

Operations Practice

To improve your supply chain, modernize your supply-chain IT

Global distribution issues and increasingly complex supply chains are forcing companies to modernize the tools they use for forecasting demand and planning how to meet it.

by Marilú Destino, Julian Fischer, Daniel Müllerklein, and Vera Trautwein



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Companies have to modernize their supply chains. That was obvious even before congested ports and parts and labor shortages began to snarl supply chains at the start of the COVID-19 pandemic two years ago.

Companies' ability to forecast demand and determine how to meet it has been further challenged by supply chains' increasingly global scope. And supply-chain leaders haven't done themselves any favors by clinging to manual systems and antiquated software, including one widely used application that's so old the provider will soon stop supporting it.

Innovators have begun to embrace next-generation systems, and the rest of the field is starting to follow. New applications incorporate AI, machine learning, and data analytics to speed up decision making and pave the way for autonomous planning. In our survey of dozens of supply-chain executives, 90 percent said they expect to overhaul planning IT within the next five years. Four out of five expect to or already use AI and machine learning in planning, a key driver for supply-chain IT implementations.

Modernizing can make supply chains more resilient and efficient. But it's a major investment—and success isn't guaranteed. According to executives we polled, 60 percent of supply-chain-planning IT implementations take more time or

money than expected or don't achieve anticipated business outcomes.

Companies can improve the outcomes of upgrade efforts by incorporating three critical elements into the process of adopting new supply-chain-planning IT systems: a forward-looking process design, well-defined vendor selection, and an implementation road map that prioritizes getting basic features right before adding more complicated use cases. To maximize the sizable investment that an upgrade represents, companies must reinforce those elements with the appropriate organizational change, business process updates, and upskilling.

Why it's hard to update supply-chain-planning IT

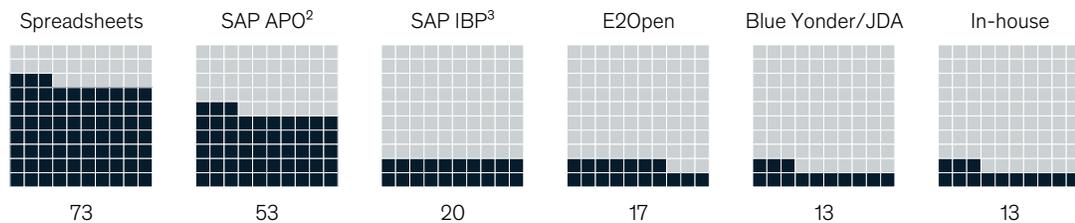
Despite the advantages that modern supply-chain-planning IT systems offer, an overwhelming majority of enterprises still use manual or outdated methods, as illustrated in Exhibit 1.

Close to three-quarters of supply-chain functions rely on the simplest method: spreadsheets. In addition, more than half use SAP Advanced Planning and Optimization (APO), a popular but antiquated supply-chain-planning application that SAP introduced in 1998 and will stop supporting in 2027. The portion of APO users in certain industries is even higher—75 to 80 percent of all

Exhibit 1

Spreadsheets remain the top method for supply-chain planning.

Top 6 planning IT systems in use,¹ % of respondents



¹Respondents could choose more than one system; all other systems were named by 7% of respondents or less (n = 30).

²Advanced Planning and Optimization.

³Integrated Business Planning.

Source: McKinsey survey of global supply-chain leaders (May 6–June 3, 2021)

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the automotive, retail, and chemical companies we polled.

Supply-chain leaders know that current methods need to change and are taking steps in that direction. Of the executives we surveyed, 90 percent plan to implement a new solution in the next five years, and 23 percent have already done so.

When they upgrade, supply-chain leaders are adding advanced-technology capabilities. Twenty percent of executives we surveyed have

implemented AI and machine learning for some type of supply-chain-planning activity, and another 60 percent plan to in the future (Exhibit 2). Top applications for AI and machine learning include demand planning, sales and operations planning, and control tower, among others.

Multiple supply-chain-software vendors offer applications with AI and machine learning. Based on our survey, we see companies shifting from current solutions to future solutions that incorporate those advanced technologies, as illustrated in Exhibit 3.

Exhibit 2

Four out of five supply-chain leaders expect to or already use AI and machine learning for planning.

