McKinsey & Company
Operations

Digital supply-chain transformation with a human face

January 2020 | Article

By Scott McArthur, Ali Sankur, Ketan Shah, and Vedang Singh

Why building a digitally enabled supply chain is hard, and what to do about it.

In an earlier article, we looked at an inconvenient truth of supply-chain technology: the modern supply chain is still a fundamentally human endeavor. Smart algorithms may be able to generate faster, more accurate demand forecasts, for example, but executing against those forecasts requires the combined effort and alignment of hundreds of individuals across the organization, each with their own preconceptions, incentives, biases, motivations, and limitations.

In that article, we argued that understanding the importance of the human factor presents an opportunity for companies pursuing technology-enabled supply-chain improvements. Digital approaches that work with people, rather than around or against them, tend to achieve more impact while proving easier to implement and more sustainable over time. Such approaches work by improving access to information, streamlining decision-making, and facilitating cross-functional collaboration and trust.

This thought provides a novel lens through which to assess supply-chain technology investment and design digital supply-chain transformations, as opposed to the stereotypical approach of automating ruthlessly.

From linear to iterative transformation

Even companies that recognize the need to take a holistic approach to supply-chain technology face another major hurdle: getting from here to there. Transformation in any part of a business has always been difficult. It requires organizations to juggle multiple moving parts, including people, processes, and

management infrastructure. And it requires them to overcome all the usual technical, organizational, and cultural obstacles to change.

Digitally-enabled transformations add two extra challenges into the mix. First, there is the extra technology component, which must be handled alongside changes to processes, management infrastructure, and mind-sets and behaviors.

The second, and more significant, challenge for companies introducing digital technologies into their supply chains today is the lack of a single, clear destination. When organizations embarked on transformations in the past, they could begin by defining the desired end state. Introducing a lean production system is a very difficult enterprise, for example, but companies starting out on their lean journey at least understand how they ultimately want things to work. That vision of a goal makes it much easier to take the right steps in the right sequence, and to measure the progress of the overall transformation.

Right now, digitally enabled supply-chain transformations don't have the same luxury. Digital technologies are evolving so rapidly that there hasn't been time for many of them to prove themselves at scale. There is no Toyota of the digital supply chain, providing a template for other organizations to copy. Indeed, supply chains are so specific to each company's product range, operating footprint, and customer needs that such universal archetypes may never emerge, even after years of experimenting.

All that extra complexity and uncertainty means that companies can no longer follow the traditional linear transformation path: they need an iterative approach. New digital technologies must integrate with people, processes, and management infrastructure—but those technologies will also influence how each of the other elements should be redesigned. If an organization introduces real-time, closed-loop planning technology, for example, does it still need a traditional monthly sales-and-operations-planning (S&OP) process? It might be better off with a new, more flexible collaboration structure, designed to manage exceptions and issues on the fly as they arise.

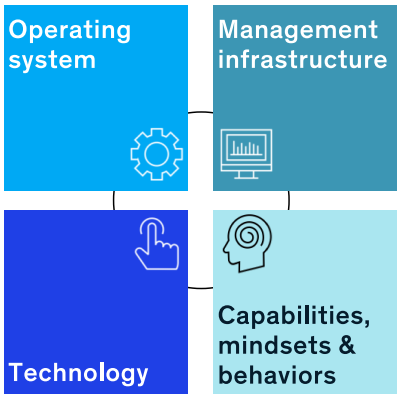
In the same scenario, does it still make sense to have separate supply-planning and inventory-management roles? In short, if companies introduce new technologies without also making changes to their operating systems, mindsets, and management infrastructure, they risk "digitizing the current firefighting" rather than fundamentally transforming their supply-chain performance.

Why today's approaches fail

Designing and delivering a supply-chain transformation is a formidable task. So formidable, indeed, that some companies have so far avoided the challenge altogether, waiting on the sidelines for a standard template to emerge. Others have tried but failed, often falling into one of three common traps (exhibit).

Exhibit

Three common failures block supply-chain transformation.



Legacy approach
Fixing a single process (eg forecasting) or a single metric, with focus on process design

Paper excellence …
…but failure to take off and transform

System roll-out
IT-driven attempts to digitize supply chain, or to redesign processes to conform to systems

Firefighting digitized…
… but failure to deliver impact

End-to-end approach in a narrow segment of business
Implement system, process, and organization changes in only a contained slice of the supply chain

Nice pilot…
…but failure to scale up

Source: McKinsey digiTS

McKinsey & Company

The first of these traps is to focus only on process. Companies sometimes spend lots of time and effort in developing highly detailed plans that describe exactly how their supply chain processes should work. Others even try to outsource thinking on this, copying their plans from generic “best practice” templates.

When the time comes to implement the new way of working, however, this approach often leads to “organ rejection.” Process is necessary, but not sufficient for a transformation. There are certainly common-sense best-practice principles: for example, in most cases supply chains should be cross-functional, not siloed. In our experience, however, the details of process must be co-created by the engagement of key stakeholders across all levels of the organization, and co-driven by hands-on capability building and change management.

The second trap is the adoption of a technology-first perspective: the digital hammer looking for an analog nail. Here, companies find an impressive digital approach, then hunt for places to apply it across their supply chains. Working this way, companies end up digitizing their current, suboptimal processes. That limits the value of digital approaches and may even make it more difficult to capture larger improvements over the longer term.

