SUPPLY CHAIN 2020:

Industry Insiders Share
Perspectives on Successful
Supply Chain Management
in a Changing World

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If you ask what the future holds for supply change management in the modern enterprise, one thing is certain: There's no shortage of opinions to go around!
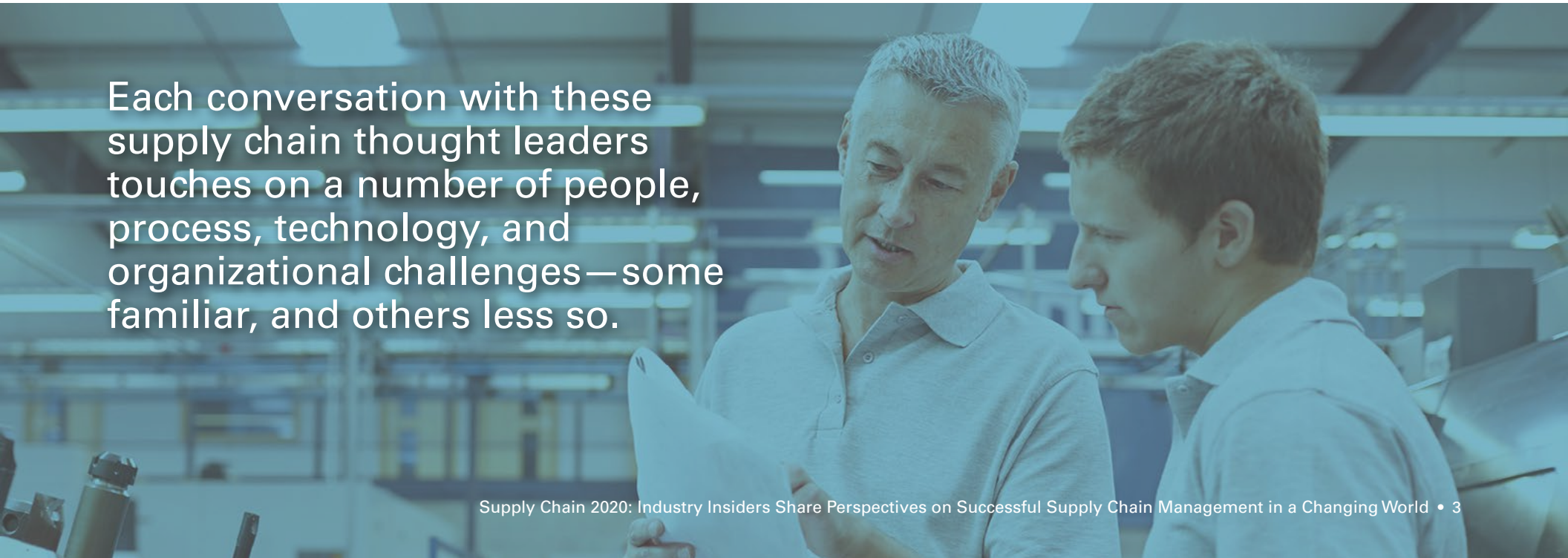
The key is to find the insights and advice that go beyond speculation, and provide supply chain leaders with something useful about how and why to prepare for the future.

We think this collection—excerpts from interviews with nearly a dozen of the world's top SCM experts—fits the bill nicely. Our contributors include a cross-section of industry: consultants, authors, academics, and executives with top brands, as well as with the technology partners serving those brands.

Each conversation with these supply chain thought leaders touches on a number of people, process, technology, and organizational challenges—some familiar, and others less so. Better yet, readers will notice that some issues surface repeatedly, as multiple contributors offer their own takes and perspectives—for example, the transformative shift toward buyer-centric, end-to-end, demand-driven supply chain and business models, and the interlocking trends that support the migration toward localized, highly agile manufacturing and logistics models.

Many of these conversations are likely to raise as many questions as they answer. That shouldn't come as a surprise! If any piece of content is likely to inspire supply chain professionals to engage in lively conversation and investigation over the future of the industry—and what will be necessary to grow and prosper in a fast-moving and dynamic world—it is this one!

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Steve Banker

Finding the Formula to Combat Supply Chain Complexity

In an omnichannel world, technology complexity is a defining trait—and a key challenge—for supply chain managers.

Firms that adopt cutting-edge technology for their supply chains often struggle against complexity. Veteran supply chain expert and consultant Steve Banker discusses some key fronts in the industry's running battle to solve the problem, including the pivotal and perhaps under-appreciated role of applications built using public cloud infrastructure.

