTA

THUMB THROUGH THE PAGES of any business—or supply chain—journal and you won't look long before you stumble across the word transformation. Business professionals across the world are in love with the word as well as the idea of transforming their organizations to tackle the challenges confronting their businesses and put a cloud of dust between them and their competitors. It's part of the daily business spiel, tossed around in the boardroom and C-suite; in consultants' presentations; at management conferences; and in the pages of *Supply Chain Management Review*. But if we ask those same executives just what the word transformation means to them, there would likely be little if any consensus on its definition or how it applies to their organizations or supply chains.

Sandeep Gupta leads the Business Excellence team at Al Tayer Group, UAE. He can be reached at sandeep1gupta1@hotmail.com.

FIGURE 1

A standard view of pillar functions



Source: Sandeep Gupta

For the purposes of this article, we'll use the definition that comes up in most searches, which is that transformation is the process of driving fundamental and sustainable change. Those two key words are crucial. Businesses around the world are experiencing never-ending transformations caused by a number of trends at play, including but not limited to the following:

- customer demands for customization and quality at the lowest cost, shifts to services, all leading to ever-evolving business models like omni-channel;
- life-cycle compression, which isn't limited to just the ever-shortening life-cycle of products (an article last year in Forbes noted that as recently as 50 years ago, the life expectancy of a firm in the Fortune 500 was around 75 years; now it is compressed to less than 15 years and declining even further;)
- intense, global competition driven by players like Amazon, Uber and Alibaba that are changing the rules of the game through their ever-evolving business models,
- disruptive forces such as the Internet of Things (IoT), 3-D Printing, Artificial Intelligence, Robotics Process Automation and even visionary political and business leaders who are creating Smart Cities in places such as Dubai and Singapore.

As if these four were not enough to keep supply chain executives up at night, there are the ubiquitous pressures to grow revenues and contain costs even while keeping up with the moves being made by Amazon, and new regulations in geographies like the Middle East, where former tax-free havens are preparing to introduce value added taxes (VAT) to reduce the region's dependency on revenues from oil.

Clearly, no organization, regardless of industry, can afford to ignore this tsunami of change. In recent years, however, the impact of these crashing waves has been especially damaging to retail. In part, that is because retailers lived for too long in a state of denial about the changes being wrought on their business models by the Internet; and in part it is because once retailers saw the light, there were no clear and easy solutions. The failure to get things right has created distress for many leading retailers—just look at what has happened to stalwarts like JCPenney, Sears, Macy's and even Walmart. It will come as no surprise then that retail supply chains are seeing ever-increasing pressures to deliver more from less, be it in procurement or last mile delivery. They are ripe for transformation, no matter how we define it.

That brings us to another dilemma: While the need for a fix now is imminent, transformations are notoriously slow, and as many as 70% of them fail, according to an article published by McKinsey. There are many theories as to why this is so, but there has been very little, if any, new thinking to over-ride the traditional approach to such programs. It is in that context, based on my experience of working with many retailers, that I offer the following point of view: The fundamental problem in the retail world is that the business model follows the organization model and not the other way around.

That is a different lens through which to view retail transformation. But it is the reason I believe that the phrase "supply chain transformation in retail" is a misnomer, a point I will buttress later in this article with three case study examples of supply chain transformation initiatives from my consulting

work in retail. It's important for me to note that my observations are drawn from my work over the years, and are not necessarily the views of the consulting firm where I now work. The point is that the primary and meaningful way to make supply chain transformations work is to see them not as functional-specific but as organization-wide. In other words, I am pointing a finger at the retail organization model. The different lens that will be detailed in this article should make you re-think your entire retail operating model.

A new model

Like many industry sectors, retail organizations begin by setting up an organizational model: They structure the pyramid, define roles, job titles and lines of report, and then delegate authority. Only after the organization is in place do they design the relevant business model, dictating how the business will operate and go to market.

This last phase of design is constrained by the structure of the organizational model. As a result, managers end up force-fitting ways of working around the organizational structure. By this time, the damage is done.

Such disconnects happen all too often in today's retail supply chain. These create the perfect storm for failed supply chain transformations, and in retail, they fail often. However, because organizational models reflect the power equations, hardly anyone is willing to acknowledge or bring out the elephant in the room.

Before we study the real-life examples that will illustrate that point, let's consider organizations from a large segment of industries that aligned their supply chain functions to the SCOR methodology (Supply Chain Operations Reference Model). Figure 1 is a standard view of the pillar functions one can find in the broader supply chain function.

Most readers will connect with the following typical sub units in their supply chain organization:

- demand/supply planning;
- sourcing and procurement;
- manufacturing (contract and own); and
- operations or distribution and warehousing, logistics and transportation.

Retail organizations, however, typically structure themselves differently: Not only are the terminologies different, but the functional incumbents also see themselves as different. This manner of structuring the business model is the root cause that drives disconnects and creates grounds for the failure of supply chain transformations in retail.

For the sake of comparison, let's look at consumer packaged goods (CPG) or fast moving consumer goods (FMCG) firms. In those industries, the focus is on creating and fulfilling demand. Demand creation sits with marketing and sales, while the supply chain is tasked with ensuring that the demand is satisfied in the most optimal manner. Hence, these two sets of actions or functions are primary; all other functions play a support role, like a backstage crew.

A retailer's perspective is different, even though the science is exactly the same as that of CPG/FMCG. Take luxury retail, be it retailing leather jackets, red-soled stilettoes or diamond-studded jewelry. In this segment, the key decision-making functions are:

- merchandisers and buyers who travel across the globe, read the trends and decide what products/assortments to bring into the stores; and
- planners who hold the purse strings through the OTB (Open to Buy) and work hand in glove with the buyers.

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Figure 2 matches the two value chains—that of a Consumer Packaged Goods (CPG) or Fast Moving Consumer Goods (FMCG) organization with Retail.

As the illustration shows, the retail industry's value chain breaks apart the traditional SCOR-based supply chain function. Select parts of the supply chain disassociate from the SCOR model and see themselves as radically different; even though the essence of what they do is unchanged.

- The planning sub-unit of a CPG supply chain becomes planning in retail.
- The sourcing sub-unit of a CPG supply chain becomes retail's buying/merchandising arm.
- "Make" is mostly sub-contractors if the retailer has a private label in the portfolio; otherwise this sub-unit doesn't exist in retail.

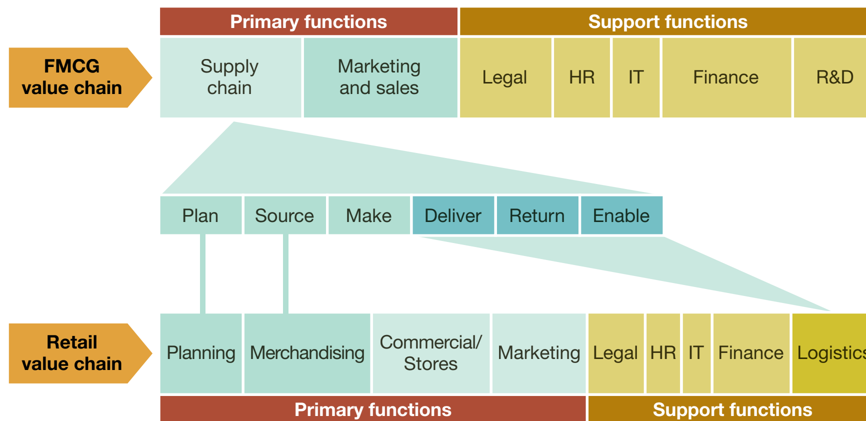
These sub-units do not see themselves as having any connection with the supply chain. In their view, supply chain is only about moving boxes, managing labor/warehouse or driving trucks and delivering stocks to stores and customers.

This structural difference has far-reaching consequences. For example, in retail, merchandisers are responsible for procurement. They are constantly searching, evaluating and selecting new brands and vendors. Additionally, there are various issues in inventory process flow around order split or consolidation (at both levels—order creation as well as execution). This requires ensuring certain capabilities to manage multiple sources of supply in an optimal manner. Think International Commercial Terms (Incoterms).

Question: Why is the logistics function not engaged with contract discussions with vendors to ensure that the most appropriate Incoterms have been included?

FIGURE 2

Consumer packaged goods vs. retail



Source: Sandeep Gupta

The need for retailers to transition toward omni-channel is now a given. Omni-channel leads to stores rationalization as is evident from the number of stores being shuttered by major chains as varied as Target to Walgreens and from Office Depot to Barnes & Noble, with news of new closings trickling in every month.

Question: The closure of stores has a direct impact on the design of the supply chain network. Why, then, isn't supply chain engaged during the decisions to open or close stores because they have an impact on the efficiency of the supply network as well as the total landed cost of the merchandise being sold?

The real world

Let's now review the details from some real-world retail examples from my consulting work. The first is a retailer that operates in multiple segments and has a large footprint of brick-and-mortar stores in emerging economies.

During periodic reviews of the financial performance for one specific line of business, the CFO repeatedly noted that inventory levels were trending upward. The impact on the availability of working capital was pinching the business. To address the issue, the retailer brought in a team of consultants to look for ways to reduce inventory levels.

The consultants undertook a detailed review, studying the product flow, actual lead times, ordering mechanisms, aging of SKUs at the store level and other dimensions. They drew up a road map for transformation that was embedded with a set of operational and strategic solutions. They claimed that the proposed solutions could reduce enterprise inventory levels by as much as 50% without any adverse impact on customer experience.

Skeptical of the claim, the divisional vice president dismissed the recommendations, claiming that based on his years of experience, a 50% reduction in inventory was pie in the sky. He was extremely wary of moving forward on this transformation. Still, the CFO asked the consultants to implement a pilot of their recommendations. The consultants drew out a phased approach that clustered brands into waves based on certain criteria and then implemented the plan in select solutions. The first wave focused on 10 high-volume brands sourced from a common market.

A few months later, the consultants reported that the pilot had reduced the inventory of those selected brands by 6%. After the finance team vetted the real-

ized benefits, the consultants were sent on their way with a pat on the back while business leadership decided to proceed with the rest of the implementation on its own. After two years, the business failed to capture more than that initial 6% reduction in inventory.

The essence of what went wrong (and therefore, the various recommended solutions) was across all dimensions of the operating model. Figure 3 is an example of how various issues had created an inter-play of cause and effect.