Implementation status,¹ % of respondents

■ Not doing it ■ Doing it



Top applications being considered

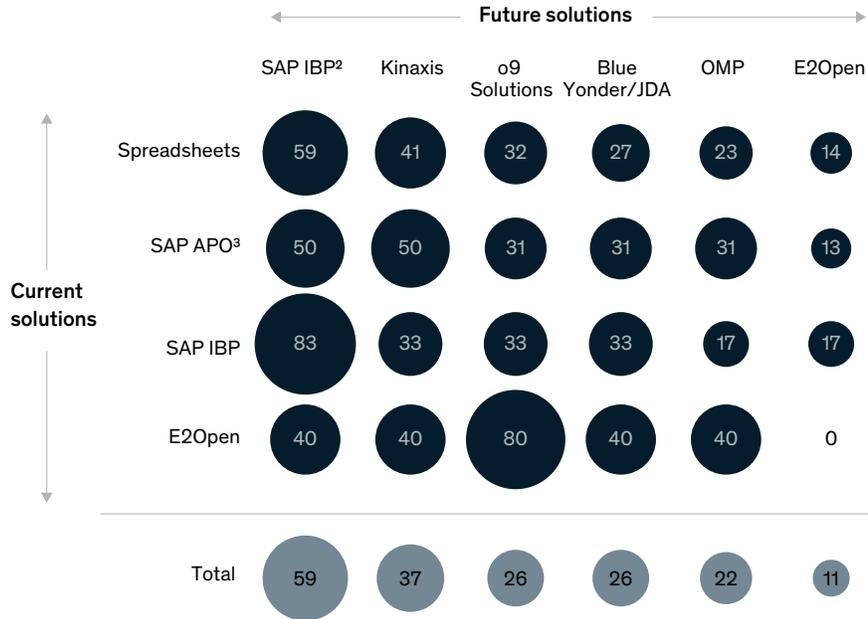
- 1 Demand planning
- 2 Sales and operations planning
- 3 Control tower
- 4 Detailed scheduling
- 5 Inventory optimization

¹n = 30.
Source: McKinsey survey of global supply-chain leaders (May 6–June 3, 2021)

Exhibit 3

Supply-chain leaders are upgrading to a variety of planning systems with AI and machine-learning capabilities.

Plans to upgrade to a specific supply-chain IT system with advanced technology,¹ % of respondents



¹Respondents could choose more than one method (n = 30).

²Integrated Business Planning.

³Advanced Planning and Optimization.

Source: McKinsey survey of global supply-chain leaders (May 6–June 3, 2021)

However, several challenges stand in the way of implementing new planning systems.

Upgrades are time-consuming and expensive

Companies hang onto older systems because of the time and money needed to replace them, even if upgrades would bring substantial benefits. The resources required for an upgrade depend on the complexity of the company's supply chain. Companies average 2.8 years from vendor selection to complete rollout. Industries with highly complex supply chains, such as pharmaceuticals, typically spend four to six years and €55 million to €110 million (\$62.5 million to \$125 million) to fully implement a new supply-chain-planning system. Industries with less-complex supply chains, such as consumer-packaged

goods, can spend two to three years and about €15 million (\$17.5 million) on a new system.

Vendor selection is critical—and difficult

When they upgrade planning IT systems, supply-chain leaders evaluate two potential vendors on average to ascertain which system best meets their specific planning challenges. But some talk to as many as eight. Supply-chain leaders typically vet vendors using functional requirements, how a system integrates with existing supply-chain applications, and up-front and operating costs.

Implementations don't go as planned

Of executives we polled, 45 percent said the biggest barrier to launching a project was a lack of

consensus on a new system's technical and process requirements. Another 35 percent said the impact of a new planning system did not meet expectations, and 28 percent said they struggled to create a compelling business case to justify switching to a new system.

Successfully implementing supply-chain-planning IT

When planning IT implementations fail, 60 percent of the time it's in one of three ways: they aren't completed on time, are over budget, or don't deliver the expected outcomes. The failings are indicators that processes are poorly designed or lack needed capabilities, or the change was poorly managed.

Companies can surmount the challenges and increase the chances that a supply-chain-planning IT system will succeed if they incorporate three key elements into the implementation process (Exhibit 4).

