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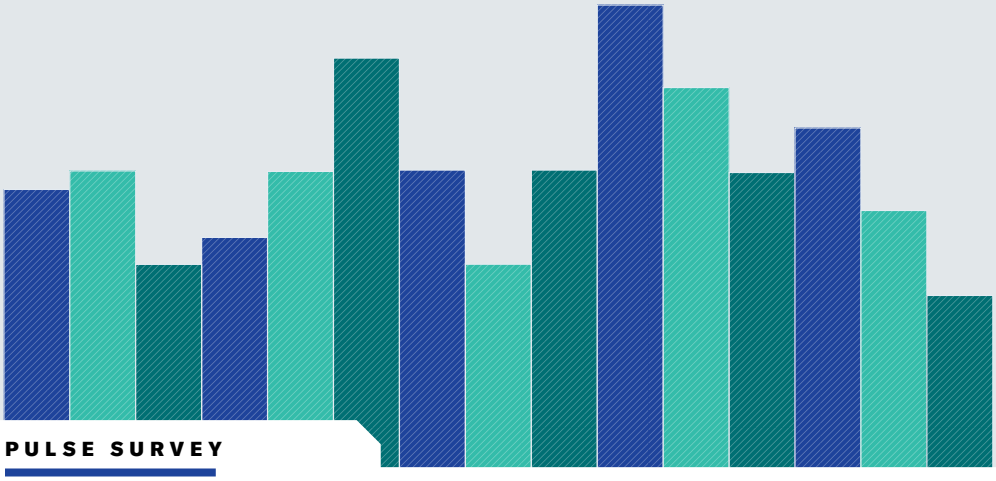

PULSE SURVEY

A Resilient Supply Chain Built for Competitive Advantage

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Supply chains have been thrust into the spotlight recently, and for good reason. Customer expectations have evolved, sustainability is top of mind, and leaders are left navigating economic disruptions with legacy solutions that make it difficult to respond. Amid these challenges is the opportunity to reimagine supply chains to be more agile, connected, and adaptive. Simply put, the status quo is no longer sufficient.

In recent years, we've seen how fragile existing supply chain networks are; disconnected and disparate systems lead to slow response times and limited visibility to orchestrate and triage disruptions in real time. But it doesn't have to be this way. With an open, flexible, and extensible platform approach that unifies data from across these systems, supply chain leaders can usher in a new era of resilience to exceed customer expectations and positively impact the bottom line.

According to this new research from Harvard Business Review Analytic Services, 97% of respondents agree that a resilient supply chain positively impacts a company's bottom line. While it may seem like an overwhelming time to examine existing systems, it's clear based on the research that strategic leaders are ready to embrace what's next.

This report illustrates where the opportunity lies. A hodgepodge of disparate systems dominates supply chain infrastructures today, with just 11% of respondents relying on a single, integrated platform of modern and best-in-class applications. Yet we see the excitement and appetite for an orchestrated and digital infrastructure; 76% of organizations in the survey are currently, or are in the planning stages of, implementing improvements to the digital infrastructure of their supply chain. Respondents indicate that building resilience with improved systems and a data-first approach is what's next in today's ecosystem.

A supply chain must have built-in visibility and flexibility for organizations to survive a highly competitive landscape with heightened customer demands. Enabling real-time collaboration and orchestration of disparate systems weaves resilience into the fabric of each unique ecosystem. It also unlocks new opportunities to leverage artificial intelligence (AI) capabilities that can surface recommendations in real time based on company goals, like sustainability and customer service. I encourage readers to use this report, sponsored by Microsoft, as an opportunity to embrace agility, sustainability, and connectivity in their supply chains today.

Learn more about Microsoft Supply Chain Platform at aka.ms/supplychainplatform.

Ray Smith

Vice President,
Supply Chain Management

Microsoft

A Resilient Supply Chain Built for Competitive Advantage

In an era defined by disruption, organizations must be able to respond quickly to changing business needs and customer demands. In the past few years alone, a trifecta of events—the pandemic, political turmoil, and natural disasters—have wreaked havoc on the supply and demand equation, challenging organizations to rethink their supply chains so that they might build the visibility and flexibility needed to become more resilient.