The center of the illustration shows one of the hypothesis used by the consultants: New inventory stock was being sent to the stores even though the stock already on the shelves was not selling, compounding the inventory issue. In fact, the hypothesis had proven true. The schema provides a glimpse to the types of questions that were raised during the deep-dive on each dimension of the operating model—Organization (or People), Business Processes (including Policies), Systems and Performance Management.

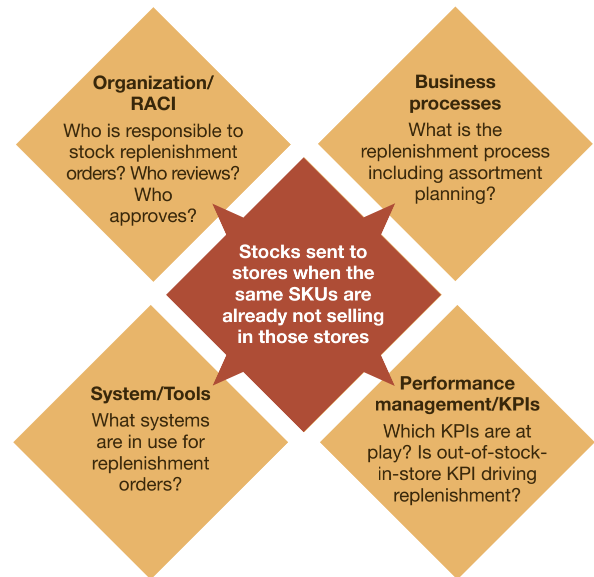
Think of the "5 Whys" from Lean; the true hypothesis was like a symptom and the questions across all dimensions were searching for the root causes and testing for direct correlations. As the consultants delved deeper, the chain of root causes and their linkages grew and grew like a spider web. Some questions, in turn, became hypothesis that needed further validation. The causal relationship across multiple attributes was deep-rooted and spread out across all dimensions of the organization. Slowly the canvas, as illustrated in Figure 4, became larger.

Imagine the true scale of the transformation needed to address the business issue. This was a gangrene of sorts, but amputation was not possible.

Real transformational success requires that an organization keeps peeling back the onion layers to finally reach the core and then design relevant solutions. In this instance, growing inventory levels are not like the common cold—you cannot address it with over-the-counter medications. Even worse, this retail organization did not have either the appetite nor the courage to progress on the implementation and ask the relevant questions. Whose problem is inventory? Will the problem-owner also own the solution? Given that the transformation program cut across planning, buying, technology, HR, etc., who would sponsor the initiative, if not the CEO? Is this really just a supply chain transformation program or is it an organization-wide transformation program?

FIGURE 3

What went wrong: Cause and effect



Source: Sandeep Gupta

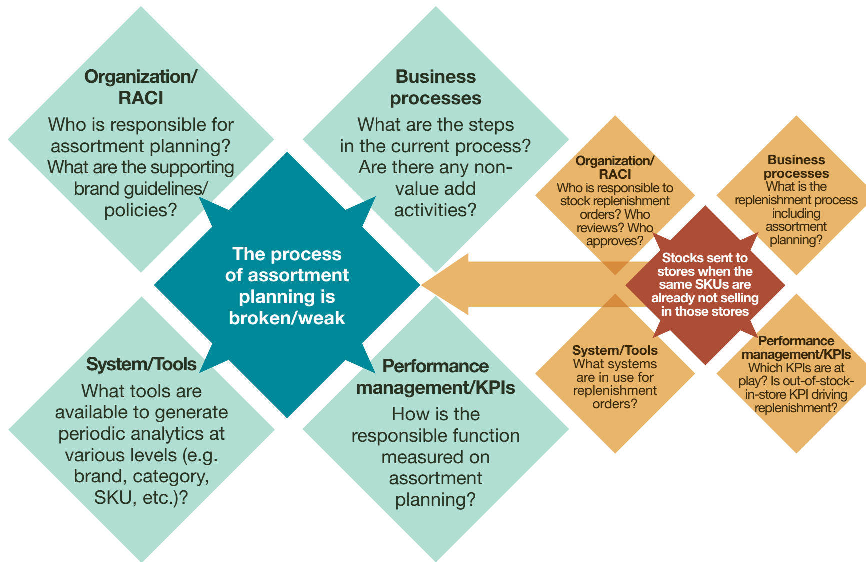
In this case, the ultimate outcome is easily predictable: The constant bleeding or hemorrhage will one day lead to the death of this business unit; they are only postponing the inevitable.

Let's look at another example: This franchise retailer has been in business for more than 40 years and has built an envious portfolio of global brands. A few years ago, it began to face eroding profitability due to changing market and economic conditions. As various governments opened their markets and reduced Foreign Direct Investment (FDI) restrictions, some high profile brands ended their marriage with the franchise partner and went independently to market. Additionally, the disappearing wage arbitrage across markets led to a rise in labor and operating costs. In short, revenues as well as profits came under severe pressure. As a result, the CEO and CFO concluded that unprecedented times needed creative thinking and were keen to initiate a series of projects. Even support functions, such as logistics, were required to identify topics or themes of transformation to achieve a step-change in profitability.

In fact, logistics was tasked with optimizing total landed costs (TLC) as an avenue of potential savings. However, because TLC includes the cost of the products, which sat

FIGURE 4

The spider web grows



Source: Sandeep Gupta

with the buying function, the scope of logistics' study was restricted to other cost elements, excluding product cost.

The study required some very heavy data lifting to understand the historical flows of ordering cycles, receipts, the time that inventory sat idle in a warehouse before it was issued to a store, including all possible variations of cross-docking and direct store deliveries. The franchise nature of the business did not permit a like-to-like comparison to international benchmarks on TLC. However, the project team was able to develop some very specific proposals that could shave 7% to 12% off their baseline cost. The challenge was that most of the proposed solutions were strategic in nature.

One solution called for a re-examination of the Incoterms negotiated with the brands. The study highlighted a number of instances where the retailer was operating on unfavorable Incoterms. For example, some brands operated on delivered duty paid, or DDP, but the retailer could save significantly on shipping costs if the Incoterm was changed to ex-works (EXW). Analysis showed that there were other potential savings involving different choices of Incoterms.

The challenge to realizing those savings was that the higher logistics costs had their roots in the way buyers were negotiating vendor contracts. So, what began as a logistics transformation initiative made little progress because the route to success passed through buying, planning and merchandising.

The question for the retailer was: Where should real transformation begin? As is mostly the case in retail, the responsibility for TLC had been handed to the supply chain (logistics), even though the buyers select the brands and negotiate prices and volumes using the OTB worked out by planning. In the case of this retailer, most buyers had no idea where the merchandise would be sourced from, how it would be shipped or which Incoterm was most suited to their organization. Some buyers did not even know the existence of the word Incoterm, which is the key to managing TLC.

It will come as no surprise that the transformation died before it was born.

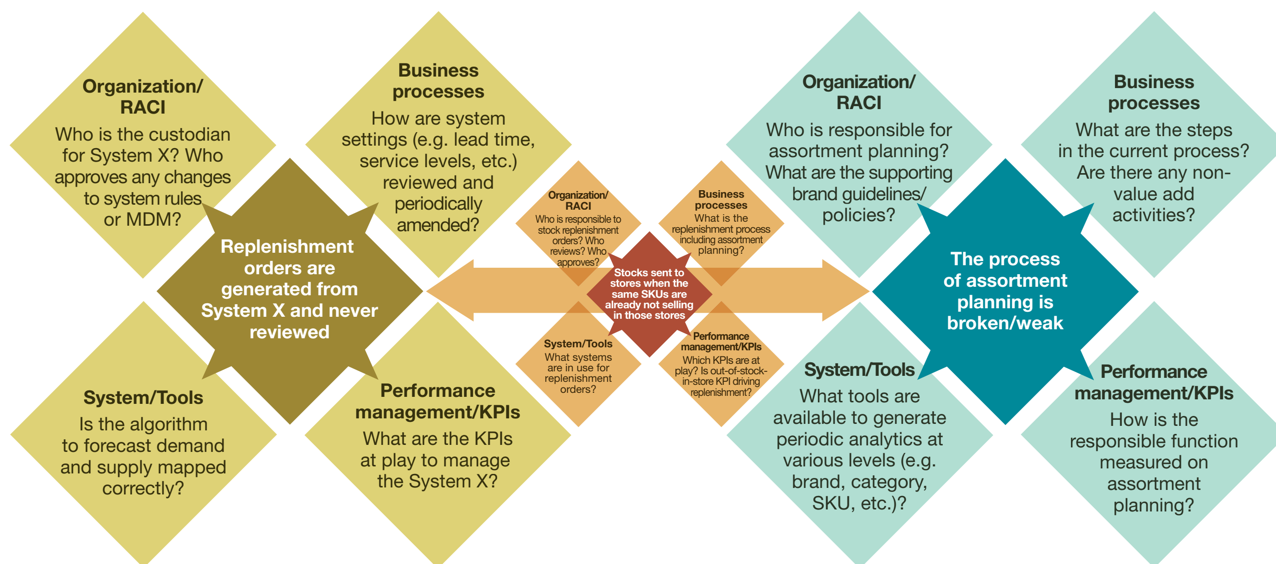
I present one final real-life example. The logistics function of an apparel retailer operated as a separate service provider, with a charge-back model based on the unit volume of products being handled. Every year, in the budgeting rounds, logistics came under pressure from the internal clients/P&L owners to push this unit cost down.

A diagnostic review highlighted that the warehouse staff was often busy with fire-fighting activities that added no value. A more detailed study concluded that the bulk of these activities were related to inbound shipments. The key issue was that when shipments from non-EDI brands arrived at the warehouse, the corresponding purchase orders were often missing in the ERP system. As a result, even though the warehouse had physical custody of the merchandise, it could not take ownership on the books, leaving the stocks uninsured and in quarantine on the docks. What's more, back-of-the-envelope calculations concluded that logistics was spending as much as 25% to 30% of its efforts on such non-value added activities.

But while logistics was bearing the brunt of the case of the missing purchase orders, it had no role in procurement, which was done months earlier, or in the posting of purchase orders. That raised at least two questions: How can logistics deliver

FIGURE 5

…and grows



Source: Sandeep Gupta

operational and unit cost reductions when activities beyond its scope affect its overhead? More importantly, how do you convince internal customers that they are the real culprits here?