A well-articulated planning-process design

Adding automation doesn't magically fix broken processes. To get the most out of new systems, companies first have to put well-defined planning processes in place. For that, they need to understand their objectives and create detailed descriptions of planning activities that a new system will cover to meet those goals. To craft the right end-to-end processes, companies can ask the following questions:

- What are our main pain points?
- What would our ideal supply-chain-planning system look like?
- Which parts of the current system need to change to turn it into our ideal system?
- What performance indicators should we use to measure success?

Exhibit 4

A three-step process helps in implementing new supply-chain-planning IT.



From there, they can determine which low-level processes could be automated to free staff up to deal with more complex issues, such as managing inventory or replenishing raw materials. They can also determine where to implement AI for highly complex tasks that people often struggle with, such as forecasting customer demand.

Leaders can review existing steps in the planning processes to determine how new systems could support each one. For demand planning, for example, a new system could provide initial forecasts based on advanced analytics that experts review and adapt to create a single forecast for all downstream activities. For supply planning, a new system could support pinpointing and planning for potential bottlenecks. Embedding a control-tower framework into their supply-chain IT can solve short-term demand–supply imbalances by providing forward-looking insights into potential stockouts.

A well-defined vendor-selection process

Once leaders have identified the processes that a planning system must cover, they can create a framework for evaluating prospective vendors. The vendor-selection process has three parts:

- ***A list of business requirements.*** A succinct set of requirements covers the full scope of the application as well as must-have and nice-to-have features.
- ***Clear evaluation criteria.*** Vendors with systems that meet the basic business requirements can be evaluated against more detailed aspects of the process design, for example, for how specific features or tools match the company's needs.
- ***Two or three “must have” use cases.*** The supply-chain team can ask prospective vendors to demonstrate how their systems would handle priority use cases during a sales presentation to see how well the app performs. In demos, users can ask vendors to simulate common pain points or problems they deal with to get a

realistic idea of how the system would operate in their environment.

Rather than let leaders be the only ones involved in vendor evaluations and demos, companies could consider including employees who provide a frontline perspective, such as those who use the existing planning system or who would use the new software. At a US biotechnology company that was upgrading its supply-chain-planning IT system, supply and demand planners participated in vendor demos since they would be the most frequent users of a new platform.

A multiphase implementation road map

The survey of supply-chain executives confirmed that lengthy software implementations are a major pain point. Fixing that requires creating a well-defined, multiphase implementation road map. Such a road map prioritizes testing and rolling out must-have features before adding those that are nice to have. It ensures that work on the implementation can be done at an agile or sprint pace with repeated rounds of design and testing. And it includes all the change-management components needed to get supply-chain planners and other users of a new system involved in the implementation as early as possible to make the transition as smooth as possible.

When the aforementioned US biotech company began to upgrade to its new system, the implementation team worked in six-week sprints, starting with a minimum viable product with only standard functions to make it simple for users to understand and test. After each sprint, any bugs that testers encountered were collected in an issue log and addressed in order of importance. Testers also provided input on which features they needed for the system to go live and which could be added to a backlog to be tackled later in the development cycle.

The final step in launching a new system is running it in parallel with the existing system long enough to ensure that it works in a real-world setting and to

continue to make improvements before phasing out the old system.

Switching to a new system isn't just about the technology. Companies need to prepare staff to use it to ensure they're engaged and that new processes and ways of working stick. One way to do that is to have one team, region, or business unit start using the new system to show other teams or units how things work and communicate the system's benefits. Senior leaders should serve as role models to reinforce new ways of working, which signals the commitment to the transformation.

Additional considerations

For a transformation to succeed, companies also need to do the following:

- ***Keep the customer at the center of change.***
Set clear objectives at the beginning of the transformation that spell out how it will improve the customer experience. For every decision, ask, "How would this change affect our customers?"

- ***Build in-house capabilities.*** Training personnel on the new ways of working that a new system requires makes the vendor hand-off easier and faster and leaves the organization less dependent on long-term outside help.

- ***Use in-person and online learning.*** To make working in new ways stick, use experiential learning, the influence model, and create safe spaces for learning. It also helps to build trainings around user journeys.

It may feel daunting, but upgrading supply-chain-planning systems is doable with the right approach. And the potential benefits are significant: better planning processes, systems that are a closer match for the company's needs, and ultimately, a more efficient and resilient supply chain.

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