Ninety-four percent of the 189 respondents surveyed by Harvard Business Review Analytic Services in October 2022 say supply chain operations are a higher priority for organizations today than they were three years ago. What's more, nearly all (97%) respondents strongly or somewhat agree that having a resilient supply chain positively impacts a company's bottom line.

But while building a resilient supply chain has long been a priority for organizations, Daniel Stanton, author of *Supply Chain Management for Dummies*, says today's corporate climate calls for a new "vision of resilience that's not just about building a wall around your organization but positioning your organization so that it can create and contribute value no matter how much the world changes around you. That's really key."

Yet, for many organizations, embodying a value-driven definition of resilience requires overcoming significant challenges, from technological issues to an absence of qualified talent. For instance, while 90% of respondents believe a modern and fully integrated digital infrastructure supporting the supply chain is critical to business success in their industry, many organizations continue to rely on bloated legacy systems and a one-off approach to supply chain operations.

Achieving resiliency requires better supply chain planning, which itself depends on data-driven insights. Data platforms with artificial intelligence

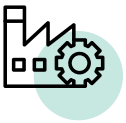
HIGHLIGHTS

97% of survey respondents agree that having a **resilient supply chain** positively impacts a company's bottom line.

90% believe having a **modern and fully integrated digital infrastructure** supporting the supply chain is critical to business success in their industry.

53% feel their supply chain isn't **flexible** enough to adapt quickly to market demands.

Due to rounding, some figures in this report may not add up to 100%.



"Supply chain is hard enough in the best of times. You add a war, an interest rate increase, the end of Covid—all of these variables that are exogenous to your forecasting algorithms—and you end up with a big supply chain mess," says David Glick, chief technology officer at Flexe Inc.

(AI) capabilities that collect and harmonize data from various systems and devices need an integrated, modern IT infrastructure. So, a complex and fragmented IT environment can hamper the real-time decision making required to anticipate disruptions—whether it's a natural disaster or a geopolitical event—and solve problems proactively.

The reality is "you're not going to solve supply chain network problems with legacy systems," says Jim Tompkins, chairman of Tompkins Ventures and Tompkins Leadership, a Raleigh, N.C.-based matchmaker that specializes in designing and implementing end-to-end supply chains and leadership.

Many business leaders understand the urgent need to update and integrate applications and establish best business practices to survive in today's harsh business climate. But they sometimes lack the technology know-how and C-suite support to incorporate these practices to make their supply chains more resilient. This report examines the strategies organizations are adopting to build resilience into their supply chains and the challenges they must overcome to remain competitive.

The Consequences of Disruption

Although supply chain disruptions are not new, worldwide events are having an unprecedented impact on global supply chains.

"Supply chain is hard enough in the best of times," says David Glick, chief technology officer at Flexe Inc., a provider of logistics programs in Seattle. "You add a war, an interest rate increase, the end of Covid—all of these variables that are exogenous to your forecasting algorithms—and you end up with a big supply chain mess."

Transport delays, reduced production at manufacturing plants, and labor shortages are among the business outcomes of unanticipated disruption. When asked what significant challenges organizations are experiencing with their supply chains, two-thirds (66%) of survey respondents say their supply chain is still recovering from recent disruption. Complicating matters is that 53% of respondents fear their supply chain isn't flexible enough to adapt quickly to fluctuating market demands.

"Prior to 2020, our world assumed certainty," says Tompkins of Tompkins Ventures and Tompkins Leadership. "Today, we are in known uncertainty. We've totally switched directions with respect to our ability to anticipate supply, demand, and costs."

From Poor Visibility to Scarce Talent

In today's digital world, data is the lifeblood of business—the information that allows organizations to adapt their products and services to cater to customer preferences, predict equipment failures, target emerging markets, and innovate in product design. Yet the third-most common factor hampering supply chain operations is technology/data issues, cited by 37% of respondents, outpacing such things as poor collaboration between internal supply chain teams and external partners (31%) and difficulty finding talent with supply chain skills and expertise (30%).

