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The **smart** moves your **supply chain** needs now

To navigate global supply shocks, companies must build resiliency while repositioning for growth.

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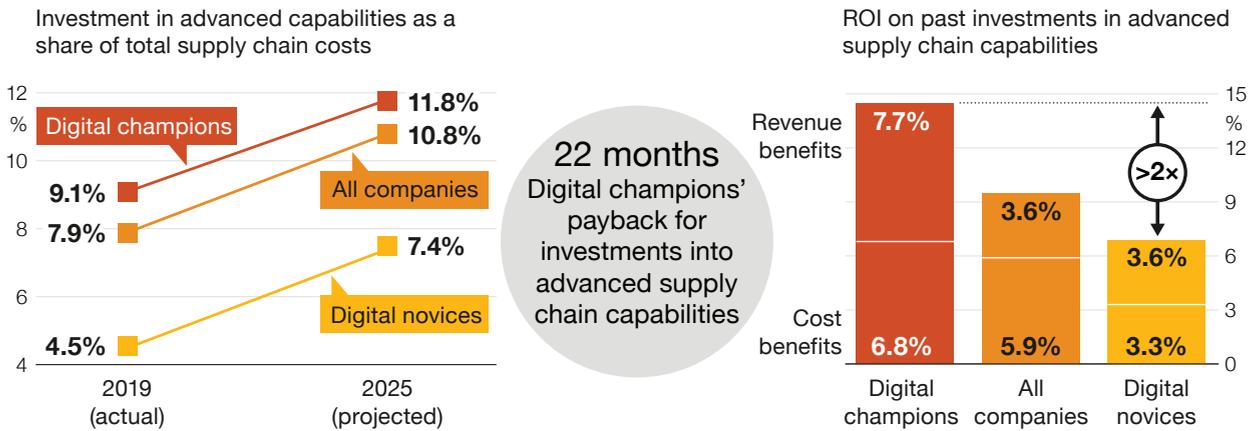
For today's global supply chains, it's one crisis after another. A persistent shortage of raw materials is upending manufacturing. Supply chain managers are quitting in droves. The pandemic lingers, and inflation is up, including soaring costs for industrial energy in Europe due to Russia's war on Ukraine. A possible recession looms. And geopolitical risk has surged to its highest level in many years. All while climate indicators generate further uncertainty.

And that's just on the supply side. Consider the retailers who'd adjusted to new consumer purchasing patterns during the pandemic—more furniture, televisions, appliances, and casual clothes—only to find themselves caught out when people began spending less time at home. As demand-side behavior returned to pre-pandemic norms, retail supply chains were stuck with excess inventory and warehouse space.

Today's turbulence and volatility might be here to stay. As companies look to develop resilient responses to a continual series of shocks on both the supply and demand sides, many find the old approaches less and less effective. That's because most global supply chains were engineered decades ago to manage stable, high-volume production by capitalizing on labor-arbitrage opportunities in low-cost countries such as China, India, and Vietnam. Speed, cost efficiency, and performance comprised the “magic triangle” of supply chain management. Large-scale shocks were relatively infrequent, and customer needs were more fixed and well-known. Today the landscape is entirely different.

Given the new reality, we propose a few smart moves to fortify supply chains

Leading companies invest more in advanced supply chain capabilities—and get higher returns



Source: PwC's *Connected and autonomous supply chain ecosystems 2025* survey of 1,601 companies, conducted between October 2019 and January 2020

now—and to bolster them for the difficulties, and opportunities, ahead. Many of these initiatives require investment, it's true. But recent PwC research shows that investing in advanced supply chain capabilities bears fruit through lower costs, increased revenues, improved sustainability, higher asset utilization, better risk management, and greater rates of on-time, in-full delivery to B2B and B2C customers. Our research found that some companies stand out from others in building the supply chain of the future. For these “digital champions,” investments in advanced supply chain capabilities pay off in an average of 22 months. And the payoff can be attained even more quickly in companies that consider and manage global corporate tax and customs issues upfront and along the way.

Each of the following moves is designed to help you make a virtue of necessity as you bolster resilience and reposition your supply chains for growth.

Take stock of your options

At one level, it might seem obvious: you need to know what's coming at you, and how well your business would perform under different scenarios, before you can calculate your risk exposures and think through your best responses. But not every company has adequate systems in place to measure and monitor

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product content, supply chain financials on a transactional level, and logistics flows (see “Get control of your data story,” on page 8). Many don't even have visibility beyond their direct suppliers.

Closing the gap demands a wholesale reset. Companies must start with a clean sheet of paper and map out scenarios to navigate the kinds of extreme events we've seen recently in our poly-crisis world. The interrelated nature of and complex dependencies among a wide range of participants and locations means scenario planning must encompass the full scope of the end-to-end supply chain. Scenarios must account for everything from suppliers through logistics providers to your Tier N suppliers (entities at lower levels in the supply chain), all the way through to your customers. How do difficulties in one tier of suppliers spill over into the others? What's the effect of a breakdown in critical operations machinery at a logistics facility, or the lockdown of a crucial port due to covid-19? How would you respond to a sudden spike in demand or the emergence of specialized market segments?

