

Supply chain resiliency: Modern technology helps direct smart supply chain orchestration

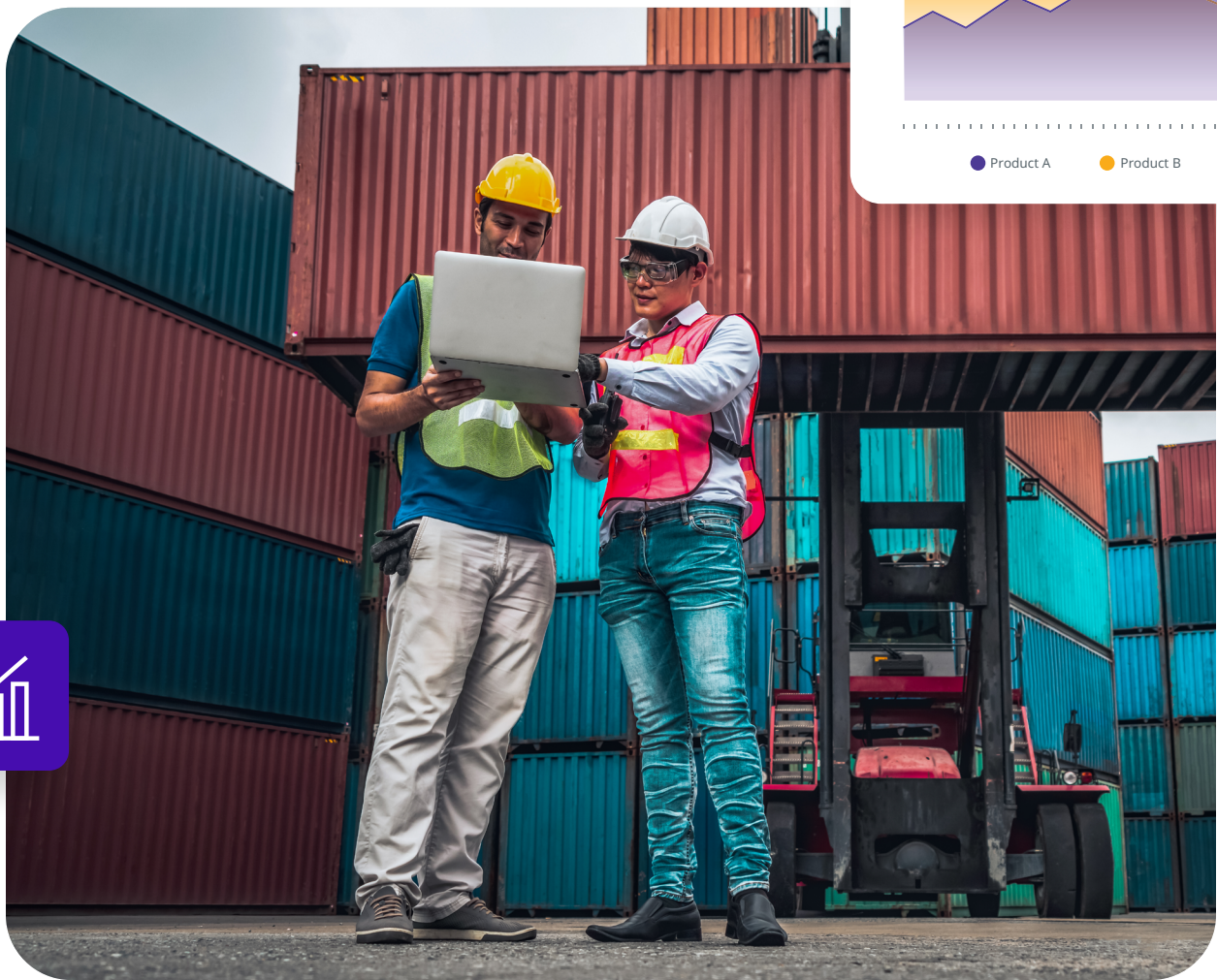
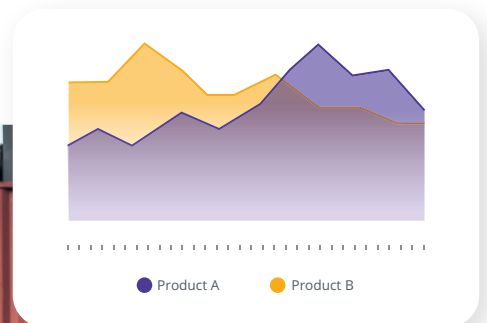