Ultimately, planners and buyers viewed the creation of purchase orders as a mundane, non-glamorous job that could be procrastinated. Of course, the "do it later" mentality too often meant that POs were never issued until the fire fighting was underway. Logistics would have to take the stocks into the warehouse to avoid paying demurrage, keep a manual count for all such shipments and follow up by the hour. In parallel, all kinds of multiple manual handling kept happening until the final put away or cross-dock was completed.

The true impact of this could be devastating for those retailers that have implemented an omni-channel strategy, where demand fulfillment is completely dependent on how quickly can you move your products from receiving to shipping. No one can deny that the supply chain is the backbone of omni-channel fulfillment: You either perform or perish.

Transformation success

In all three real-life examples, the reference to buying and planning functions is neither deliberate nor accidental. There is no denying that these functions are lynchpins in the success or failure of any retailer. What's more, if you look at transformation through a new lens, it is clear that their genesis is in the supply chain. Until retailers recognize this, most supply chain transformations will continue to fail or deliver very little in the way of tangible business benefits.

Based on my consulting experience, retailers need to go back to the basics and bring in the three very important considerations below.

- Retail is all about the supply chain: Your organizational model should reflect this.
- Only those retailers that have supply chain talent and thinking embedded across the various functions will be successful in the future; that includes buyers.
- Any supply chain transformation must begin as an organizational transformation in scale and depth—know it, and deal with it.

Based on the examples I have shared, I believe that when the organization model precedes the business model, the organization has a written end-date for itself. This single, fundamental flaw becomes the bane for many transformations. Instead, if retailers first paint the canvas with "how do we want things to be done" and then go on to define "who will do what," they may see a completely different horizon—one full of transformation success and positive results.

Major Modes JOIN E-COMMERCE MIX

While last mile carriers receive much of the attention, the traditional modal heavyweights are in charge of connecting the growing web of facilities that enable e-commerce. Today, all modes as well as freight intermediaries must be poised for growth and flexible enough to keep evolving.

BY PATRICK BURNSON, EXECUTIVE EDITOR

As Amazon continues its inexorable march toward distribution and order-fulfillment dominance, logistics managers are examining the opportunities all modal players are promising as they build out their e-commerce supply chains. As a consequence, the nation's industrial transportation networks have been largely transformed.

According to the CBRE Group, the world's largest commercial real estate services firm, there's been a proliferation of warehouses and distribution centers (DCs) spanning 1 million square feet or larger across the nation. And while "last mile" carriers receive most of the attention these days, the traditional modal heavyweights are in charge of connecting this ever-growing web of facilities.

"The massive warehouses and DCs have sprouted from Southern California to Philadelphia, clustering around metro areas that provide the combination of road, rail, air and sea access that e-commerce users covet," says David Egan, CBRE's head of industrial and logistics research in the Americas.

To date, 117 such facilities were built across the United States from 2010 to 2016 for a total of 141.2 million square feet—a significant increase from the 99 facilities built between 2003 and 2009, according to CBRE data.

The markets in which the most big-box construction occurred over the past six years are led by Philadelphia, California's Inland Empire and Dallas/Fort Worth. By way of forecast, CBRE says the Inland Empire, Chicago, Philadelphia and Atlanta lead the busiest markets for on-going construction of 1 million-square-foot DCs. Across the 10 busiest U.S. markets for this type of construction, 29 such facilities are now underway.

Egan maintains that this trend foretells several different things. "The proliferation of big-box facilities underscores the rapid growth of e-commerce, because these mega-facilities serve as the backbone of retailers' fulfillment networks, distributing goods across multi-state regions," he says.

Furthermore, says Egan, developers prefer to build these big boxes in industrial-powerhouse "metros" that offer the best combination of exceptional

Patrick Burnson is executive editor of SCMR

transportation access and close proximity to big populations favored by e-commerce users. "While massive warehouses aren't purely a phenomenon of e-commerce, the two are closely related," he says. "E-commerce users typically need two to three times the amount of warehouse and distribution space that traditional users do."

That's mostly because e-commerce fulfillment requires more inventory, labor and automation. According to Lexi Russell, a senior research analyst with CBRE, the strongest trend to watch now is "build-to-suit," which customizes warehousing for truck, rail and intermodal service. "The dimensions of the warehouse are determined by the client," she says, "to maximize traffic driven by e-commerce in the new demand cycle."

New air cargo hubs

The impact on air cargo operations is already being felt by upstarts like Greater Cincinnati/Northern Kentucky International Airport (CVG), which will now serve as Amazon's centralized hub for its newly-launched Prime Air Cargo service.

"Amazon advised us of several factors important to them, including site availability and infrastructure," says Candace McGraw, CEO of CVG. "CVG owns more than 7,500 acres of property, four runways, plenty of taxiways, and we're a cost-effective airport. To top it off, we're committed to invest $5 million in infrastructure improvements that will assist the airport and the overall project," adds McGraw.

Meanwhile, it appears that the "middle mile" of e-commerce will also be served by established hubs like Dallas Fort Worth International (DFW) Airport. This international cargo gateway recently began installing a cold chain facility that will be operated by AirLogistix USA.

Expected to be operational this summer, the new transfer facility will give DFW the ability to precisely control warehousing temperatures for shipments of pharmaceuticals, flowers and fresh foods. John Ackerman, executive vice president of global strategy and development at DFW, calls it "a natural choice" for the AirLogistix facility, given the airport's location in the center of the United States.

Aaron Ahlburn, senior vice president and director of research for the industrial property consultancy Jones Lang LaSalle, concurs, noting that DFW enjoys a certain geographical advantage. He says location—as well as market timing—is key. "Obviously, there are broad industrial and logistics real estate implications as e-commerce supply chains are perfected," he says.

Middleman in the mix

According to Brandon Fried, executive director of the Airforwarder's Association, implications for today's freight intermediaries due to the double-digit growth of e-commerce are equally complex—regardless of mode.

"Freight forwarders have traditionally been focused on the business-to-business supply chains, but are now making some inroads into business to consumer deliveries," says Fried. "We see this in many of our members delivering appliances, large electronics and other substantial-sized goods into private homes."

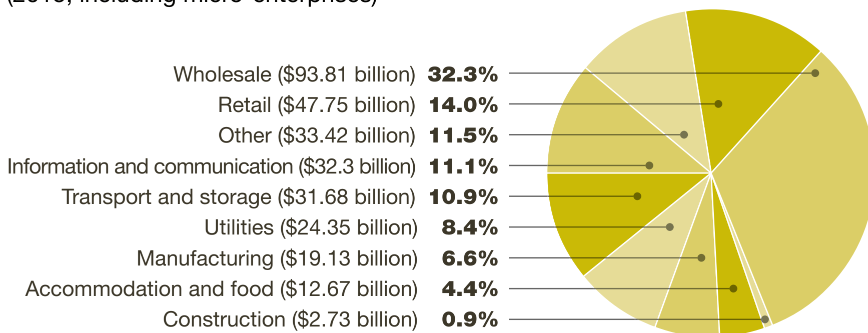
Because forwarders are traditionally "asset light," they can be quite nimble in adapting to changing e-commerce market needs, adds Fried.

"We are seeing this now in the online ordering environment where forwarders are supplying distribution centers, either the actual brick-and-mortar retail outlets or e-commerce fulfillment facilities with a wide range of shipments from suppliers to maintain their inventory," says Fried.

Indeed, building customized solutions for complex supply chain challenges is where freight forwarders excel, Fried

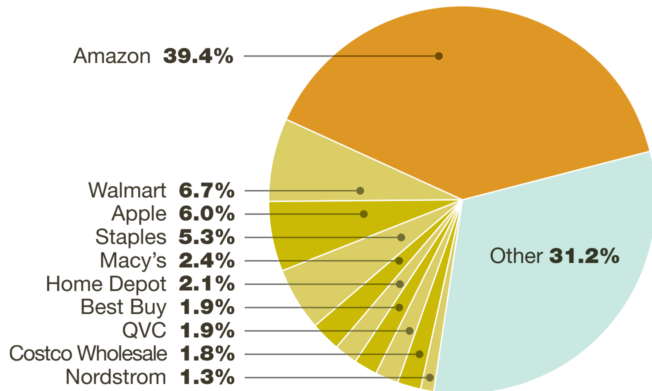
Total e-commerce sales via a website, by industry sector

(2015, including micro-enterprises)

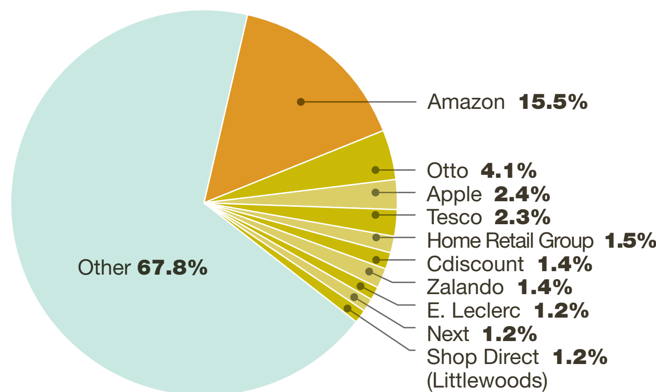


Source: Office for National Statistics

Top 10 online retailers: U.S.



Top 10 online retailers: Europe



Source: eMarketer for U.S. data; RetailMeNot, Centre for Retail Research, ibusiness and Veraart Research for Europe data

contends. Unlike the "old days" of the 20th Century, forwarders are less mode-centric and more focused on actual solutions where the form of transportation is only part of the overall logistics scheme.

"The freight forwarder role in e-commerce tends to support suppliers moving industrial goods—both finished and in actual components—which may or may not end up in the consumer goods supply chain," he says.

But while transport infrastructure and warehousing is moving at warp speed, the learning curve, as well as the pace of adoption among forwarders, is being brought into question by air cargo industry experts.

Dr. Michael Hanke, founder and managing director of SkaiBlu, an e-commerce consultancy assisting clients in the aviation industry, says that recent analysis of the top 50 airfreight forwarders found them unprepared for "digitized" commerce.

"Across the board, results were not encouraging and many forwarders don't appear to be fit for a competitive cyberspace presence," says Hanke. "Many sites suffer from slow speed, are not optimized for mobile devices, lack information on their handling of digital customer data including information on cyber security measures."