Scenario planning through the extended supply chain places a premium on having the right data at the right time as the planning cadence shifts to real time and as leaders use the latest scenario-modeling techniques to adjust variables on the fly. Scenarios should leverage both internal and external data to create “what if” hypotheses that help determine the best path forward, using experience and intuition as the final determining factors.

Properly executed, scenario planning gives companies the power to transform

projections of uncertainties into options for tangible actions. But to embed scenario planning into an organization's culture, leaders must instill a conviction that change is needed—and that thinking the unthinkable is the new norm.

Execute across the holistic value chain

It's one thing to know what's coming at you and the options available, and another to execute a dynamic response across your holistic value chain that includes all your trading partners, including Tier 2 and Tier 3 suppliers. Effective execution requires closely coordinating people, streamlining processes, and integrating technology to create the transparency and visibility that participants need.

We know from our research that leading companies are using both advanced and emerging technologies to give themselves clearer visibility. Many are creating AI-enabled “control towers”—connected dashboards of data, key business metrics, and events personalized to decision makers across the supply chain. A supply chain control tower enables organizations to understand, prioritize, and resolve critical issues in real time—for example, when circumstances require temporarily shifting sourcing from one part of a supply network to another.

Not only do control towers enable executives to better see the present, but the end-to-end visibility they create provides the crucial foundation for a “digital twin”—a simulation model of a supply chain's physical assets. Digital twins use live information feeds, such as incoming shipment schedules, vehicle locations, and inventory levels, to help supply chain leaders assess the current state of operations and predict what might soon be coming at them. DHL, for example, is using a digital twin of a warehouse in Singapore to help reduce storage congestion and make better staffing decisions. The result so far has been a safer, more cost-efficient warehouse space.

Even as they're working toward development of a digital twin, companies can make better use of “smart logistics” technologies to orchestrate the flow of materials and related information from the point of origin to the point of consumption. These technologies include robotic warehouse systems that automate picking; automated order management for omnichannel fulfillment;

track-and-trace functionality in transportation; and distributed ledger technology for more efficient and transparent transactions. Smart logistics are both a key cost lever and a crucial support for revenue growth in extended supply chains.

Get transparent about cost trade-offs

It used to be that supply chains were expected “merely” to source materials and deliver products at the right levels of quality, for the best available price, in the fastest way possible. The expectations are even greater today. As consumer needs and behaviors shift in a poly-crisis world, companies have begun looking to their supply chains to drive revenue growth through better customer experiences. When companies move their manufacturing and distribution facilities closer to the customer, for example, they make their entire value chain faster and more responsive to customers, which in turn may also reduce carbon emissions through shorter transportation routes.

But getting there from here may require investing in many of the advanced supply chain capabilities we’re discussing in this article. Given their influence on revenues, it would be a mistake to see these solely as costs. For decades, excess inventory or production capacity meant wasted cost. There’s still no free lunch, but in the right circumstances, increasing inventory “just in case” or boosting production capacity can support quicker responses to demand spikes and newly emerging sources of growth.

Both choices have their own trade-offs when it comes to costs. Building more inventory carries a risk of creating mismatches with future demand as B2B customer and B2C consumer behavior shifts. Changing the footprint of your supply chain, meanwhile—whether it’s to boost resilience to supply shocks, to increase production capacity, or simply to move supply chains closer to customers—can have a significant impact on enterprise tax cost. Customs, VAT, income taxes, exit taxes, credits and incentives, and transfer pricing arrangements are some of the elements companies need to factor in before they can understand the total cost of the trade-offs they face.

Failure to manage these issues proactively and early in the planning process can spell missed opportunities and higher costs later that could be difficult or

impossible to address once new supply chain channels are established. Moreover, the skilled labor and engineers needed for high-end manufacturing may be limited in some parts of the world, and the learning curves for apprentice hires may affect output during the initial ramp-up phase. Inherent in any discussion of changing the footprint of your supply chains, of course, are changing labor costs and tariffs, and government incentives.

Yet even with inflation weighing on economic growth and putting intense pressure on margins, leaders must be careful not to over-index on short-term cost reduction. In a world where the old supply chain management grails are obsolete, any cost incurred to shore up key parts of the value chain against increasing risk is, in fact, an investment in future growth. At the same time, however, it's critical to redirect operating costs and scarce capital to the capabilities that best position you to win. Think of it as combining low-risk moves and strategic bets to match the extended supply scenarios that you think have the greatest probability of occurring.

Rein in Scope 3 emissions

As companies ramp up their decarbonization commitments, the focus is squarely on Scope 1 and Scope 2 emissions, which are produced directly by companies or indirectly through the purchase of energy. Yet Scope 3 emissions generated in the upstream and downstream value chain should get more attention. Scope 3 emissions represent 65 to 95% of most companies' broader carbon impact, according to the Carbon Trust, a group that helps companies measure carbon emissions.