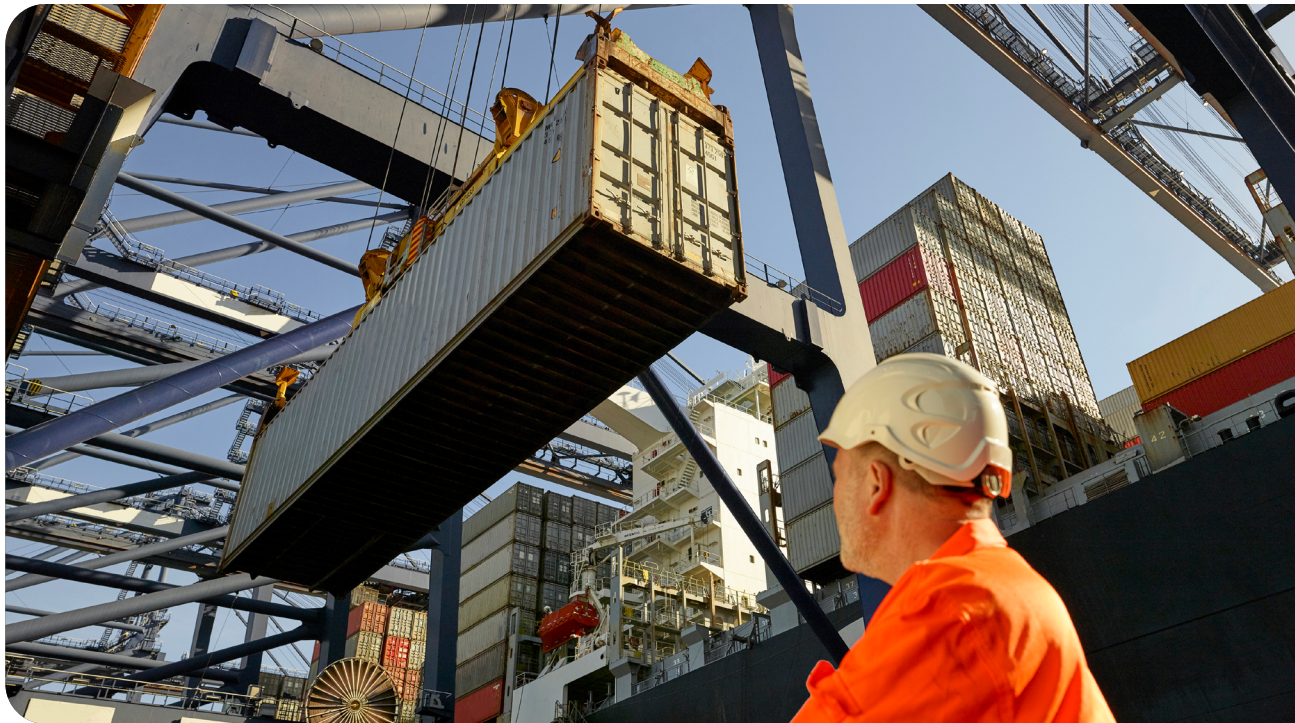
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Supply chain resiliency: Modern technology helps direct smart supply chain orchestration

Coping with the jarring discord of supply chain disruption is not easy. For weary supply chain professionals, news of shipment delays can be like hearing fingernails on a chalkboard. Today, supply pipelines are ultra-vulnerable to interruptions, from political conflicts in the Red Sea to the Panama Canal's water levels delaying traffic. Increasing the budget for rush fees is hardly a sustainable option. Fortunately, modern supply chain technology can help by providing visibility and supporting the strategic orchestration of resources and routes.

This paper explores supply chain resiliency and ways technology can help organizations overcome current pipeline challenges, turn visibility into agility, and use data insights to discern reliable patterns. Learn how to keep your business synchronized and the supply chain in step with customer expectations with our tips for taking action.





Shaking up supply chain standards

Elvis did it. Then, the Beatles. In the music world, new voices occasionally burst onto the world stage, pioneering a new sound, and throwing old-timers into consternation. The unexpected can be exciting and frightening all at once.

Recent changes to the supply chain industry are shaking global commerce. Many organizations are still catching their post-pandemic breath. Collectively, everyone in the supply chain industry has learned the downside of having sole suppliers and just-in-time inventory.