According to Hanke, most forwarder websites are poorly designed, and have a small, if any, presence on social media platforms. "This is just a snapshot of the findings," he says. "Essentially, if any of these companies want to be relevant for their customers, these e-basics have to be addressed soon," he says.

Intermodal imperatives

The Intermodal Association of North America (IANA) examined the rise of e-commerce and the future of expedited intermodal at its last annual conference, and will likely address the issue in greater detail throughout the year.

"E-commerce and associated services have fueled ever-increasing service expectations on the part of shippers," says Derrick Broome, vice president of intermodal for C.A.T. Global, a multimodal service provider. As an IANA board member, he also notes that the mission for surface mode transport providers will now be to determine how the marketplace requirement is evolving under increased pressure in the demand cycle.

"For intermodal to remain in the game, intermediaries are going to have to move light years ahead in the way they process information," says Broome. "This not only speeds up business, but creates a closer bond with the shipper as transparency is enhanced."

Logistics terminals that facilitate the transfer of goods between rail and motor carrier are now being increasingly co-located in high-density business districts with facilities that can process a range of commodities and distribution centers for finished, containerized goods, notes Bill Renicke, partner at the global management consultancy Oliver Wyman.

"Compressing distances in these ways could drive the development of new regional services, including blended trains—with a mix of bulk commodity, automotive and containerized traffic—and more direct point-to-point services," says Renicke.

Waterborne worries

Shippers are rightly concerned about the wave of ocean carrier consolidation, but they should also consider the "digital divide" keeping some players out of the e-commerce marketplace.

To date, the most significant news in this regard surfaced last January when global container shipping giant Maersk announced that it will partner with Alibaba—a Chinese e-commerce provider. This endeavor will enable ocean shippers to book space on Maersk vessels through Alibaba's booking service called OneTouch,

According to John Fay, CEO of INTTRA, a leading provider of e-commerce services for the ocean freight industry, that gap may be widening. "The main impact of consumer-driven e-commerce on ocean shipping is not on deployments and schedules, but rather shippers' needs for more efficient logistics management," he says.

Fay's company recently announced that it generated 16% growth in 2016 over 2015 in container orders, which include bookings, shipping instructions and shipping orders. According to Container Trade Statistics, INTTRA processed 38.5 million container orders on its platform, while containership sailings in the industry rose by just 3% in 2016.

"We played a significant role in 2016 as the rate of technology and digitization accelerated rapidly in the ocean industry," says Fay. "We believe that digitization is now indispensable."

NavisWorld, a biannual conference to help port terminal operators optimize the movement of containers with the use of advanced technology, will also focus on e-commerce this month when it convenes in San Francisco. "While the main impact of e-commerce to date has been around last mile logistics and warehouses, it's interesting to think how e-commerce can link back to what's happening in the terminal and port," says Andy Barrons, senior vice president for Navis.

According to Barrons, the new warehousing infrastructure and downstream processes need to be reinforced with accurate and near-real-time information flows from the upstream container movement from vessel arrival through to container availability and yard management that feeds the gate and rail process.

"Terminals and ports will see greater demand for providing visibility and predictability to container moves for logistics providers and shippers," adds Barrons. "This in turn will drive more automation of processes."

E-commerce: Dramatic shift in service sector

A new report released by the London-based think tank Transport Intelligence (Ti) notes that the logistics industry has undergone a "transformation" with a dramatic shift in service sector domination.

According to research contained in Ti's latest report "Global e-commerce logistics 2017," a powerful mix of demand and supply side factors means that further re-structuring is possible—if not probable.

"The global logistics industry is vast, both in terms of market size and the huge numbers of people employed in the sector," says Professor John Manners-Bell, CEO of Ti. "It's therefore surprising that its role in the development of the global economy is generally overlooked."

Ti estimates that the global e-commerce logistics market grew by 18.1% in 2016 and has forecast a 2016-2020 compound annual growth rate of 15.6%. Low, expected and high forecast scenarios have been presented.

"E-commerce is making everything more unpredictable," says Ti analyst Ken Lyon. "To cope, organizations will need to react faster by breaking down functional silos to enhance communication and reaction, use systems that support flexibility rather than rigid process, and establish operational networks and alliances that can respond and flex to demand," he says.

David Buckby, an economist with Ti, observes that e-commerce volume now accounts for 20% of DHL Express total volumes, up from about 10% in 2013. "That's not necessarily all international volume growth, but I reckon a good portion of it is," he says.

For Alex Leroy, a Ti analyst, another obvious impact is that cross-border e-commerce is proving to be a major "shot in the arm" for airfreight. "DHL's latest report claims that cross-border e-commerce accounts for about 15% of total e-commerce, and has an annual growth rate of 25%, with one in 10 dollars spent on shipments," he says.

In addition to the roles of the contract logistics and freight forwarding sectors, the Ti report also examines the dynamics of the express parcels, container shipping, air cargo, trucking and intermodal industries.

"While global macro-trends are highly important to the long-term future of these sectors, conversely it's the structure and competitive nature of these sectors that has a 'bottom up' influence on supply chain management and hence global economies," concludes Manners-Bell.

—By Patrick Burnson, executive editor

Cutting through the fog of trade war

In uncertain times, flexibility proves to be the supply chain's greatest strategic asset.

By: Sean Monahan and Johan Gott

Sean Monahan is a partner and global practice leader of A.T. Kearney's Operations & Performance Transformation practice. He is based in New York and can be reached at sean.monahan@atkearney.com. Johan Gott is a principal in A.T. Kearney's Private Equity/ Mergers & Acquisitions practice. He is based in Washington D.C. and can be reached at johan.gott@atkearney.com.

The world of politics is poised to collide with the supply chains of increasingly globalized U.S. companies. The Trump administration has identified trade and treaty reform as two of its top priorities, but how that will translate into specific policy or implications for international commerce remains unclear.

It takes a broad suite of tools to effectively manage a supply chain today, including everything from software and systems specializing in logistics, data analytics and inventory management to tools enabling demand forecasting, freight management and ensuring security and beyond. In fact, the supply chain manager's traditional arsenal is overflowing with weapons designed to address any and all known obstacles.

But, what tools do you need to address the unknown? How can you indemnify your organization against change and uncertainty? How can you forecast, for example, without data?

Fortunately, tools such as game theory and scenario planning can help you manage more effectively in the face of multiple alternatives, including worst-case situations.

The tools

If you're not familiar with the term, traditional game theory focuses on identifying key players or actors, and then modeling how they might react and behave by describing alternative choices—sometimes called actions or strategies—that they might employ in order to resolve a problem or in response to a specific situation.

Scenario planning, in all its various forms, seeks to construct one or more probable and plausible future outcomes based on a series of inputs and analytics; creates visions or narratives of what those futures would be like; and allows managers to test how well a proposed solution or response might work in a variety of future environments.

The goal of both approaches is not so much to predict one "correct" individual future state, as it is to help prepare supply chain managers for a range of possibilities contained in the plausible futures that emerge from the process.

There are as many variations of game theory and scenario planning as there are practitioners, but when it comes to addressing the challenges presented by the Trump administration's somewhat elusive stance on global trade, a combination of both tools that we call "Trade Wargaming" is essential.

The stakes

Before we consider scenarios, let's remember exactly what is at stake.

In 2015 the United States imported $475 billion worth of goods from China; $291 billion worth of goods from Mexico; and $288 billion worth of products from Canada.

The American export trade is significant and mirrors our import trading partners. In 2015 the top three U.S. export destinations were: Canada ($219 billion); Mexico ($188 billion); and China ($128 billion).

With close to $1.6 trillion of trade at stake

between just four nations, the implications for anyone with supply chains extended outside America—regardless of which direction the goods are flowing—are staggering. And that isn't factoring in what happens to lower value, but still significant, trading partners like Japan, Korea, Malaysia and Vietnam if a total trade war breaks out. Entire commercial sectors including retail, apparel and even home electronics goods could find themselves crippled with no fixed end to their collective misery in sight.

Modeling plausible future

While there are hundreds, perhaps thousands, of possible trade policy scenarios we could examine, our analysis has led us to highlight three: what would happen in the wake of the imposition of a Border Adjustment Tax; what trade policy looks like if NAFTA were to be dismantled; and the possibility of an all-out trade war, conceivably with China. Let's look at each.

Border Adjustment Tax. Congressional Republicans have already drawn up what they call the Ryan-Brady plan, a blueprint for corporate tax reform that advocates reducing corporate taxation from today's 35% rate to 20%. One of the cornerstones of this plan is what is known as a Border Adjustment Tax, or BAT, under which companies would be taxed on revenues generated in the United States less the cost of goods sold, provided those goods were not imported, in which case their cost couldn't be deducted. Imposition of a BAT would place an effective 20% tax on all imports, potentially destabilizing retailers with thin margins, particularly if the resulting exchange rate moves don't compensate for the increased costs of imports.

NAFTA. NAFTA was a favorite target of Donald Trump's primary and general election rhetoric. Candidate Trump described NAFTA as "the single worst trade deal ever signed anywhere," characterizing it as a killer of American jobs. Since the inauguration a number of approaches to NAFTA have been floated by the Trump administration, ranging from suggestions for bilateral reform to threats of tearing the entire treaty up and punishing Mexico. As written, NAFTA gives Mexico tariff-free access to the United States

The least disruptive NAFTA scenario would have the United States and Mexico agreeing to modifications in existing treaty language, primarily in areas like environmental standards, updates to e-commerce and digital trade language and rules of origin regulations that are important to the auto industry. Ironically, many of these provisions were covered in the now dead TPP treaty. While certain labor standards updates may raise costs, specifically in areas like apparel, these reforms wouldn't cripple heavy net importers like U.S. retailers.

In a more disruptive NAFTA scenario, American, Mexican and possibly even Canadian negotiators would not be able to agree on terms. What would happen should agreement become impossible isn't clear. Congress must ratify any changes to NAFTA, but through Executive Order President Trump can terminate the treaty with a pen stroke, driving tariffs back to pre-1994 levels.

Trade war, likely with China. China is the primary target of the Trump administration's trade policy ire. The most extreme Chinese trade policy proposal involves imposing a 45% tariff across the board. This would have profound consequences on all Americans because Chinese exports account for 20% of U.S. household spending on furniture and household goods categories and 36% of the clothing and shoe categories.