Part of the problem is an inability to access data in a timely and efficient manner in order to facilitate fast decision making. Indeed, 65% of respondents cite lack of access to real-time supply chain data as a technology obstacle to their supply chain operations, closely followed by not enough data visibility (54%).

Data visibility is only likely to worsen as supply chain processes and partnerships become increasingly interconnected and complex. Organizations need visibility into all operations and the data they generate across the supply chain ecosystem to monitor the flow of materials, track consumer usage patterns, meet regulatory compliance standards, and gauge overall performance. Without these data-driven insights, supply chain planning and other critical steps in achieving resiliency can fall by the wayside.

Outdated IT infrastructure is also hampering efforts to build a more resilient and flexible supply chain. The pandemic significantly accelerated the pace of digital transformation for many industries, turbocharging the adoption of digital technologies such as AI, machine learning, internet-of-things devices, cloud computing, and blockchain. But deriving value from these tools requires an integrated, modern IT infrastructure that can gather and synthesize data from disparate systems and devices.

Yet, according to survey respondents, technology-related challenges persist, including digital applications that don't

communicate with each other well (47%), too many data silos (45%), and too many legacy systems (44%). These can result in an IT environment that is unfavorable for building resilience.

In fact, Flexe's Glick says years of purchasing single-purpose solutions from a wide variety of vendors have created "a huge mess" for organizations eager to gain greater visibility into their supply chain. Complicating matters, he adds, is the fact that "many of these enterprise systems were built in the pre-Amazon days, when there was no direct to consumer," so they're limited in their ability to track packages "at a single-unit level." Many of these systems have since been "adapted to support shipping to customers, but not very well," says Glick.

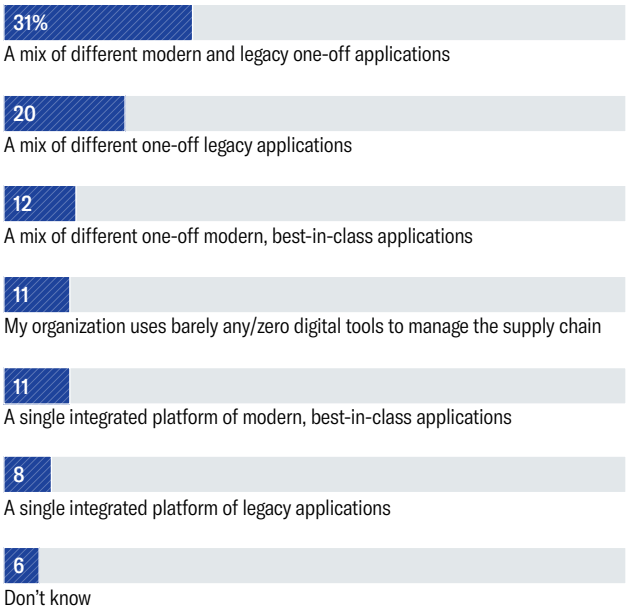
As it stands, a large share of survey respondents currently relies on a slew of individual applications instead of a single, integrated platform to manage their supply chain; 63% of respondents rely on a mix of different one-off applications. **FIGURE 1** And when it comes to how current their tools are, the majority are relying either partly or entirely on old applications; 59% rely either completely on a set of outdated tools or partly on outdated tools. Worse yet, 11% use barely any tools or no tools at all to manage the supply chain. This finding leaves only 11% who have a modern, integrated digital solution for their supply chain.

FIGURE 1

A Hodgepodge of Systems Dominates

Supply chain management primarily relies on a mix of one-off apps.

Which of the following best describes the digital infrastructure your organization currently uses to manage its supply chain?



Source: Harvard Business Review Analytic Services survey, October 2022

"Today, we are in known uncertainty. We've totally switched directions with respect to our ability to anticipate supply, demand, and costs," says Jim Tompkins, chairman of Tompkins Ventures and Tompkins Leadership.