Looking at supply chain performance—or lack of performance—complexity appears to be an increasingly difficult challenge for many firms. Where do you see this issue having the greatest impact, and what is required to solve it?
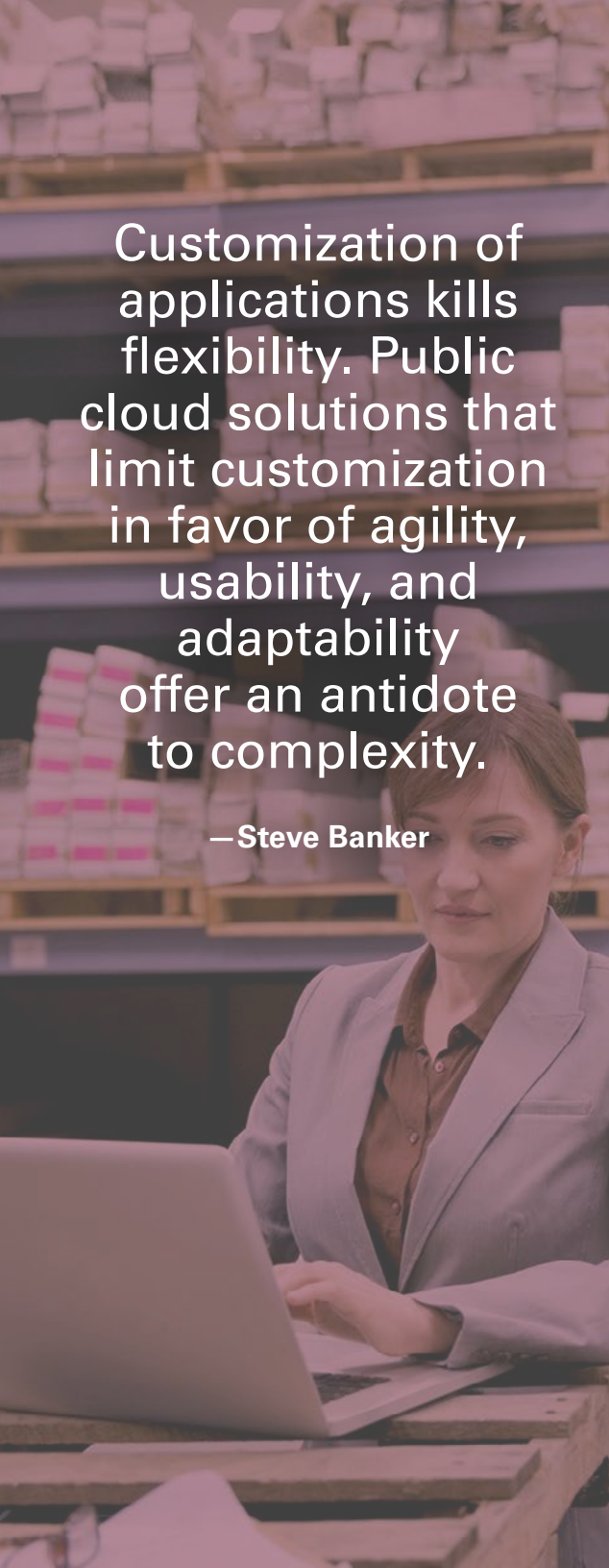
The place where increasing complexity is most apparent is the rise of omnichannel—the attempt to reach customers across all channels in a uniform manner. This is most obvious in the retail sector, where the "brick and mortar" retailers have been losing market share steadily to ecommerce players. The retailers are attempting to turn their stores into resources by making them places where inventory can be shipped to customers, goods may be picked up, or returns made.

But it is not just retail. Consumer goods companies are being asked by their retail partners to drop-ship goods directly to consumers, but make the delivery appear as if it came from a retailer. The growth sector of the third-party logistics industry is ecommerce warehousing solutions, but these warehouses are more complex and costly to run. Ecommerce also increases returns, which are costly and difficult to handle as well.

Additionally, ecommerce increases both consumer and business-to-business expectations for receiving goods quickly, for having good visibility into shipment statuses, and for handling returns promptly.

Is there a technology dimension, for better or worse, to these omnichannel challenges?

Engaging in omnichannel efficiently and profitably does require new technologies. The one that appears to cause the greatest pain for the industry is Distributed Order Management (DOM). A DOM must capture inventory statuses across the different inventory locations; allocate inventory to

> Customization of applications kills flexibility. Public cloud solutions that limit customization in favor of agility, usability, and adaptability offer an antidote to complexity.
>
> **—Steve Banker**

different customers, products, and channels based on a wide variety of rules; and then track the status of orders across their lifecycle. The biggest problem appears to be that many DOMs don't have sufficient flexibility and configurability to deal with the plethora of product flow paths to the customer.

But the other problem is getting good inventory accuracy at the store level; this inventory accuracy could be very high if companies implemented less complex warehouse management solutions to manage inventory in the stores. The implementation of a light warehouse management solution is not difficult. The cultural barriers are huge though. Store managers will always be more focused on customer-facing activities than operational ones.

What are the keys to getting ahead of these challenges, or at least keeping pace? Can the right technology—for example, cloud applications—provide an antidote?

Future-proofing your supply chain is not just about technology. It is about people, process, and technology. On the people front, companies need to hire and groom good leaders—people who embrace change. Top-down, hierarchical management will not work with Millennials.

From a process perspective, getting to higher levels of Integrated Planning Maturity is key. And thoughtful collaboration with key partners, whether that occurs within these processes or external to it, also needs to be embraced.

From a technology perspective, the pace of change will not slow down. Flexible solutions, solutions that allow companies to change their processes on an ongoing basis, are critical. Customization of applications kills flexibility. Public cloud solutions that limit customization in favor of superior agility, usability, and adaptability are the antidote to complexity; they point the industry toward a future where it can embrace technology innovation without also struggling against complexity.

Steve Banker is Vice President, Supply Chain Management at ARC Advisory Group, where he leads the Supply Chain & Logistics consulting team.

Jake Barr

An Insider's View of the Consumer-Centric Supply Chain

Navigating the supply chain through a "perfect storm" of market change and consumer expectations

During his time at Procter & Gamble, Jake Barr worked to implement supply chain transformation on a massive scale. In this conversation, Barr touches on what's ahead for supply chain managers, and why customer-centric, demand-driven supply chains are a necessity for competing and succeeding in a fast-changing business landscape.

Over the course of your 33-year career at P&G, what were the most significant trends or disruptions that impacted your role and day-to-day life in supply chain?

There are at least three key changes that, without question, were disruptive forces within the fast-moving consumer goods industry. The first was the rapid acceleration in the "clockspeed"—of consumers' expectation for change in product (shortening product/package lifecycles). The second, a near simultaneous request for reduction in our reaction time-to-market by most relevant trade channel partners. This also coincided with the advent of ecommerce, which ramped up competitive activity and pressure on time-to-market. The final disruptive change was the global economic reality of a near-flat growth in developed markets and the

concurrent explosive growth in developing markets around the world. Both created, in effect, a perfect storm that has mandated change on a massive scale to remain relevant and competitive on cost/service/cash, etc.

We're hearing a lot about the need to shift to a customer-focused or demand-driven supply chain strategy. What do organizations need from the perspective of people, processes, technology, and especially leadership to reach this point? Are there any challenges that are prohibiting or constraining organizations from reaching this level of coordination?

There is no question that an end-user-based focus is critical moving forward. Depending on industry vertical, this will be referenced as "patient-centric, customer-centric, or consumer-centric." Culture trumps everything. You must first have a leadership "moment of truth" that understands that this move is critical to the company staying relevant and competitive.

We were lucky to have this at Procter & Gamble in the form of [company executive] A.G. Lafley, who

contributed to our early leadership of a demand-driven supply chain strategy. This executive-level support and leadership is important because many of the required people, process, and technology changes will challenge the status quo for how the business executes.