The math is simple.

American retailers and manufacturers would have to either absorb massive increases, killing their margins in the process, or pass those increases onto their customers and/or consumers. China would then retaliate, likely by counter-tariffs on American exports, effectively launching a global trade war.

Bad as that would be, things could get worse.

The Chinese recently forced Lotte, a South Korean department store operator, to shutter its Chinese outlets in response to American missile deployments in South Korea. Any U.S.-based retailer or manufacturer might face similar retaliation if a full-scale trade war were to break out.

What should you do?

Even the best tool can't realize its potential until it is put to use. Game theory and scenario planning can identify plausible alternative futures, but CSCOs and supply chain managers concerned about how trade policy may affect their operations need facts, not theories.

Of course, no responsible business person believes they can guarantee the future, but wargaming potential responses allows supply chain executives to explore different strategic approaches to scenarios, those outlined above or others, and—perhaps even more importantly—get ahead of the competition.

The global trade landscape continues to be characterized by widespread uncertainty, some of it created by nations with whom we don't even trade. Whether you are an importer or an exporter, the real key to survival in the ever-changing global trade environment is to be prepared to address change faster and more effectively than your competition—no matter what form it comes in.

Maturity is key to analytics effectiveness

Although organizations have embraced supply chain analytics, few are highly satisfied with their ability to use the data to make decisions.

By Becky Partida, APQC

Many organizations have adopted analytics initiatives because of their need to aggregate vast amounts of data and to automate the identification of patterns and trends. The supply chain alone produces a large enough data set that analytics can be applied to help identify areas for process and performance improvement. Data generated through internal operations, as well as transactions with suppliers and customers, can be used to uncover small changes that can make a big impact on an organization with regard to efficiency gains and even cost savings.

Becky Partida is senior research specialist, supply chain management, APQC

Many supply chain professionals report that their organizations have increased their investment in analytics over the last three years, according to a recent APQC survey. This survey looked at the analytics practices of organizations, as well as the structure of these efforts. APQC surveyed supply chain professionals from a variety of organization sizes and regions and from 36 industries. APQC's analysis found that organizations have several areas of focus for their supply chain analytics efforts, and that most organizations have a formal analytics structure. However, the payoff of these efforts may not be at the level organizations expect.

Analytics inputs and outputs

Supply chain organizations focus on a variety of goals for their use of analytics. As shown in Figure 1, when asked about seven possible goals or activities, a majority of respondents highly agree or agree that each goal or activity is an area of focus. This indicates that organizations want to see a variety of results from their supply chain analytics efforts.

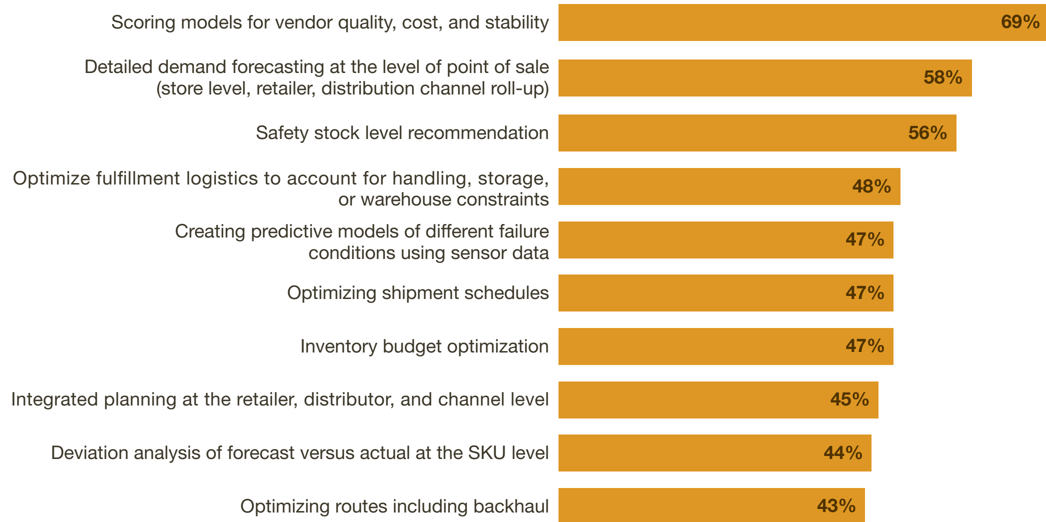
FIGURE 1

Areas of focus for supply chain analytics

Source: APQC

FIGURE 2

Use of analytics for supply chain activities



Source: APQC

Not surprisingly, the largest group of survey respondents highly agree or agree that a reduction in cost is a focus area for their organizations' analytics efforts. However, the next largest group of respondents highly agree or agree that their organizations want analytics to provide visual tools to help individuals within the organization obtain information in a way that is easy to digest. In addition to supply chain performance improvement, organizations are looking at analytics as a means of better disseminating information.

In addition to supply chain performance improvement, organizations are looking at analytics as a means of better disseminating information.

In fact, organizations are pulling data from across the supply chain to feed their analytics activities. Figure 2 indicates the top 10 supply chain activities for which organizations are using analytics. Although these activities span the supply chain, the top three activities for which organizations use analytics (scoring models to assess vendors, demand forecasting and safety stock level recommendation) focus on the procurement and logistics areas.

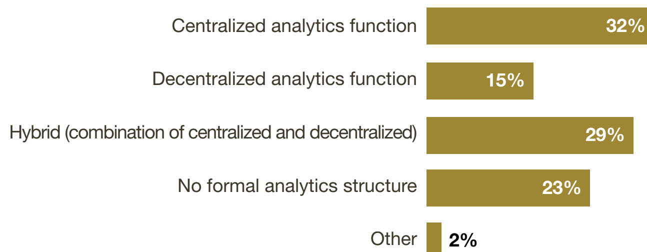
In addition to the supply chain activities on which they will focus, organizations must determine the types of analytics they will use. In its survey, APQC defined three types of analytics as listed below.

1. **Descriptive analytics,** which uses business intelligence combined with existing data to determine what is currently happening within a business.
2. **Predictive analytics,** which determines what drives a specific business outcome. This form of analytics uses historical data and various algorithms to create scenarios that can help predict future events or trends.
3. **Prescriptive analytics,** which involves quantifying how predictions will affect a process or goal and uses optimization or embedded decision rules to find out what should be done in a certain situation. This form of analytics uses insights from predictive analytics to recommend business decisions or actions that are likely to produce a specific result.

Respondents to APQC's survey indicate that descriptive analytics is the most commonly used form across all areas of supply chain, including quality management, procurement, process management, logistics, supply chain planning and manufacturing. These results align with many organizations' efforts to evaluate current supply chain performance, as they often use this most basic form of analytics to track measures such as median costs, average satisfaction ratings, and cycle times for processes.

FIGURE 3

Supply chain analytics structure



Source: APQC

There is some indication that organizations are adopting more complex forms of analytics. Thirty-six percent of survey respondents indicated that their organizations use predictive analytics for their supply chain planning functions, and 30% indicated that their organizations use predictive analytics in procurement.

Nearly one-third of respondents indicated that their organizations have a centralized analytics function for the supply chain, and just under 30% use a combination of a centralized and decentralized structure.

On a smaller scale, organizations are also making use of prescriptive analytics. The largest group of respondents indicated that their organizations use prescriptive analytics for supply chain planning (15%), followed by quality management (12%). That organizations use prescriptive analytics most in these two areas is not surprising given that recommendations for what should be done would benefit these areas most. However, it is worth organizations considering how prescriptive analytics could benefit other areas of the supply chain.

Structure and organizational attitudes

Through its survey, APQC also sought to examine how organizations are structuring their supply chain analytics efforts. As shown in Exhibit 3, 23% of respondents indicated that their organizations do not have a formal analytics program or structure. This indicates that, although organizations are making efforts to analyze the data produced within their supply chains, some still rely on isolated analytics activities. However, nearly one-third of respondents indicated that their organizations have a centralized analytics function for the supply chain, and just under 30% use a combination of a centralized and decentralized structure.

Those supply chain functions with a centralized analytics structure may reside within already data-driven enterprises. Formal program structures often result from senior leaders' appreciation for analytics across functions. In fact, a majority of survey respondents indicated that they strongly agree or agree that analytics is an expected activity in their organizations when building a business case or conducting an improvement project.

Despite the progress organizations have made in adopting analytics programs and the degree to which they use analytics for supply chain activities, the survey respondents had a variety of responses regarding the effectiveness of their organizations' efforts in using analytics to solve strategic supply chain challenges. Only 5% of respondents consider their organizations' use of analytics in this area to be very effective. Twenty-eight percent of respondents consider their organizations' efforts to be effective, and 44% (the largest group) consider their organizations' efforts to be average. This may reflect the fact that many organizations are still focusing primarily on descriptive analytics when it comes to the supply chain rather than the more mature predictive and prescriptive analytics.

In a related question, APQC asked survey

respondents to indicate their level of satisfaction with their organizations' ability to access and analyze relevant supply chain data for timely decision making and reporting. Although a majority of respondents' organizations have a formal structure for supply chain analytics, only 2% of respondents are very satisfied with their ability to access and analyze data. Twenty-one percent indicated that they are satisfied; a majority (61%) indicated that they are only moderately or slightly satisfied. These results indicate that organizations still have progress to make when it comes to the implementation of their analytics efforts. Simply adopting analytics activities is not enough if there is not widespread access to data that can yield results.

Communication through leadership can ensure that direct reports are well informed on how data is being used to improve supply chain processes and can create transparency that makes employees feel they are part of the analytics effort.

Steps to improvement

Many organizations have room to improve the effectiveness of their analytics programs in the supply chain as well as the maturity of their analytics capabilities. To drive analytics efforts forward, one key step APQC recommends organizations take is to further develop their capabilities via an analytics team or program. Organizations should carefully consider whether it is possible for them to adopt a centralized structure for analytics programs. Doing so can provide strategic alignment, as well as central governance and accountability for analytics efforts. At the very least, organizations should establish analytics teams that function as service providers. This can increase buy-in and eliminate the potential for territorial behavior by other business units. The analytics team should include well-appointed resources with the skills needed to serve overarching organizational goals. These resources can include analytics experts who know both the limitations and possibilities of analytics, and data management experts who know where to get the data and what it means. Organizations should also include domain experts who can define problems and know how analytics insights should be used for maximum impact.