The problem, of course, is that Scope 3 emissions are out of a firm's control. To build sustainability as a fulcrum for growth, organizations must forge partnerships with suppliers on their biggest sustainability challenges and opportunities.

One of the largest mineral producers in the world wanted to make improvements toward decarbonization goals but knew it needed to bring suppliers along, so it created a supplier code of conduct and a climate action plan for the entire supply chain, which includes almost 20,000 individual suppliers worldwide. Though codes of conduct have been used for years to ensure that suppliers

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conduct their business in an ethical manner and act with integrity, the company saw another use for the time-honored convention: to better understand the decarbonization challenges and the opportunities to solve them. To enhance its odds of success, the mineral producer committed to open and transparent collaboration with suppliers, which involved sharing data sets and rolling out digital communication tools.

Get control of your data story

A sure sign of a future-ready supply chain is free-flowing data unencumbered by departmental silos. Leading companies collect and model massive amounts of customer and supplier data. They invest in data analytics capabilities to detect changes in customer preferences, and track data on sales and consumers at every store and through every channel. They use data to detect fluctuations in demand between stores, to alert suppliers to potential shifts in requirements, to help reallocate inventory among stores, and to ensure that the company restocks at the right time. They also use data in a separate but related way: to identify shocks before they happen.

But the best supply chains create a virtuous cycle in which more relevant products create more consumer demand, more consumer demand feeds more data into models, and more data is converted into the privileged insights that are needed to inform more relevant products and customer experiences—and smarter decisions about locating infrastructure.

In fact, gaining privileged insights may become one of the supply chain's most important capabilities. The better the insights, the more the organization can increase its value for customers. The more they improve the value propositions, the more trust they can generate by delivering on promises and the more customers will engage. The more customers engage and trust the company, the more the company will remain connected with and relevant to them—no matter what global shocks and market shifts are occurring.

Successful companies think of their data and associated digital and analytical capabilities as key value drivers, and treat them with care and diligence to capture the maximum net-of-tax value from these elements.

Building a dynamic data strategy takes years, but one important decision companies can make immediately is to create a data network that can read, clean, and analyze data from multiple sources. Data may be generated internally, externally from hundreds or thousands of suppliers, or from publicly available sources. That's why intelligently combining structured and unstructured data—and having a way to draw clear insights from the data—is key. It's also important to employ AI responsibly and with sufficient governance in place—for example, by taking possible biases into account.

Another sound tactical decision is to share data openly with suppliers. This allows all participants to spot changes in demand or supply problems immediately, and to respond in a concerted fashion. Reducing information delays is the first step in creating a collaborative, future-ready supply chain. The good news is that near-term efforts to create a supply chain control tower move your supply chain organization that much closer to truly autonomous, machine-supported decision-making down the road.

Align your leadership

It almost goes without saying that executing across your supplier network will require strongly aligned and collaborative leadership within your own organization. The multidisciplinary, cross-functional nature of supply chains resists silo-based approaches.

If your company doesn't have a small, senior, cross-enterprise team tasked

with finding resolutions for your toughest supply chain problems, it may be time to create one. That team should draw on the company's expertise in advanced and emerging technologies, as needed, to tackle the most critical issues facing the supply chain, and in particular the ones that can't be resolved quickly at lower levels. Those issues might include how to rebalance the supply network to mitigate risk or reduce dependency on a given country or region—a decision that also involves cost questions, as discussed above.

Although many companies create rapid-response teams in the wake of sudden shocks, the current challenges facing supply chains call for an “always on” cross-enterprise team. As recent research has found, managers learn from past shocks but still have difficulty preparing their operations for the next extreme disruption.

Senior leadership teams need to take steps to cascade their decisions through the organization, which provides transparency, increases the adoption of decisions, and helps the leadership team to speak with one voice.

All members of that team will need to understand the different perspectives their peers may bring to supply chain decisions and endeavor to bridge them where possible. PwC research finds, for example, that COOs and CFOs are currently more conservative in their appetite for the digital transformation investments that provide a foundation for connected supply chains. This may be due to an intensified focus on shorter-term results amid rising inflation and demand-side challenges.

Regardless of the reason for differing perspectives, the heightened importance of supply chains will require more top-team functionality and collaboration. Some companies might begin to rethink C-suite roles in a way that blurs traditional functional responsibilities. For many organizations, the work might start with redefining the role of the chief operating officer, and creating new modes of collaboration between that executive and the chief commercial officer, chief information officer, chief data officer, chief tax officer, and chief financial officer. It might be that a new supply chain role emerges in the C-suite, one that has a broader remit over the resilience of operations, customer acquisition and retention, risk, sustainability, and technology development. Regardless of

the organizational preference, the supply chain imperative is, without doubt, a complex problem that requires novel solutions. No one part can be isolated from the others. That means the team at the top of your organization may need to reinvent itself.

For business leaders, the challenge of helping their companies navigate global supply shocks requires strong and steady thinking—and a recognition that there will be more crises to come. Moving smartly now can help them ensure that their supply chain organizations not only survive the current crises but get ever more resilient and oriented for growth in the future.

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