Realistically, because of culture, this is a journey versus a single leap-frogging activity. It's also necessary to think in a non-linear way to accelerate progress. An example of this is concurrently planning the consolidation of a process (or set of processes) from a significant number of locations into a single or small set of control-tower locations. Matching this with a change in the supporting technology can dramatically reduce the timeline for a step change (e.g., number of people to be trained, across the number of locations and the cost to implement). The ripple effect on the people component is profound. The next generation of supply chain and business leaders will be dynamic decision-makers with strong analytic skills. They will leverage near-real/right time information to manage complex flows, make trade-off decisions, and optimize revenue, margin, and service.

What do you believe the supply chain of the future will look like? What will organizations need to do, from a people, processes, and technology standpoint, to see success?

A simple visual image to use as a base starting point can be an air traffic control tower. These facilities are leveraging real-time feedback on process conditions *and* anticipating potential conflicts and scenarios to deal with them *before* they impact performance—or, dare I say, lives. Likewise, supply chain professionals will be "network orchestrators" versus being consumed with tactical execution as they are today. Technologies will be laid into these control towers continuously because of the concentration on the management of supply chain processes and the tremendous big data computing capabilities. Machine-based learning tools will be leveraged within these sites to ease the monitoring and evaluation of data points on a scale that we simply can't do either manually or within many existing applications. At the heart of it all, though, will continue to be a set of supply chain professionals who both monitor and adjust plans because of the complexities of many trade-off decisions.

Jake Barr is CEO and Principal at BlueWorld Supply Chain Consulting LLC, where he provides consulting support to a cross-section of top Fortune 500 companies. Previously, Barr served as Global Director, Supply Network Operations, for Procter & Gamble.

Changing customer expectations and economic realities have combined to create a perfect storm for supply chain managers—one that demands change on a massive scale.

—Jake Barr

Bob Ferrari

Supply Chain Agility in an Era of Continuous Change

Customers, markets, and technology today never stop evolving, and neither can an organization's approach to supply chain management.

When supply chain expert Bob Ferrari looks at today's supply chain landscape, he sees dynamic change and industry disruptions becoming business as usual. As Ferrari points out, supply chain leaders have the tools they need to thrive at a time when everything around them seems to be changing—if they apply those tools correctly.

It seems that for many organizations today, constant and disorienting change is the new normal. Is there a way for supply chain leaders, in particular, to step off the treadmill and escape a "perpetual crisis" mentality?

Probably the single biggest challenge that organizations face today is the overall agility of their businesses and associated supply chains: whether they are engineered to support constantly changing and more demanding customers and associated market dynamics. Across many industries, disruptors that leverage more advanced technology, more agile business responses, and lower cost structures can literally disrupt an industry leader in a matter of months. Traditional business and decision-making processes built on sequentially-based processes and descriptive performance indicators are challenged by today's needs for continuous planning, more dynamic information flows and insights, and the application of prescriptive or predictive analytics that better anticipate customer demand needs and supply chain-related shortfalls.

What else is required for businesses to achieve this agility and adaptability from a people and processes standpoint?

Today's industry business environments demand certain people-process-technology dimensions of maturity that foster higher levels of information integration and dissemination; de-centralized, more-informed decision-making; and the ability to quickly form ad-hoc teams that can collaborate and orchestrate needed changes to respond to customer or market needs. The context is customer-driven—an outside-in perspective on business response as opposed to an inside-out perspective. Needless to state, there needs to be a continual commitment to change and augment skills with each iteration of process change.

We're also hearing more about the need to transition to an end-to-end consumer- or demand-driven supply chain. Why do you think this is critical, and how will IoT and other technologies help drive this transition?

There is no question in my mind that an outside-in, demand-driven supply chain capability is essential in managing today's online and omnichannel-driven industry environments. Businesses and their supply chains today have physical, informational, and external online data and information flows. Supply chain teams need to fully understand and support key customer needs, and they must be able to modify or segment supply chain processes to respond to and accommodate such needs. Increasingly, businesses are discovering that they require segmented supply chains, each supporting different product families and accommodating different dimensions of cost and service.

Also, keep in mind that as IoT becomes a reality, supply chain teams benefit from connecting the physical aspects of the supply chain (assets, products, storage mechanisms, sensors, alarm state conditions) with the digital control aspects of the supply chain. For many years, I have described this end-state as the "holy grail" of supply chain management: the ability to incorporate information and the state of physical things into overall decision-making parameters. As a supply chain body, this state could not have been reached without today's new wave of technology convergence around in-memory storage, big data analytics, and cloud computing.

In practice, IoT will open up far more opportunities to support demand-driven supply chains, including the ability of machines to automatically generate a replenishment parts order, or signal a probable failure condition, before it occurs. This opens opportunities for organizations and their supply chain leaders to support new business models and broader levels of information awareness—and better yet, to engage in truly predictive decision-making.

Bob Ferrari is Managing Director of The Ferrari Consulting & Research Group, where he shares his expertise as an industry influencer and works with firms as a consultant and independent industry analyst.

> Businesses are discovering the need for segmented supply chains, each supporting different product families and accommodating different dimensions of cost and service.
>
> **—Bob Ferrari**

John Gattorna

Putting the People Back into Supply Chain Success

For firms facing an increasingly uncertain economic future, a shift to customer-centric supply chain models could offer a solid foundation for stability and growth.

Dr. John Gattorna's book, Dynamic Supply Chains, *is widely acclaimed for its thesis that "customers, and customers alone, are the ultimate frame of reference when designing and operating enterprise supply chains." In this conversation, Dr. Gattorna discusses what buyer behavior means to supply chain management and what's at stake for firms that overlook the issue.*

In your latest book, *Dynamic Supply Chains,* you teach organizations to design, build, and manage what you refer to as "people-centric value networks." How does this concept—and particularly the use of the term "people-centric"—relate to achieving supply-chain excellence?