Part of the problem with the supply chain landscape, says author Stanton, is that yesteryear's solutions were primarily built to serve a single purpose, such as warehouse management, inventory tracking, or supply chain optimization. "Each of these functions has its own specialized system that doesn't talk to the others," he says. Because of such specialization, these systems are unable to "share or exchange information" such as inventory levels or warehouse capacity.

But legacy systems and data silos aren't the only obstacles preventing organizations from gaining greater supply chain resiliency and flexibility. People also can stand in the way of supply chain progress. For instance, among the supply chain operations obstacles cited by respondents, 31% report poor collaboration between internal supply chain teams and external partners and 30% report difficulty finding talent with supply chain skills and expertise. **FIGURE 2**

Remedies for Resilience

While there are multiple obstacles preventing organizations from improving their supply chain operations, the good news is many of the people surveyed are clear on the steps they need to take to respond quickly to operational disruptions and continue to create value regardless of changing circumstances. Many are already aware of the technologies, talent, and competencies required to take supply chain resilience to the next level.

Among the supply chain capabilities cited as "extremely valuable" by 50% or more of survey respondents are a clear decision-making framework/strategy to address risks (58%); strategic sourcing capabilities (55%); talent with supply chain expertise and experience (51%); and strong customer-facing capabilities, such as tracking and shipping (50%).

FIGURE 2

Disruptions Still Plague Supply Chain Operations

Disruption and a lack of supply chain flexibility are leading challenges organizations face.

Source: Harvard Business Review Analytic Services survey, October 2022

These days, customers, investors, and governments are also increasing pressure on organizations to demonstrate greater environmental stewardship. By improving strategic sourcing practices, such as repurposing raw materials that might otherwise be scrapped, organizations can reduce waste while meeting the demand for supply chain sustainability.

"Anything an organization can do to reduce waste improves sustainability," says Lisa Anderson, founder of LMA Consulting, a supply chain consultancy based in Claremont, California.

However, there remains plenty of room for improvement in each of the aforementioned areas. For instance, only 23% of respondents say they're very or extremely satisfied with their organization's execution of a clear decision-making framework to address risks, despite it being a top-cited capability. Other categories of capabilities aren't faring much better; strategic sourcing is 31 points lower (24% versus 55%), talent is 25 points lower (27% versus 51%), and customer-facing capabilities is 22 points lower (28% versus 50%). **FIGURE 3**

To bridge these critical supply chain capability gaps, organizations may want to begin by reimagining their digital infrastructure. Single-purpose solutions can lead to data silos and network issues, preventing supply chain practitioners from making fast and informed decisions as market conditions and customer preferences rapidly evolve.

"When you cobble together solutions, you're building all sorts of latency into your supply chain systems," says Tompkins. Worse yet, he adds, a poorly integrated supply chain infrastructure can compromise much-needed visibility into areas such as procurement and inventory. For example, Tompkins says, retailers without "a clue of what's going on" in their supply chain often end up purchasing too much inventory, which they must later sell at a reduced price. "So if you get a good deal while Christmas shopping, it's because a retailer has a lousy supply chain," he says.

Given these hindrances, it's unsurprising that 82% of survey respondents do not agree that the digital tools their organization uses to manage their supply chain work well and do not need improving, with 67% blatantly disagreeing with this statement.

Executives are taking note of these low levels of digital satisfaction; 76% of respondents say their organizations are currently implementing or are in the planning stages of implementing improvements to the digital infrastructure of their supply chain. At the same time, 71% say recent disruptions to the supply chain have caused their organization to rethink the supply chain technology they use.

But rethinking supply chain technology and overhauling it are two different things. Replacing legacy systems with modern applications or retrofitting existing solutions with sensors and other advanced capabilities can be time-consuming and costly endeavors.

"Companies are concerned about investing, because some of these technologies and implementations are not necessarily for the faint of heart," says LMA Consulting's Anderson. "They're concerned, but they shouldn't be. The only way they'll be successful going forward is to utilize technology."