Engagement and communication play important roles in ensuring that analytics efforts are embraced by those within the organization. Communication through leadership can ensure that direct reports are well informed on how data is being used to improve supply chain processes and can create transparency that makes employees feel they are part of the analytics effort. Perhaps most importantly, communicating successes related to analytics can help convince those within the organization that an analytics program is worth any process changes needed to obtain and evaluate data.

APQC also recommends organizations take steps to ensure their analytics efforts remain relevant. Organizations should continually refine their analytics program's alignment with organizational goals so that the results of analysis are relevant to any problems the organization wants to address. They can also provide opportunities to build on previous successes and refine data needs as projects change. Organizations should keep reporting simple by focusing on key measures, and they should evaluate measures at regular intervals. This provides the opportunity to consider whether they need to shift focus to accommodate changes in the business. Through regular evaluations, organizations can consider whether their analytics programs are working efficiently and provide value for the supply chain.

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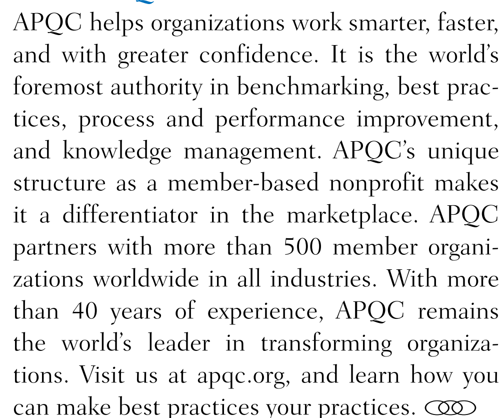

About APQC

APQC helps organizations work smarter, faster, and with greater confidence. It is the world's foremost authority in benchmarking, best practices, process and performance improvement, and knowledge management. APQC's unique structure as a member-based nonprofit makes it a differentiator in the marketplace. APQC partners with more than 500 member organizations worldwide in all industries. With more than 40 years of experience, APQC remains the world's leader in transforming organizations. Visit us at apqc.org, and learn how you can make best practices your practices.

SPECIAL REPORT
Trucking Top 50

A SPECIAL SUPPLEMENT TO:
SUPPLYCHAIN MANAGEMENT REVIEW

Reinventing the fundamentals

A new breed of leadership is creating a long-term vision to earn strategic relationships with shippers. Solid day-to-day execution and aggressive investment in technology set the direction for trucking's new guard.

By John D. Schulz, Editor at Large

Over the years we've found that the biggest trucking companies have maintained their size and scope due to the leadership of solid management teams that have the ability to transform a long-term vision into a profitable day-to-day business plan—and continue to do so in a cyclical industry where earnings for even the best companies are razor thin.

This formula for success is not difficult to create, but it's elusive to achieve. "You have to find a niche and serve it better than anyone else," says Stifel's veteran trucking analyst John Larkin. "Stay true to that core service offering, watch your costs like a hawk and treat your people like the heroes they are."

Continued on page S62

Top 25 Less-Than-Truckload Carriers: 2016 revenues

(Including fuel surcharges)

Rank	Carrier name	2015 Revenue ($ million)	2016 Revenue ($ million)	YoY % Change
1	FedEx Freight	$5,745	$5,936	3.3%
2	XPO Logistics	$3,525	$3,445	-2.3%
3	Old Dominion Freight Line	$2,893	$2,936	1.5%
4	YRC Freight	$3,033	$2,923	-3.6%
5	UPS Freight	$2,479	$2,384	-3.8%
6	Estes Express Lines	$2,135	$2,155	0.9%
7	ABF Freight System	$1,870	$1,870	0.0%
8	YRC Regional	$1,777	$1,741	-2.0%
9	R+L Carriers*	$1,429	$1,452	1.6%
10	Saia Motor Freight Line	$1,221	$1,218	-0.2%
11	Southeastern Freight Lines*	$1,031	$1,043	1.1%
12	Averitt Express	$702	$717	2.2%
13	Central Transport	$675	$703	4.3%
14	AAA Cooper	$513	$518	1.0%
15	Dayton Freight Lines*	$462	$498	7.8%
16	Roadrunner Transportation	$516	$460	-10.8%
17	New England Motor Freight	$388	$398	2.6%
18	Pitt Ohio	$396	$397	0.2%
19	A. Duie Pyle	$282	$290	2.8%
20	Central Freight Lines*	$216	$202	-6.5%
21	Oak Harbor Freight Lines	$191	$198	3.6%
22	Daylight Transport	$192	$195	1.2%
23	Ward Trucking	$155	$153	-1.3%
24	Wilson Trucking	$148	$142	-3.9%
25	LME	$110	$126	14.1%
TOTAL TOP 25 LTL CARRIERS		**$32,085**	**$32,099**	**0.0%**

Note: Revenue for LTL operations only, unless otherwise indicated and includes Canadian operations
*Revenues primarily LTL and include less than ten percent for truckload and other services
Source: Company reports and SJ Consulting Group estimates

Top 25 Truckload Carriers: 2016 revenues

(Including fuel surcharges)

Rank	Carrier name	2015 Revenue ($ million)	2016 Revenue ($ million)	YoY % Change
1	Swift Transportation	$3,512	$3,361	-4.3%
2	Schneider National	$2,380	$2,422	1.8%
3	J.B. Hunt Transport Services	$1,837	$1,921	4.6%
4	Landstar System*	$1,697	$1,619	-4.6%
5	Prime**	$1,504	$1,520	1.1%
6	Werner Enterprises	$1,623	$1,504	-7.3%
7	U.S. Xpress Enterprises	$1,343	$1,323	-1.4%
8	CRST International	$1,135	$1,173	3.3%
9	Crete Carrier Corp.	$1,014	$984	-3.0%
10	C.R. England	$924	$903	-2.2%
11	Knight Transportation	$952	$900	-5.4%
12	Celadon Group**	$870	$892	2.5%
13	Roadrunner Transportation	$811	$862	6.2%
14	Ryder Systems	$734	$837	14.0%
15	Ruan Transportation Management Services	$770	$750	-2.5%
16	Daseke	$675	$655	-3.0%
17	Penske Logistics	$506	$642	26.7%
18	Cardinal Logistics*	$630	$621	-1.4%
19	Heartland Express	$736	$613	-16.8%
20	Covenant Transportation Group	$647	$594	-8.1%
21	Anderson Trucking Service	$618	$593	-4.0%
22	Stevens Transport	$616	$589	-4.4%
23	Marten Transport	$517	$533	3.2%
24	XPO Logistics	$562	$530	-5.7%
25	Western Express	$520	$528	1.5%
TOTAL TOP 25 TRUCKLOAD CARRIERS		**$27,134**	**$26,869**	**-1.0%**

* Light-Asset Carrier
** Results adjusted to closer resemble calendar year
Revenues primarily for truckload operations and may include less than ten percent for non-truckload services
Source: Company reports and SJ Consulting Group estimates

But while the logos on *Logistics Management*'s (*LM*) annual listing of the Top 50 trucking companies rarely changes, we're seeing a new breed of younger, but seasoned management teams take the helm of several of these market leaders—changes that are sure to continue.

For example, FedEx Corp.'s 72-year-old founder Fred Smith stepped down as president of the nation's second-largest transportation concern as of Jan. 1, although he will remain CEO and board chairman. David Bronczek is taking over Smith's role as president, and analysts say that the $50.4 billion freight conglomerate won't miss a beat.

At Swift Transportation, No. 1 on the *LM* listing of truckload (TL) carriers, its founder and longtime chairman and CEO Jerry Moyes stepped down recently and was replaced by Richard Stocking. Not to worry, as Swift's senior management team still has more than 150 years of trucking experience.

Following the death of its namesake chairman and truckload visionary Don Schneider in 2012, the No. 2 TL carrier is making a significant move of its own this year. Privately held Schneider is planning to go public with what would be the largest initial public offering (IPO) since Swift went public in 2010. The move is being engineered by Schneider's CEO Chris Lofgren who formerly was chief information officer at the company and generally regarded as one of the best innovators in the industry.

When Robert Young III joined ABF Freight (No. 7 on the *LM* LTL list), President Harry Truman fired Gen. MacArthur, Joe DiMaggio played his final game for the Yankees, and Winston Churchill returned to power in the U.K. It was 1951, and Young was 10. He recently ended a 52-year career at the conglomerate now known

ArcBest takes diversification route

ArcBest Corp., parent of ABF Freight (No. 7 on the *LM* Top 25 LTL list), is undertaking the biggest transformation in the company's 94-year history.

When Judy McReynolds took over as board chairman last year, she began accelerating ArcBest's move away from its traditional, unionized LTL operation into a new, more diversified approach to transportation.

As recently as 2009, ABF produced as much as 93% of its parent company's revenue. Last year, that share was 70%. According to ArcBest's internal projections, the goal is a 50/50 split between asset and non-asset based services within a decade.

Its goal, according to projections given at a recent investor conference, is to become "one fully-integrated logistics enterprise" involving as many as four operating units including managed transportation (ABF, truckload, ocean and warehousing), ground expedited (including its Premier and Panther expedited units), moving (U-Pack) and maintenance and repair (including FleetNet).

ArcBest's plan would seem to follow the successful diversification strategy of industry leader Old Dominion Freight Line (ODFL), No. 3 on our LTL list. ODFL made a conscious strategic management decision more than 15 years ago to diversify away from being simply a Southeast regional LTL carrier into a multi-regional, multi-modal "solutions oriented" carrier that's now posting industry-leading operating ratios in the mid-80s.

—By John D. Schulz, editor at large

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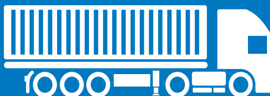

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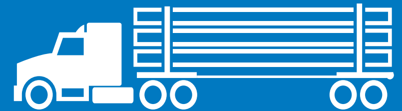

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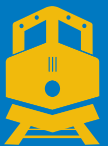

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as ArcBest Corp., and organization now run by Judy McReynolds—the only female CEO among *LM*'s Top 50 listings.

"There comes time when a leader is ready for retirement, and, if the retiring CEO has done a good job, there will be at least several candidates ready to move up into the CEO slot," says Larkin. "Often the change is tricky, as an entrepreneurial founder is often replaced by a younger 'professional manager.'"