"People-centric" and "customer-centric" are easy to say but difficult to deliver. Because of this we have over-used these terms to the point where they are largely meaningless.
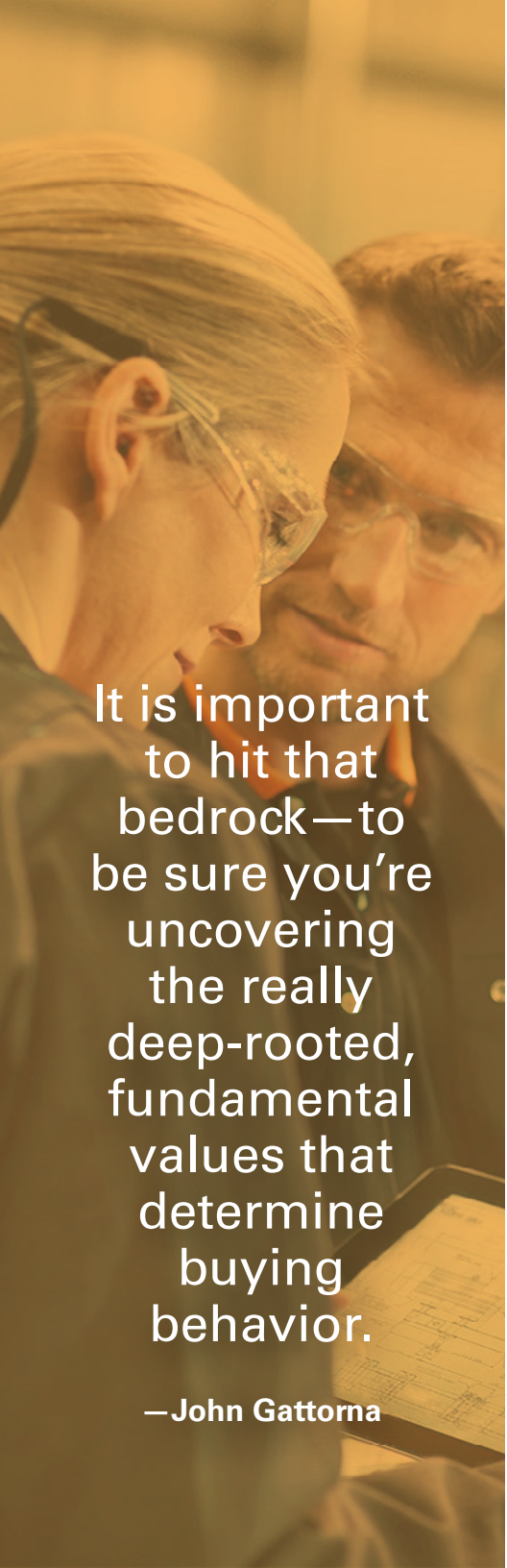
I use the term here precisely because it is meaningful. The only way you can claim to be truly "people/customer-centric" is to find a way to interpret customers' expectations, organize these into a small number of groupings or segments, and then directly link these back to the enterprise. In other words, mapping the market in this way becomes a frame-of-reference for re-engineering inside the enterprise, i.e., processes, technology combination, organization design, right down to training and development.

On a practical level, how do these concepts shape an organization's approach to supply chain management?

Designing a supply chain that will function for 5 to 10 years—a reasonable length of time for many firms—is a big investment. Doing this successfully means understanding, on a bedrock level, the individual values that shape buying behaviors.

The first thing to understand is my emphasis on buying *behaviors*. My research shows that you should expect to uncover four or five dominant buying behaviors for any given product/service category in a given target market—and that, combined, these will give you about an 80 percent fit to a given market.

> It is important to hit that bedrock—to be sure you're uncovering the really deep-rooted, fundamental values that determine buying behavior.
>
> **—John Gattorna**

Once you've done the research to understand the buying behaviors associated with a particular industry and company and products, it's a fairly straightforward task to work backward to engineer an equivalent number of suitably structured supply chains. In other words, once you understand the structure of your market, you can replicate that structure inside your business and within the supply chains that are hard-wired into your business.

To what extent are those buying behaviors likely to change once they're identified? Does that type of change pose a risk once you've built supply chains based on that set of behaviors?

Buying behaviors *will* change. The changes, however, tend to involve short-term shifts between the behaviors already identified. That's what I mean when I talk about the concept of dynamic alignment: aligning with customers as they move and change their buying behaviors because of different conditions that they find themselves in.

This is a process, however, that demands the ability to understand, observe, and connect with customers. It is important to hit that bedrock—to be sure you're uncovering the really deep-rooted, fundamental values that determine buying behavior. Otherwise, you do risk designing supply chains based on superficial factors that could change tomorrow.

How does this approach compare to the *status quo* today, and what's at stake for firms that haven't changed?

Most companies today still use what I call an "inside-out" philosophy of supply chain design. It's a heads-down approach: They do some reengineering, maybe they embrace Lean or they adopt RFID or some other top-of-mind trend. Then they lift their head and say, "Oh, it's actually not connecting with my customers."

What I'm arguing for is an "outside-in" approach. It's consistent with the Design Thinking that Roger Martin introduced about 10 years ago—the idea of looking back at your own company through the eyes of your customers and trying to understand what's in the customer's mind. Only then do you start pulling the right levers on the inside of your business—eliminating the guesswork that's rather typical within the conventional "inside-out" model.

We're in a period where we've got volatile markets and a rather unclear economic future. It's no longer just a marginal advantage to more precisely link with our customers and try to follow them and understand how to directly link with them. It has very quickly become a survival skill—one of the fundamentals that separates winners from losers in a range of industries.

Dr. John Gattorna stands at the forefront of supply chain thought leadership, and his work has influenced many of the world's largest multinational corporations. His most recent book is Dynamic Supply Chains: How to Design, Build and Manage People-Centric Value Networks.

Matthew Littlefield

Supply Chains and Transformative Technology

Look past the hype, and some high-profile emerging technologies promise to deliver practical impact for supply chains.

The list of cutting-edge tech innovations that could affect supply chain operations is already long, and it seems to be getting longer. Matthew Littlefield looks at how some of these technologies hold real-world potential to solve pressing supply chain challenges.

The Internet of Things, of course, gets an enormous amount of attention—some of it crossing the line into hype. How do IoT applications impact real-world supply chain performance?

Supply chain systems today are essentially top-down models, often based on accounting rules and routings rather than the real world. The Industrial Internet of Things (IIoT) offers the promise to flip this architecture on its head. As assets, materials, workers, facilities, fleets, suppliers, customers, and products all become smart and connected, autonomous cyber-physical systems will provide a bottom-up model of the enterprise. This "Digital Twin" approach will enable true real-time optimization of the entire value chain, eliminating the need for inaccurate and hard-to-maintain models that yield sub-optimal results.