Making Customers Count

For decades, the supply chain has focused on how goods are made, delivered, and sold. But today's customers are

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Lisa Anderson, founder of LMA Consulting

In today's global economy, organizations are more interconnected than ever, and many of them rely on shared resources, trade agreements, and seamless data flows to ensure that the right products reach the right customers. By working together, disparate parties can redesign their supply chain processes to mitigate risks, pool resources to reduce waste and redundancies, and share information for more accurate forecasting and capacity planning.

FIGURE 3

Performance Lags in Key Supply Chain Areas

A strategic framework, sourcing capabilities, and talent are areas requiring work.

In order to have a strong supply chain, how valuable is it for an organization to have the following areas firmly established? How satisfied are you with your organization's performance in each of these areas today?

*Difference based on unrounded percentages

Source: Harvard Business Review Analytic Services survey, October 2022

becoming increasingly demanding, insisting that they receive personalized communications, have access to up-to-the-minute delivery details, and obtain goods through their preferred channels. At the same time, supply chain disruptions have put increasing pressure on organizations to adopt strategies for predicting customer demands, accelerating delivery, and providing customers with real-time tracking.

Although that's a tall order, supply chain solutions can help organizations meet these demands by providing greater visibility across the complete lifecycle of customer engagement. Accessing information such as the cause of delays, customer feedback, and sourcing capabilities can help organizations across the supply chain continuum improve product design, enhance delivery, and ultimately improve customer experience for significant business gains.

"Providing superior customer service during these times can allow organizations to grow their business and increase profitability," says Anderson.

Another strategy for improving supply chain resilience is bolstering third-party collaboration. In today's global economy, organizations are more interconnected than ever, and many of them rely on shared resources, trade agreements, and seamless data flows to ensure that the right products reach the right customers. By working together, disparate parties can redesign their supply chain processes to mitigate risks, pool resources to reduce waste and redundancies, and share information for more accurate forecasting and capacity planning.

Anderson offers the example of a manufacturer collaborating with a supplier to make a product more compact so that it occupies less space in warehouses, in delivery vehicles, and on store shelves. By joining forces to change a product's formulation, making it easier to compress, she says, third-party collaborators can achieve mutual benefits, including "substantial savings in freight, storage, and material costs."

But while 61% of survey respondents believe their organization should be increasing collaboration with external supply chain partners to make their supply chain more

resilient, only 39% of respondents are actually doing so or plan to within the next 12 months.

One way to foster greater collaboration among third parties is to build trust. "The step beyond supply chain visibility is transparency," says Stanton. "While visibility is seeing what's important to your organization, transparency is sharing information that would be useful for your supply chain partners. The irony is everybody wants visibility; nobody wants to provide transparency. The trust is the hard part."

The Value of Data

Now more than ever, organizations must monitor supply chain performance to identify inefficiencies before they can wreak havoc on operations. The right metrics can flag potential bottlenecks, as well as help organizations capitalize on supply chain strengths and establish goals that will bring about peak performance. In fact, use cases for data analytics and metrics are expanding beyond the supply chain itself to include designing products with the specific goal of minimizing supply chain costs and waste.

"Organizations have to look at the design of the product," says Anderson. "How will the product perform? Will the product be in a package that the customer will accept? To some degree, you can utilize data analytics to determine these factors," which can lead to "savings in substantial freight costs, storage costs, and material costs and increase sustainability."

More than half (58%) of survey respondents see the value in improving supply chain data analytics capabilities/metrics when it comes to making a supply chain more resilient, reporting that it's something their organization should be doing.

Survey respondents already rely on a wide array of metrics to measure supply chain effectiveness, including on-time shipping/delivery time (62%), closely followed by cost savings (59%), inventory turnover (57%), and supply chain cycle time (43%).

However, these metrics are likely to evolve, as 40% of respondents say they are currently making improvements to their supply chain data analytics/metrics or plan to in the next 12 months (making it the most popular change out of the 10 listed options). One possible improvement, says Stanton, could be the adoption of metrics that gauge an organization's ability to get back up and running in the wake of disruption. He points to time to recovery, or TTR, a metric that measures the time it takes for a supply chain to fully recover after a disruption. "That's an important measure of resilience," says Stanton. For example, he says, organizations need to know that if a factory is shut down due to a hurricane or malfunctioning machinery, another factory has the capabilities and human capital to take over without a lengthy delay.