Other times, a change at the top is the best thing that could have happened. For example, James Welch performed a near-miracle as new CEO in saving YRC Worldwide (YRCW) from bankruptcy. A Yellow veteran who left the company during the reign of Bill Zollars, Welch returned in 2011 and has led a successful turnaround. This occurred after YRC, which is parent to the No.4- and No.8-largest LTL companies in its long-haul and regional carriers, flirted with bankruptcy amid $2 billion in debt.

Getting YRC on the road to profitability—and saving 10,000 jobs in the process—is an ongoing task. "Progress at YRCW has not, or will not always be linear as we work to move the company profitably forward," said Welch. "We can expect some bumps along the way."

What "bumps" lie ahead for some of the biggest and the best in the trucking industry? *LM* looked at what makes the biggest companies tick and what changes they're making to stay on top.

Technology, technology, technology

Increasingly, spending millions on technology is no longer seen as optional for the biggest trucking companies. Today, it's simply the ante required to stay in the game. As analyst Larkin says: "Technology is everything."

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"I rarely turn down a request internally for IT capital expenditures," says Brad Jacobs, chairman and CEO of XPO Logistics, parent of the No. 2 LTL carrier, who adds that technology is a "big part of our strategy to make it easy and profitable to do business with us."

Since XPO bought the former Con-way LTL companies for $3 billion in 2015, Jacobs told *LM* that the company has completed "dozens" of significant IT developments. These include the rollout of 15,000 handheld devices for better crossdock management at its terminals, an LTL dashboard for shippers and a new "virtual pricing" workbench for its sales staff along with other mobilized IT processes.

"We've integrated our LTL options into every other XPO unit to spot untapped efficiencies and create cost savings," says Jacobs "First, it makes both carriers and their customers more efficient. Second, it brings down costs." And third, but certainly not least, this level of integration creates what Larkin calls "sticky" relationships between carriers and shippers—less transactionally-based, and more strategic in nature.

According to Larkin, what the best carriers are trying to give their customers is state-of-the-art visibility while providing shippers with continually optimized, "fail-safe" supply chain management services.

"Almost all of us are trying to get more strategic with customers from a sales and services perspective," says John White, chief marketing officer for U.S. Xpress, the No. 7 TL carrier. "We're all trying to get deeper relationships, providing multiple

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service relationships, getting more imbedded into customers supply chains and bringing value beyond trucks and rates."

To do that, says White, "requires trucking carriers to start rolling up our sleeves and driving efficiencies and costs out with our mutual customers. Their customers are ultimately our customers as well."

Changing to stay in the mix

No trucking company was in worse financial condition than YRC was back in 2007-2010. Coming off ill-timed purchases of Roadway Express and USF Corp. and grappling with the worst economic downturn since the 1930s, YRC teetered on the brink of bankruptcy.

Bill Zollars, who had engineered the Roadway and USF purchases in an attempt to grow in revenue to compete with the likes of multinational giants UPS and FedEx, left under pressure in 2011. That opened the door for James Welch, who held senior management positions at Yellow before leaving the company five years earlier, to return.

The blueprint was simply survival. Equipment and terminals were sold for cash. Labor negotiations were renewed with concessionary agreements. Non-performing operations were closed or sold. And management was trimmed, a move that continued

FTR cites flat trucking conditions with an eye on growth as year goes on

Flat conditions were the theme of the recent edition of the "Trucking Conditions Index" (TCI) issued by freight transportation consultancy FTR.

The TCI reflects tightening conditions for hauling capacity and is comprised of various metrics, including capacity, fuel, bankruptcies, cost of capital and freight.

According to FTR, a TCI reading above zero represents an adequate trucking environment, with readings above 10 indicating that volumes, prices and margin are in a good range for carriers.

For January, the most recent month for which data is available, the TCI came in at 2.7, which was in line with December's 2.9 and down from November's 4.38 and October's 4.58. As was the case in December, the numbers from January reflect what FTR described as a low point for trucking conditions in advance of "an expected bounce as 2017 progresses." The consultancy added that while the industry feels positive following the election, there are risks related to various economic proposals currently being considered by the new administration and Congress.

"It's looking like 2017 will be a better year for the trucking industry," said FTR COO Jonathan Starks. "This late recovery is consumer driven, which is relatively light on increasing freight demand, but we will see modest growth. More importantly, the industry is really beginning to face up to the costs and changes from ELD implementation."

Starks said that we should expect a productivity and capacity hit to the industry, though the effects will be felt differently, with early adopters ahead of the curve. "One of the big issues we expect companies to continue to struggle with is the driver situation, with the number of new hires not keeping pace with overall demand for drivers," he said.

If capacity doesn't meet demand, then truckers will be able to raise prices. However, FTR does not expect to see that make an impact until late 2017, or into 2018. "We're also closely tracking government policies and actions," said Starks. "The main concern continues to be the possibility of trade wars, which could have immediate and detrimental effects on freight transportation."

According to FTR, the ELD implementation scheduled for December could be markedly affected should the White House or courts significantly curtail or remove it, although the consultancy noted that should not be the case, given the long-standing bi-partisan support for transportation safety regulations.

According to Starks, FTR will closely monitor how small carriers begin to implement ELD into their operations over the next nine months to 12 months, and how it is likely to affect changes in carrier capacity and rates.

"Even though the market outlook is showing signs of optimism, the freight environment remains in a pattern of largely flat growth, including fluctuating GDP, decent job growth figures and signs of increased consumer spending," added Starks.

—Jeff Berman, group news editor

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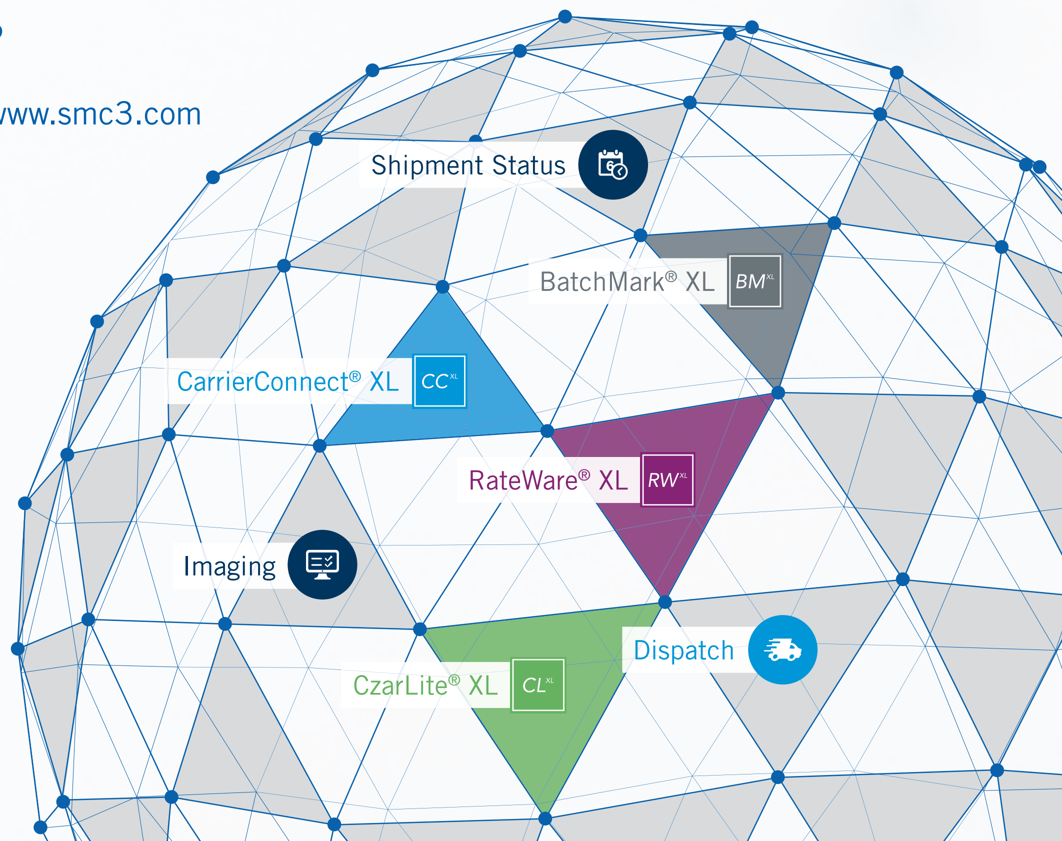

this year when about 100 middle managers at both YRC's long-haul and regional carriers were let go.

YRC called it "normal rightsizing adjustments" as a result of advances it has made in processes and technology. Welch calls the entire recovery process "a balancing act" to create profitability.

According to Welch, it starts with weight per shipment and lengths of haul in an effort to create the right "freight mix" among its customers. "A little tweak here and a little tweak there in its customers' freight can create all the difference when it comes to producing the freight density needed on key lanes to create long-term profitability," he says.

The results have been impressive. YRC ended 2016 with the lowest levels of debt YRC has had since 2005, reducing debt by more than $70 million. Last year's operating income of $124.3 million was YRC's best result in 10 years. But when asked if he was satisfied, Welch said that the answer is "a resounding 'no.' However, I believe the company is well positioned to participate profitably as the economy strengthens."

What can shippers expect from changes?

So, what are the immediate effects of these long- and short-term changes being made by these top carriers as they work to become more diversified, more strategic and more connected with their customers?

In short, it means rate increases, probably in the 3% range for TL carriers and perhaps as high as 5% for some LTL customers. However, these are not your father's rate increases. Unlike the one-size-fits-all rate hikes of the past, more carriers now say that they're tailoring their rate increases to cover their costs first on their most costly customers.

If a shipper is providing "driver-friendly" freight on efficient lanes with steady demands, that shipper can substantially reduce or mitigate these price hikes, carrier executives say.

"In terms of demand and pricing, the LTL market

Staffing changes in trucking sector

Preliminary research indicates that the entire logistics industry is on a course of change due to more women entering the workforce.

As *Logistics Management* provides readers with its 33rd annual "Salary Survey" this month, the focus will again be on regional trends and generational demographics. But the role of women in logistics will also be top of mind.

Preliminary research indicates that the entire logistics industry is on a course of change due to more women entering the workforce.