Does 3D printing have the same upside potential? Certainly, industry innovators and disruptors like Amazon appear committed to take the technology in that direction.

In the next several years, 3D printing is poised to move from spares and prototypes to full industrial scale. Printer companies like Stratasys and HP believe their hardware is ready for prime time, but it won't be as simple as replacing injection moulding, metal stamping, and CNC machines with 3D printers. For productivity gains to be realized, the entire supply chain will have to transform. Industries like automotive, medical devices, aerospace and defense, and consumer products will be hit first. Parts and products will be reimagined, quality and reliability will need a new paradigm, shop floors will have to be reengineered, the value of intellectual property will change, and local manufacturing will take on a whole new meaning.

Cloud computing is a considerably more established and mature technology, yet in many ways it still seems to occupy that same "zone of disruption" as IoT and 3D printing.

The cloud will be a fundamental component to supply chain and industrial transformation. It will not just be for IT cost savings, but a functional requirement of delivering new business and operating models.

What about the concept of advanced analytics? It's usually discussed in the same conversation as big data—another technology that experienced a transition from theory to practical impact.

Manufacturers have been doing prescriptive and predictive analytics for many years. The challenge has been that the delivery model for these analytics were model- and engineering-based, often coming in the form of simulations for products, plants, and supply chains. Moving forward, companies that can combine traditional model-based simulations with big data analytics—that combine structured, semi-structured, and unstructured data—will be able to start answering new questions they never thought to ask.

What do you believe the supply chain of the future will look like in 2020, or even 2030? Do you have any imperatives for success that organizations should take note of?

The supply chain of the future will not see the factory as a traditional black box. Instead, product, production, and delivery will be coordinated by synchronized business processes and data models. Advanced manufacturing technologies like IIoT, big data Analytics, 3D printing, robotics, and drones will enable new, flexible manufacturing models. Look at concepts like Lot Size of 1 and Local Manufacturing, and you'll see what's possible as these technologies come together.

Matthew Littlefield is President and Principal Analyst for LNS Research, which he co-founded in 2011. He oversees the firm's coverage of the industrial supply chain.

In the next several years, 3D printing is poised to move from spares and prototypes to full industrial scale. In the process, local manufacturing will take on a whole new meaning.

—Matthew Littlefield

Roddy Martin
A New View of Supply Chain Success

For today's SCM leaders, cost-cutting isn't the only item on the business and supply chain excellence agenda.

Supply chain success stories tend to cover familiar turf: Paying less for something today than you did the day before, and getting it faster!

According to Oracle's Roddy Martin, however, there should be a more specific and pointed story that organizations can tell about their supply chain successes and associated business value: Firms that approach SCM as an end-to-end business capability with the right tools, attitude, and talent, and appropriate expectations, will tap into holistic business growth opportunities that most firms never even notice.

For a long time, supply chain success meant driving down cost. Today, that's changing. Why?

For one thing, customer expectations are changing. They increasingly want the on-demand, service-for-one experience and promise they get from ride-sharing apps. They are oblivious to how many process-improvement events you've made or how much you've saved in transportation costs because of improved scale and utilization. And they want agility to meet changing market demands!

The end-to-end supply chain and transforming business operating model plays a central role in meeting the modern customer's and the market's expectations. Keeping customers engaged and satisfied, and ensuring that customer experience remains a pivotal driver of business success, is a competitive differentiator.

The other thing that's changing is the mental model of supply chains: Forward-thinking organizations are realizing that supply chains are not pure cost-management centers. Businesses are increasingly rich in high-value data as well as established links, analyses, and insights to suppliers, customers, and the market; with these outside-in capabilities, combined with modern digital technologies, supply chains can open doors to new growth opportunities if the business is agile enough to adapt to the change.

Any examples of opened doors?

Consider the sensors that are embedded in many pieces of industrial equipment these days. If these are networked within the Internet of Things ecosystem and then supported by advanced
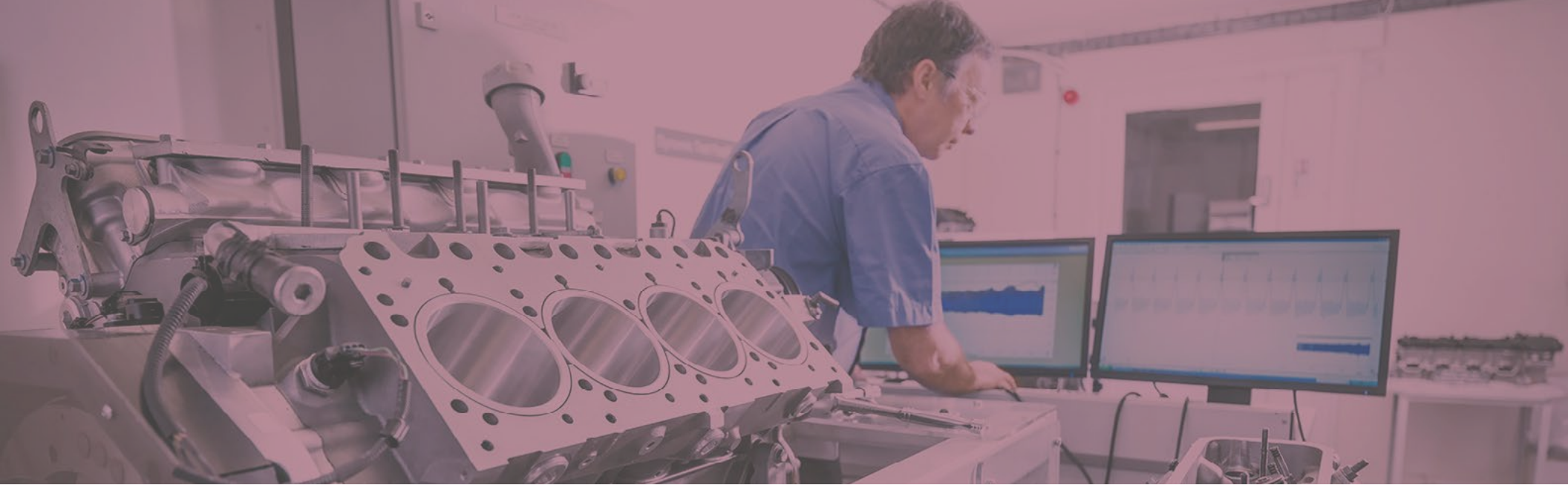
analytics and machine-learning technology, a machine could send a signal to a supplier in advance of a maintenance need. The supplier can actually "learn" to spot similar patterns in the future, and proactively trigger a response instead of waiting for a maintenance event. This changes the whole dynamic of maintenance, offering new capabilities such as reliability-centered maintenance, where parts are proactively ordered and shipped, and maintenance activities are synchronized and aligned with the business and supply chain plan.