The third common trap is the problem of pilot purgatory. The company understands the need to address every component of the transformation—but tries to make the problem more manageable by addressing only a small part of the organization in a targeted pilot project. These efforts often deliver rapid and impressive results.

The problem comes when it is time to scale up. Processes, systems, and technologies that work well with a small group of motivated people may not be robust enough to stand up to the demands and complexities of the entire business. There may be too many distinct segments of the business, with supply-chain requirements that differ fundamentally from those of the pilot unit, to allow for a simple copy-and-paste approach.

The shortfalls of the chosen systems and technologies, which are often easy to overlook or manually correct in a risk-free pilot, become a headache when they need to operate in a touch-free, at-scale environment. The focus and energy the organization builds during the pilots usually evaporates quickly, and other parts of the business may not be receptive to a new approach developed somewhere else. Finally, organizations may rely on external help to get the initial pilots up and running, but a lack of capability building can leave them with insufficient skills to repeat the process on their own.

Learning from the leaders

Steering a digital supply-chain transformation so that it avoids these pitfalls is no trivial exercise. Nor is there is a magic formula or one-size-fits-all approach that guarantees success. When we look at companies with high-performing digital supply chains today, we see a number of archetypes (not one model) with some common threads across them. Critically, while all these organizations make extensive use of advanced digital technologies in their supply chains, those technologies were only one component of a far more holistic effort, which always has the human element at its heart. Let's look at three examples.

Aligning on a single, clear objective in high tech

Operating in a particularly fast-moving, volatile part of the IT industry, one component manufacturer already had an efficient and high-performing supply chain. Over time, however, customers began to demand even faster delivery and the ability to change their order mix at the last minute. With lead times of more than 30 days to fulfill orders placed by customers in the West for products manufactured in China, the company found itself in an uncompetitive position.

Over a multi-year period, the organization embarked on a comprehensive supply-chain transformation, built around a single business objective: reduce lead times to the minimum possible while keeping cost under control. Having a single, clearly understood business goal helped everyone in the company to support and align behind the multiple changes that were required across the supply chain.

Some of those changes, like lights-out factories in China or real-time integrated planning and scheduling, involved new digital technologies. Others were around processes. The company segmented its product lines and customer base, for example, and developed tailored supply-chain processes for specific segments. It introduced postponement into its manufacturing processes, assembling finished goods on demand from components stocked close to its customers. Ultimately, the transformation effort allowed it to reduce overall lead times by more than 80 percent, with most orders fulfilled in less than five days.

Hands-on capability building in complex manufacturing

A multinational industrial-goods manufacturer was drowning in supply-chain complexity. Its product range was large and diverse in a make-to-order environment, and manufacturing relied on thousands of components from hundreds of suppliers. A single missing component could bring production to a halt, so supply-chain planners responded by flooding the system with inventory. That only led to high costs and poor productivity.

The organization had been operating advanced supply-chain-management software for more than ten years, but its use of the system had not gone beyond basic dashboards for visibility. Planners didn't know how to apply the system to support day-to-day decision making, and its advanced-analytics capabilities were untapped.

Solving the problem required a very human-centered approach. Supply-chain specialists sat down with planners and operational staff to discuss the issues they faced every day. Then, building on the existing digital infrastructure, the company created decision-support tools and problem-solving workbenches that gave easy access to relevant, actionable information. Finally, the company rolled out the new tools and processes with an intensive program of on-the-job training and support.

The capability-building approach included problem solving, root-cause analysis, and—because executing a solution often required the involvement of multiple stakeholders—influencing and communications skills as well. This last step was critical, since it not only gave frontline staff the technical ability to use the new systems, it also helped change their mind-sets, giving them the tools they needed to solve problems and the confidence to implement the best solutions. The project unlocked almost $100 million in stranded inventory in less than two months.

Getting results fast with agile in consumer goods

When a major consumer-goods manufacturer looked to shift its supply-chain performance from good to great, managers assumed that technology would provide the answer. After early initiatives delivered lackluster results, however, the company knew it would need a different approach.

The company realized that the problem lay in how its digital projects were planned and executed. With little collaboration between business functions and IT, the organization relied on a traditional waterfall approach, in which the business defined its technology requirements and the IT function proposed a solution. Working that way was slow and meant that the company was merely digitizing its existing processes, rather than exploring opportunities to run its supply chain more effectively.

To break the cycle, the organization took a radically different approach. Rather than using its existing processes as the kickoff point for its digital efforts, it started with a clean sheet. Using the agile methodology, it brought together a cross-functional team of supply-chain, business, and technology specialists to work on a new process—together with new roles, new performance indicators, and a new management system. Working in a series of sprints, the team created an entirely new supply-chain planning system that combined 80 distinct data sources to enable data-driven decision-making and execution.

By changing its approach from “all-in” to “minimum viable product”, the company was able to put the new operating model into action after only 16 weeks. The new system reduced the time required to re-plan and react to demand changes from seven days to less than three hours. That led to a two-percentage-point service-level improvement and a 10 percent reduction in inventory.

Digital supply-chain transformation is about much more than technology. For the latest wave of supply-chain innovation to deliver its full potential, companies must be willing to adapt their processes, capabilities, and management systems. They need the willingness and flexibility to learn, adapt and change as they go. And above all, they need to ensure that their people are with them on the journey.

About the author(s)

Scott McArthur is an associate in McKinsey’s Southern California office; **Ali Sankur** based in the Chicago office, is a director of practice operations; **Ketan Shah**, also based in Chicago, is a partner; and **Vedang Singh** is a consultant in the New Jersey office.