The US and EU are investing heavily in infrastructure projects to help rebuild their respective economies.¹ Organizations are still trying to learn the new syncopated rhythm of supply and demand, shortages and overages, port bottlenecks, slow barges, and sky-soaring fuel prices. The available options can be confusing with a steep learning curve. Trial and error is an unacceptable strategy when life-supporting supplies are at stake.

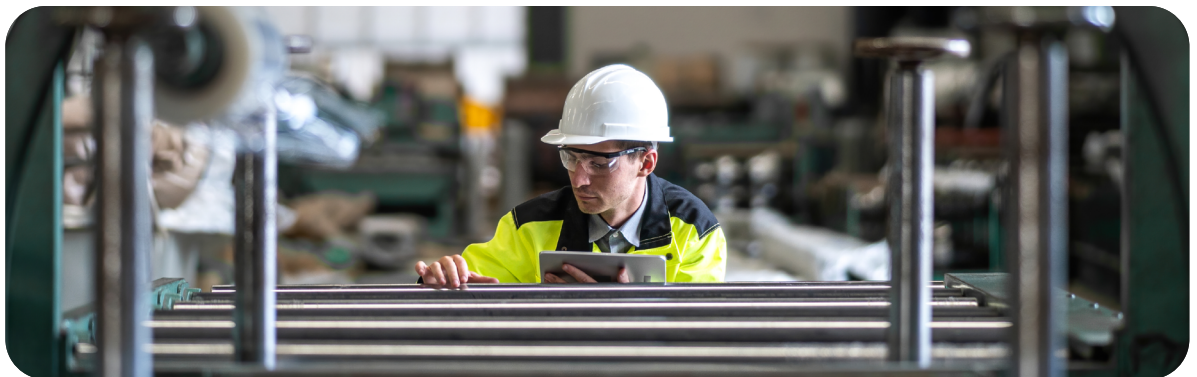


Someone keeps changing the choreography

Anyone who has watched a marching band perform halftime drills knows that one stumble of one off-beat tuba player can throw off the entire flank. Practice may lead to precision but continuous change makes it difficult to get in a groove. This is certainly true in today's supply chain industry, where rapid-fire disruption seems to be the new norm.

Just as one unreliable supplier may be replaced, the safety of a shipping lane may come into question. Organizations may face continuous disruptions such as dockworkers' strikes or new regulations on emissions. Tariffs, trade alliances, and embargoes may also come into play, among other challenges.

Disruption is an annoying song stuck on repeat. Economists warn of micro disruptions turning into macro-level effects.² The background noise can threaten leadership confidence and sideline business goals as nervous organization leaders worry over what supply chain challenge is lurking around the corner. Redundancy and over-stocking "just-in-case" inventory levels can't be the only solutions as these strategies eat into profitability and take up warehouse space.





Improvising and stretching

Future-ready organizations that rely on synchronized delivery of products, materials, parts, and components are turning to supply chain technology to help orchestrate suppliers, distribution hubs, transportation routes, and related financial implications. Visibility makes all the difference. A complete platform of integrated solutions provides many insights and practical tools.

As volatility seems here to stay, business leaders have been improvising and stretching their problem-solving skills beyond the typical carriers and combinations of water, air, ground, and rail. If necessity is the mother of invention, then supply chain challenges are the mother of Plan B.



Put multiple tools to work

“Failure is not an option,” was famously said by NASA Chief Flight Director Gene Kranz about the distressed fate of the Apollo 13 Moon landing mission. The same is true of many of today’s supply chain struggles.

World commerce may come to a standstill without a stable supply chain flow. Some goods may smack of frivolity, but others are critical. While children may survive without Peppa Pig pajamas, pork production can’t survive without feed for their livestock. Without lithium for batteries, electric cars don’t run. Diabetic patients need insulin. Supply chain disruption may even weaken the national defense system.





No one said it would be easy

Some think the [global supply chain pressure index](#), which measures supply chain stressors, indicates that problems have peaked. Others are less optimistic. Some challenges persist without quick fixes.