These technology-enabled services add significant value to the customer, build loyalty to proactive suppliers, and could become an additional revenue stream and new managed service business model.

Getting specific about technology and culture, what does it take to have end-to-end supply chain capabilities?

A business needs a supply-chain operating model, an alignment culture, and an enabling management suite that is both unifying and adaptive to support the business needs and market change. Leading and managing the change from the top-down is fundamental!

What I mean is that this integratively-combined capability of people, process, and technology must support an enterprise-wide, end-to-end, demand-driven supply chain network with "one version of the truth" visibility across the business, its processes, data, and operations. That means visibility and analytics throughout the end-to-end business, enabled by the overarching integration of functions into one digital architecture—an architecture consisting of people and a stream of processes, data, and workflows. This is the Holy Grail of the transformative change happening around the digital supply chain and new digital operating models.

However, culture, leadership, and organization capabilities are foundational to the success of the business, even with an agile, outside-in technology model. For example, taking the strategic step of adding drones to your fleet to improve customer service or product tracking requires clear leadership, strategy, a business case, and the right skills—combined with a "can do," aligned culture—to transform the business's capabilities; but beware of managing the change, as there are years of embedded and traditional culture in logistics!

Business leaders must change the mental model of supply chain. We've traditionally thought about supply chains as logistics, transactional analytics and reporting, or automated manufacturing operations. This is limiting and simply reinforces functional and often cost-out focused priorities.

Businesses and leadership teams would be surprised if they took the time to strategically and holistically evaluate the business opportunities of end-to-end, market-driven transformation. This means two things:

1. Seeing supply chain as the new business operating model that is enabled by new, evolving digital technology models and capabilities; and

2. Building the capability to strategically investigate and quantify the business case, design (often re-design) the business and organization, and start the deployment journey.

I see transformation deployment models reverting to Design Thinking-type methodologies we saw in the past, which incorporated all key stakeholders into the incremental design and deployment process at an early stage than with traditional, large-scale IT projects. As part of this, upskilling, talent, and organizational designs to support the new digital operating model will be high on the leadership agenda to leverage the new business capabilities that are evolving.

Roddy Martin is Oracle's Vice President of Product Marketing for Supply Chain.

Forward-thinking organizations are realizing that supply chains are not pure cost-management centers. With outside-in capabilities, supply chains can open the door to new growth opportunities.

—Roddy Martin

Kevin O'Marah

Rethinking the Supply Chain for a Distributed Future

Tech innovation and economic realities mean that supply chain efficiency increasingly begins close to home.

Kevin O'Marah has his finger on the pulse of the supply chain industry—where it is today, and where it's going over the next decade. In this interview, he offers a clear vision of how technology is reshaping supply chain efficiencies and capabilities, and how the pace of change continues to accelerate.

At the same time, O'Marah supports a growing consensus that today's global supply chains may shift dramatically toward a "local for local" model—a product of today's economic and political realities, as well as technological innovation.

You're part of SCM World, which is one of the most comprehensive and influential communities of SCM leaders and practitioners. What trends and challenges do you find are most top-of-mind with this community?

The most important trend is around digitization. It is top-of-mind not only for information technology advances like cloud, data analytics, and artificial intelligence, but also for operational technologies like collaborative robotics, additive manufacturing, and Uberization.

The key challenge there, however, has shifted suddenly—away from automating and streamlining supply chain processes, and toward enabling precise, agile execution of everything from manufacturing to last-mile delivery. At the same time, we're seeing a move away from all-encompassing process reengineering transformation approaches in favour of incremental, test-and-learn approaches.

A second important trend involves a shift to local-for-local supply chains with material sourcing and production done close to end markets, rather than global supply chain structures based on low-cost country sourcing.

Politics plays a role here, too, tilting the business landscape away from free-trade policies and toward nationalist economic movements.

What do you believe the supply chain of the future will look like—in 2020 or even 2030?

The supply chain of 2020 will look a lot like today's, but there will be an accelerating tilt toward distributed decision-making, local execution, and

> By 2030 "Uberization" will likely cover wide areas of supply chain execution, taking advantage of idle assets and labor everywhere.
>
> **—Kevin O'Marah**

much richer data visualization offering views of actual and simulated operations. Capital equipment will be noticeably more sophisticated than it is today, especially in developing markets.

We will continue to address a familiar challenge: Technology will advance faster than organizational capabilities, and most people will still struggle to apply new tools effectively.

Scroll forward to 2030, however, and we are likely to see real changes. Retail touchpoints from stores to devices to smart appliances will evolve to accommodate widespread predictive fulfillment. Demand management will evolve with support for dynamic pricing, subscription selling, and machine-to-machine self-provisioning.

On the supply side, by 2030 we are likely to see many more micro-manufacturing sites distributed close to the point of sale and consumption. We will also see multi-function fulfillment centers with light manufacturing for apparel, electronics, machinery, and the like.

"Uberization" will likely cover wide areas of supply chain execution, taking advantage of idle assets and labor everywhere. Unmanned vehicles will handle a substantial portion of all materials movement; accountability and precise monitoring will also explode with the help of IoT-enabled equipment, vehicles, parts, and more.

Finally, a still nascent movement toward circular economics will be established. Material takeback and reuse will be much easier, more economical, and more reliable than it is today.

What are some of the key capabilities firms will need to develop or improve to participate in these changes?

Supply chain success in this scenario depends on understanding and applying technology to work very quickly. We will need dramatically faster and simpler process design to allow much more frequent changes without losing control.