"While visibility is seeing what's important to your organization, transparency is sharing information that would be useful for your supply chain partners. The irony is everybody wants visibility; nobody wants to provide transparency. The trust is the hard part," says Daniel Stanton, author of *Supply Chain Management for Dummies*.

But anticipating disruption is a far more effective strategy for achieving supply chain resilience than measuring the amount of time it takes to bounce back from disaster. More than half (54%) of survey respondents believe their organization should be increasing use of real-time planning capabilities to better predict changing demand/disruptions, though just 29% are actually increasing use of real-time planning capabilities or plan to in the next 12 months.

Building real-time planning capabilities into a supply chain can ensure organizations have the right products to meet targets, the inventory to satisfy demands, and the human capital to deliver goods and services in a timely and efficient manner. Yet legacy systems aren't equipped to support real-time planning and data analytics activities. Outdated and fragmented, they are often incapable of providing supply chain practitioners with the necessary data for fast decision making.

"There's a lot of modern functionality that organizations with legacy systems are missing out on," says Anderson, noting the absence of capabilities such as "demand planning, material planning, warehouse management, and transportation management" in many age-old systems. "These advanced system functionalities allow companies to better manage cash flow, which is clearly becoming a priority again," she says. "Not that cash flow shouldn't always be a priority, but it'll become more important as a recession becomes more likely."

While approaches to modernization vary, Tompkins points to cloud computing as a valuable supply chain technology that can provide disparate parties, from manufacturers to distributors, with "a common view of the end-to-end supply chain." What's more, he says artificial intelligence

"We need to quit putting the supply chain under the CFO or under the COO. It's a profession unto itself," says Tompkins of Tompkins Ventures and Tompkins Leadership.

and machine learning can also help "create an autonomous supply chain" that handles tasks such as testing what-if scenarios and charting the best course of action "without human intervention."

Conclusion

These days, a supply chain must have the built-in visibility and flexibility for organizations to survive a highly competitive landscape and heightened customer demands. But fully realizing a supply chain's competitive offerings will require organizations to modernize their digital infrastructure with integrated technology tools and data-driven practices.

Organizations will also have to go beyond just updating their technology to make their supply chains more resilient. They have to make resiliency and the effort around it parts of their corporate culture. Seventy-six percent of respondents say increasing the resiliency of the supply chain is top of mind for their organization's leadership, and 91% of respondents strongly or somewhat agree that a corporate culture that recognizes the value of modernizing supply chain operations is critical to success.

"There's a major shift in leadership decision making and priorities that organizations should be capitalizing on now," says Stanton, who suggests that one way to intensify leadership's focus on supply chain resilience is by creating a robust supply chain function.

Another way to put supply chain resiliency on senior management's agenda is to create a dedicated supply chain officer position that reports directly to the CEO, Tompkins says. "We need to quit putting the supply chain under the CFO or under the COO," he says. "It's a profession unto itself." After all, he adds, "a CEO's success is based on having a very strong chief supply chain officer."

METHODOLOGY AND PARTICIPANT PROFILE

Harvard Business Review Analytic Services surveyed 189 members of the Harvard Business Review audience via an online survey fielded in October 2022. Respondents qualified to complete the survey if their organization operated a supply chain and if they were familiar with those operations.

Size of Organization

30% 10,000 or more employees

29% 1,000–9,999 employees

8% 500–999 employees

25% 100–499 employees

8% 50–99 employees

0% Fewer than 50 employees

Seniority

32% Executive management/ board members

38% Senior management

20% Middle management

10% Other grades

Key Industry Sectors

36% Manufacturing

8% Technology

All other sectors less than 8% each

Job Function

26% General/executive management

14% Logistics/ purchasing/ procurement

10% Sales/business development/ customer service

8% Operations/ production/ manufacturing

All other functions less than 8% each

Regions

43% North America

22% Asia Pacific

19% Europe

8% Latin America

7% Middle East/Africa

1% Other

Figures may not add up to 100% due to rounding.

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