"When women turn to nontraditional careers, they not only find challenges and opportunities, they find a better salary," explains Ellen Voie, president and CEO of the Women In Trucking Association (WIT). "The Department of Labor identifies nontraditional careers for women as those that include less than 25% of females. However, these women earn better salaries on average than their peers in traditionally female occupations."

The WIT, adds Voie, aims to change an image many people have regarding careers in transportation. "They see a truck with a diesel engine and smokestacks and a big grill. What they don't see is a very technologically advanced vehicle that no longer requires as much physical strength to operate, and is as comfortable inside as the family car," she says.

Prior to founding WIT, Voie held a variety of roles in the transportation industry, most recently as manager of retention and recruiting programs at Schneider, Inc.

According to Voie, it's about time that shippers and consumers began to realize that that the trucking industry is working hard to provide drivers with a better work life balance. "Ordinary citizens don't see the connection between that truck and the gallon of milk on their grocery store shelf," she adds. "Our challenge is to change that perception… and that's what WIT is doing."

—Patrick Burnson, executive editor

is looking good," says Wayne Spain, president and COO of Averitt Express, No. 12 on our LTL listing. "We're optimistic that LTL shipments will grow relative to the positive outlook of the economy."

Spain adds that there's "a good possibility" that the trucking industry and freight numbers "could outperform many of the predictions that analysts made" at the end of last year. Of course, there are may uncertainties including the mercurial new administration in Washington, geopolitical macro issues and general skittishness on the part of businesses to invest in their operations.

Implementation of electronic logging devices (ELDs) has already occurred in most LTL carriers as well as in most of the largest TL carriers. "I suspect if it has any impact, it will be on the truckload side," says YRC's Welch.

Of course, any TL capacity issue is never a bad thing for LTL, because some of those multi-stop truckload shipments filter back down into LTL networks. "From a capacity standpoint, I can tell you that we have capacity at all four of our operating companies," says Welch. "Some companies have a varying degree of difference between capacity that's available, but we certainly think that we can handle the surge if there is one. We'll just have to see how it plays out."

With that said, Welch adds that he's planning "an aggressive stance" on pricing over the next couple of quarters, calling the LTL market "very stable" at the moment.

However, the situation in TL is harder to predict, analysts say, because of the unknown impact on ELDs on capacity. "It helps us," says USX's White. "In the short run it may increase some costs, but in the long run it ends up with benefits."

—John D. Schulz is an editor at large for SCMR *and* LM

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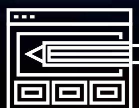
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Standing in front of a crowd of attendees and exhibitors at 10 a.m., MHI president Gregg Goodner welcomed everyone to ProMat 2017, which took place April 3-6 at McCormick Place in Chicago. This year's conference theme was "Solve for X," meaning the exact place where companies come to find their "X," or that unknown quantity that will take their supply chain to the next level of success.

"This is the largest show we've ever had," said Goodner, pointing out that ProMat continues to hold its ranking as the biggest industrial and supply chain expo in North and South America. For the first time, ProMat was spread across two show floors at McCormick Place; and the show was once again co-located with Automate.

Catherine Morris of the Association for Advancing Automation also welcomed everyone to the conference and invited attendees to check out the many different "expert huddle" opportunities at Automate. "This is also our largest show," said Morris, "and a very important event for our industry."

At ProMat 2017, more than 950 exhibitors from industry, commerce and government displayed their supply chain solutions and innovations. The event also featured 100 educational sessions that brought together leading experts from the industry to give attendees the latest information on manufacturing and supply chain trends, technologies and innovations.

Gregg Goodner, board member of Hytrol and president of MHI, cuts the ribbon to open ProMat 2017.

Keynote: Smart machines to transform industry and jobs

The new breed of intelligent machines that are core to Industry 4.0 will eliminate waste in supply chains and enable new business models, but industry also needs to think about how smart machines will disrupt jobs, said Markus Lorenz, partner and managing director at Boston Consulting Group, Tuesday's keynote presenter.

An expert on Industry 4.0—the fourth industrial revolution concept that takes in smart, connected machines and the Internet of Things (IoT)—Lorenz explained how machines like cranes at ocean ports are becoming smart enough to weigh containers as they are loaded and optimize load balancing, leading to fuel savings for ocean

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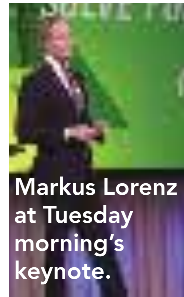
Markus Lorenz at Tuesday morning's keynote.

freight companies, and a loading-as-a-service business model for crane manufacturers.

Similarly, smart machines such as autonomous picking robots are leading to change in warehousing, Lorenz said, in part by using sensors and vision technologies to be able to do things like see and sense which produce is freshest, and quickly pick and sort items to ensure retailers get fresh goods. IoT-based monitoring of food shipments and smarter machines in production plants can help eliminate much of the product loss in the food industry, Lorenz said. Using IoT sensing, he said, "you can basically see what happens to your products once they leave the factory."

Lorenz said it is clear that intelligent machines will lead to a significant loss of production jobs across multiple industries, but there should be a net gain of jobs overall in roles such as sales and service, field service and analysts who help devise new business models around smart machines. "Human labor will play a critical role, but the nature of that work will be different," he said.

Lorenz encouraged attendees to apply new technologies, but examine ways to "take people along" using education and applying technology in way that enhances human capabilities. For example, he said, in field service, augmented reality (AR) glasses can help relatively inexperienced technicians in the field connect with and share views of service details with the most experienced engineers located in a central office. This in essence "upgrades" human capability through AR technology, Lorenz said.

KION Group launches large new product line

The KION Group, a global leader in industrial trucks and supply chain solutions, is showcasing its offerings together with Dematic, the U.S. leader in advanced integrated automation technology, software and service, which the group acquired in November 2016.

KION North America announced the release of five new Linde and Baoli forklift trucks, developed for the North American market. "The rate at which we're releasing new products and services is truly unprecedented," said Vincent Halma, president and CEO of KION North America. "Our goal is for

Linde and Baoli to be household names in America the same way that they are already in much of the rest of the world."

Supplementing Dematic's range of products and services at ProMat was an advanced piece-picking robotic solution powered by the Dematic iQ warehouse execution system. "E-commerce is soaring and this requires increasingly digitized, automated and customized warehouse solutions," said Gordon Riske, CEO of the KION Group. "We are pioneering a new kind of company with a comprehensive offering ranging from forklift trucks to fully automated supply chain solutions."

The KION Group was represented by five brands: Linde, Baoli, Dematic, Dematic Egemin and Dematic Retrotech.

A piece-picking robotic solution displayed is powered by the Dematic iQ WES.

Intelligrated shows high-density sortation system

Intelligrated debuted the IntelliSort HDS, a high-density parcel and e-commerce sortation solution. The sorter's dual-sided design accommodates a high density of divert destinations and is ideal for zone-skipping applications that pre-sort orders according to destination region prior to releasing them to last-mile carriers.

Built on sliding shoe sorter technology, the solution provides quiet, accurate and gentle sortation of a variety of product and packaging types, including polybags.

Tim Kraus, manager of product management

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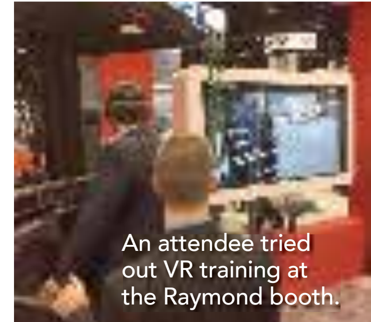
Raymond debuts vehicle-based virtual reality training

The Raymond Corp. introduced virtual reality (VR) training, which allows operators to use a Raymond forklift truck in a simulation mode for training using preprogrammed exercises.

"Once the truck's motion has been disabled, the operator can enter the training environment with their existing Raymond forklift by plugging into Raymond's sPort, or Simulation Port," said Dave Norton, VP of corporate quality and customer care.

After securing the VR headset, the user is immersed into an enhanced training experience that simulates the movement and feel of operating a Raymond forklift in a warehouse environment while using the truck's actual controls.

"This experience has been designed as a supplemental training tool and can also be used to help new forklift operators become comfortable with the vehicle and its controls before operating within the physical environment," said Norton, who added that the VR training is unlike any other forklift training method currently available in the market.


An attendee tried out VR training at the Raymond booth.

Raymond also highlighted several new products and solutions at their booth this year.

Goods-to-person buffer module premieres at Kardex Remstar

EVP of new business Mark Dunaway and marketing communications coordinator Chelsea Tarr.

Ideal for handling single-part or small-volume orders, the new LR 35 Vertical Buffer Module storage and retrieval unit made its debut in a press conference at the Kardex Remstar exhibit. The unit consists of a shelf system with automatic bin handling, goods-to-person picking stations and its own logistics software.

"The LR 35 improves order picking performance, energy efficiency and the amount of floor space required for storage of goods," explained Mark Dunaway, EVP of new business. "Roughly 500 order lines per picking station per hour can be achieved with two or more units or batch picking."

The machine supports up to four, turntable-based picking stations tilted at an ergonomic 20-degree angle. While the operator picks one order, the LR 35 preps the next bin and places it on the rear shelf of the turntable, which rotates for the next pick to minimize wait time, Dunaway added.

Dynamic work optimization from Lucas boosts productivity by 53%

In a press conference, Lucas Systems shared how recent updates to Engage Dynamic Work Optimization (DWO) software—including batching and path optimization algorithm refinements and new implementation tools—delivered a 53% productivity gain for a customer's cart-based picking application.

"This is a real-time optimization tool that uses advanced mathematical modeling techniques to reduce travel in picking and other activities," explained John Schriefer, marketing communications manager. "It's a new and unique approach to travel and labor optimization not available in any other product, including Tier 1 warehouse management system (WMS), labor management system (LMS), warehouse control and execution system (WCS/WES) solutions."

In testing, Schriefer added, the software reduces travel by 50% compared to typical WMS-directed batch picking processes employing standard aisle-bay pick sequencing. Through gamification, Lucas is offering attendees the opportunity to match their pick path optimization skills against the DWO tool in a scoring contest with a daily drone prize giveaway.

As Lucas continues to see more customers choosing Android devices when they refresh their legacy hardware devices, the company is showcasing expanded offerings of new, certified Android smart phones, smart watches and industrial devices, including the Zebra TC51 touch computer.