People skills will also separate the winners from the losers as these changes unfold. Technology will continue to set the pace of change, but the winners in this race will cultivate people with the talent and skillset to ride this wave. Having people who can ride this wave is going to be the most important competitive difference between winners and losers.

Kevin O'Marah is Chief Content Officer for SCM World, where he leads the content team and cutting-edge, practitioner-driven supply chain research. O'Marah also co-chairs the SCM World Executive Advisory Board, a group of 15 C-level practitioners from the world's leading brands dedicated to improving the practice of supply chain management.

Robert Parker and Simon Ellis
Supply Chains Feeling the Need for Speed

For today's supply chain organizations, slow but steady will not win the race.

Bob Parker and Simon Ellis team up here to drill down into the top challenges for supply chain organizations. While moving faster is an absolute necessity, as they make clear, it won't be enough to keep disruptive ecommerce competitors at bay.

What does your research tell you about the top supply chain challenges businesses face today, and about how to prioritize those challenges?

Parker: At the most strategic level, modern supply chain management begins with a single question: What does my supply chain stand for? The primary challenge, then, is to understand your mission, especially in a digital economy. Is the supply chain a competitive weapon, is it responsible for product quality, or is it focused on gaining a cost advantage through operational excellence?

The good news is that many organizations do have a distinctive primary mission. Once that is established, the next challenge we see involves the expectation to move faster. Speed is a critical factor in the new digital economy; it falls on the supply chain organization to use information to reduce both planning and execution cycle times, and to move faster without conceding accuracy or performance.

You mention changing consumer expectations. Presumably, many supply chain managers see that as simply the top item on a long list of disruptive changes they must address.

Parker: Absolutely. For example, the emergence of new digital business models is creating new complexities for supply chain organizations. These new realities also manifest in different ways by industry segment. For discrete manufacturing segments like automotive, aerospace, consumer durables, and machinery/equipment, the physical product is becoming a platform for selling digital services, and supply chain executives must blend the digital supply chain with the traditional physical one.

In retail/consumer segments, more direct home delivery and automated replenishment is compelling supply chain organizations to think about micro-logistics networks and more harmonization of the demand signal. In asset-intensive industries, supply chain departments must calibrate capabilities to shifting market realities and highly tailored products.

> Two things are clear: Emerging competitors are enabling direct-to-consumer supply chain models; and existing companies' supply chains are nowhere near being able to match those capabilities.
>
> **—Simon Ellis**

Ellis: This notion of "personalization," by the way, is perhaps the biggest challenge for the supply chain because the vast majority of organizations are configured to move pallets, on full trucks, from and to large distribution facilities—not to deliver individualized items to consumer addresses. What percentage of business goes via this latter route remains to be seen, but two things are clear: Emerging competitors are enabling D2C, and existing companies are nowhere near being able to match those offerings.

Turning the last question around, where are supply chain organizations facing clear capability gaps today, at least in terms of the ones they know about?

Parker: There are some very notable ones. First is the "data deluge" problem: Information today is not well managed and is underutilized in many supply chain organizations. On the planning side, there are too many "science projects": isolated implementations of analytic applications to things like inventory optimization. These applications are often valuable, but they need to function within a holistic, closed-loop model to understand where and how to extract that value.

Ellis: We talk a lot about the two "gaps" in supply chain. The first gap is an analytics gap, as Bob notes, where supply chains don't have adequate analytics capabilities to take advantage of all the available data. The second gap is an "eyeballs" gap, where even if the supply chain were to have adequate analytics, there may not be enough people to act on insights in a timely fashion.

Robert Parker is Group Vice President for IDC Manufacturing Insights, where he is also responsible for the research direction of IDC Retail Insights.

Simon Ellis is the Program VP, Global Supply Chain, for IDC Manufacturing Insights, where he leads the supply chain strategies practice area.

Richard Wilding

A Network-Centric View of Supply Chain Relationships

For many firms, a different view of the supply chain may hold the key to long-term competitiveness.

In this conversation, Richard Wilding discusses the impact that relationships—across borders and within business groupings—can have on how and why supply chain organizations enable businesses to compete and to differentiate themselves in the marketplace.

In your academic position, you interact with a cross-section of working supply chain professionals. What are they telling you about top-of-mind challenges for the industry today?

Supply chain professionals are very much focused around the whole issue of skills because, of course, the skills which we require for the supply chain of the future are changing quite dramatically. That is mostly due to corresponding changes in the technology and information systems.

The other one which is very much in everybody's minds in Europe is Brexit. That is having an impact on things because it means we've got to change processes and also relocate and restructure infrastructure.

Are there lessons from Brexit you can apply more broadly to the challenges supply chain managers face elsewhere, particularly in the United States?

Brexit, or what's been going on with the Trump administration, or whatever you want to call it, actually comes down to one key issue: increasing localization. We must think through the way we structure supply chains in order to compete and even to function as businesses. In many cases, for example, the information systems we use must adapt quite rapidly to account for new sources and new ways of measuring costs, logistics functions, resource tracking, and so on.

The key requirement there, really, is to get transparency for your key processes, for your network and the types of equipment you're using, and also for how your organization and people are structured. Many businesses, honestly, aren't very good at some of these things, as fundamental as they may sound.

> If you have one dysfunctional relationship in a supplier network, it's a bit like a fly hitting a spider's web: The impact ripples out and can compromise the competitive advantage of other businesses in the same network.
>
> —Richard Wilding

You just referred to the need to achieve visibility in a supply chain organization's network. That's actually a key term for you, and you don't mean "network" in the technology sense.

That's correct. When I look at how organizations actually work together to create supply chains, it becomes clear that these are not "chains" at all—they're networks. That's actually a major shift from the concept of a "supply chain" because if you have one dysfunctional relationship in that network, it's a bit like a fly hitting a spider's web. The impact ripples across the whole network, and it can compromise the competitive advantage of other businesses in that network.

The question a business must ask is how to work together with other firms within a supply network—how to manage those interdependent relationships appropriately. If we look at many organizations, however, very few actually manage those relationships. Fewer still try to measure them.

Does the "supply network" model have implications for how organizations use their individual supply chain operations to leverage relationships and compete effectively?

It does, given the fact that so many companies' core products now are becoming commoditized. Therefore, the product "surround" is what's important—what you can provide to add value, distinguish yourself, and stand out in the marketplace. Companies in those networked relationships can combine to create a competitive advantage at different points of the customer lifecycle—for example, offerings to service, support, implement, or customize a product. In that sense, the supply chain is ultimately responsible for delivering unique value to customers that wouldn't be available otherwise.

Professor Richard Wilding OBE is Chair of Supply Chain Strategy at the Centre for Logistics and Supply Chain Management, at the Cranfield (UK) School of Management.

This is an exciting time to work as a supply chain management professional. In the past, SCM usually was regarded as merely a cost center within an organization, and a place to continually squeeze costs to address the current need. Today, however, technology innovation and evolving customer expectations give supply chain managers a unique opportunity to create value for their businesses—actually taking advantage of conditions to increase sales and optimize margin. At the same time, of course, SCM is a field that must navigate a number of obstacles to progress and profitability. In both cases, success demands a complex mix of management skills, analytical insights, technology investments, and other ingredients.

5 Key Trends for the Future of SCM

As our conversations with some of the world's leading SCM experts demonstrate, the future is likely to offer an even more intriguing mix of changes, challenges, and opportunities centered around five key trends:

1. **A shift towards buyer-centric, demand-driven SCM, and outside-in capabilities:** Success will depend on the ability to understand, anticipate, and adapt to shifting customer expectations—which will give supply chains a pivotal role creating growth opportunities for the end-to-end business, rather than being perceived as a cost-management center.

2. **A bigger role for local sourcing and supply chains:** Technology innovation, a changing political climate, and long-term economic trends have combined to raise questions—for the first time in decades—about the sustainability of far-flung, global supply networks. In their place, more firms see potential in supply chains that rely on distributed manufacturing techniques and local suppliers.

3. **A pivotal role for advanced analytics and data-driven decision-making:** Modern SCM has generated a tsunami of data. Look beyond the buzzwords, and supply chain managers can witness a revolution-in-the-making for the science of business decision-making.

4. **Adapting to new business models:** Whether they compete against established enterprises or disruptive, digital-only rivals, it is clear that the ability to offer direct home delivery, automated replenishment, and other business innovations will succeed or fail based on an organization's SCM capabilities.

5. **Technology innovations in manufacturing and logistics:** The experts may disagree on precisely when and how 3D printing, robotics, drones, and other advances will transform how the world makes and moves physical goods. All of them, however, agree that the transformation will be profound—and that it will happen within most of our lifetimes.
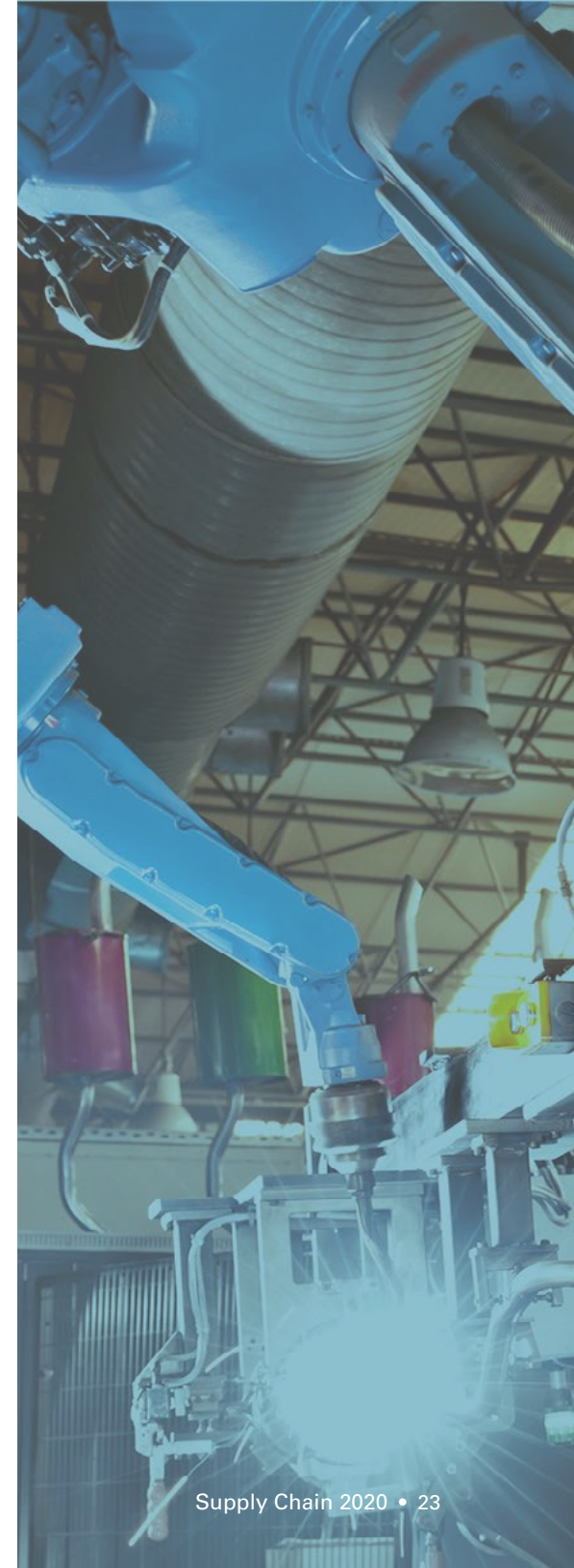
Putting People First

One other point emerges clearly from our conversations with SCM experts. The SCM story—what it means to create an effective supply chain strategy, and how and why new challenges emerge to successful supply chain management—actually revolves around the people our supply chains are designed ultimately to serve.

Firms that adopt and implement technology designed to understand and internalize their buyers' preferences, pain points, and business goals are likely to thrive; these firms will, for example, capture the massive upside potential awaiting those that successfully make the transition to demand-driven, buyer-focused SCM. Those that fail (or refuse) to do so, however, are likely to face much bigger and more difficult-to-manage issues.

Adopting the right technology to support this type of supply chain transformation can be challenging; applying it effectively is usually even more so. But the long-term benefits of making this journey are simply too clear and too compelling to leave any further room for doubt or hesitation.

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