Conflicts between nations spill into shipping lanes. Violence is an everyday reality in some regions, with cargo hijacking incidents spiking in 2023³ and Somali pirates still interrupting numerous cargo freighters.⁴

The issues further escalate when scarce minerals, such as lithium used in batteries, are only found in a few regions. Western nations and allies have identified 31 critical minerals⁵ where more than half of global production relied on a single country. Protectionism and conflict are escalating over critical resources such as those essential in reducing carbon emissions.⁶

In the US, the Bipartisan Infrastructure Law, the CHIPS & Science Act, and the Inflation Reduction Act⁷ were passed and signed into law to address key supply chain vulnerabilities. Public-private partnerships are getting into gear to spur investments in the production of key raw materials. As of November 2023, the amount of private sector investment in industries at more than \$614 billion US,⁸ targeting supply vulnerabilities, including semiconductors⁹ and electric vehicle batteries.¹⁰



Dressed to sell

For retail and fashion industries, the challenging issues stem from human rights violations: Textile plants with child labor, forced labor, hazardous working conditions, and unfair wages. Ethical sourcing of suppliers and the suppliers' suppliers has become a focus of consumers demanding accountability. If a supplier is flagged as a chronic violator of forced labor legislation,¹¹ the conscientious supply chain professional will shift orders.

But how many tiers deep does the procurement team need to investigate and how is this information gathered and reported? Legislation, and consumer outcry, will eventually define best practices. Now, supply chain orchestration is more than just economics and the movement of goods. It has an entrenched and growing ethical component that is much harder to define and measure by KPIs.

This complexity sets the stage and calls for supply chain innovations. Basic supply chain procurement and planning solutions are no longer enough. Without advanced technology, like an end-to-end supply chain platform with a control tower, the current high-risk challenges can be overwhelming. With modern technology in place, elements snap into place and predictable rhythms can be achieved again.

3 Ryan Witkowski, "Industry insider says cargo theft has reached 'unprecedented levels,'" Land Line (<https://landline.media/>), November 13, 2023.

4 Lara Seligman, "Pentagon: Suspected Somali pirates behind cargo ship attack in the Middle East," Politico (<https://www.politico.com/>), November 27, 2023.

5 The White House, "Hearing Wrap Up: 'Reliance on Non-Allied Foreign Sources for Critical Minerals is Neither Sustainable Nor Secure,'" December 1, 2023, press release.

6 Kyle Hiebert, "The Fight Over Critical Minerals Has Just Begun," Centre for International Governance Innovation (<https://www.cigionline.org/>), November 27, 2023.

7 The White House, "FACT SHEET: Biden-Harris Administration Celebrates Historic Progress in Rebuilding America Ahead of Two-Year Anniversary of Bipartisan Infrastructure Law," November 9, 2023, press release.

8 The White House, "Issue Brief: Supply Chain Resilience".

9 Stephen Nellis, "ON Semiconductor considers \$2 billion investment in electric vehicle chip production," Reuters (<https://www.reuters.com/>), May 17, 2023.

10 Deborah Scherer, "LG and Honda's New Ohio EV Battery Plant in Ohio," Columbus Region (<https://columbusregion.com/>), April 24, 2023.

11 The Department of Homeland Security, Forced Labor Enforcement Task Force.



Cue the overture

Capgemini reports that 66% of supply chain professionals feel “strategies have to significantly change” to adapt to today’s pressures.¹² Another significant supply chain interruption, like the COVID-19 pandemic, could be disastrous.

Resiliency is the answer. The White House defines resilience as “the ability of supply chains to recover quickly from unexpected events. Resilience can be achieved through better data on the structure of supply chains, investments in redundancy, greater ability to substitute between inputs, and improved communication across the supply chain.”¹³



It takes a network to supply a village

Supply chain network technology makes real-time transportation planning and routing possible, putting the optimal combination of suppliers, routes, and destinations in motion. Future-focused organizations invest in new technology as digitalization is the first baseline requirement. Then, supply chain platforms come next: ASCM projects that the global supply chain management application market will reach almost \$31 billion US by 2026.¹⁴

Multi-enterprise collaboration network solutions (MCNs) are the answer for many. Gartner defines MCNs as “[solutions] that support a community of trading partners of any tier and type that need to coordinate and execute on business processes extending across multiple enterprises.”¹⁵

“We’ve gone beyond one single issue, all of these challenges combine to create a complex and fast-moving environment ... Diversifying your supply chain is now a business imperative if you want to de-risk operations,” states a BSI report.¹⁶ The report stresses the importance of a broad view with an emphasis on foundations. “If organizations want to understand the challenge, they need to start by knowing themselves. This comes in the form of investing in data analysis, IoT, AI, cloud computing, information security and predictive analysis which build a more layered approach ... to prevent risk and put organizations on the front foot.”

¹² Capgemini, FAST FORWARD: Rethinking supply chain resilience for a post-COVID-19 world, n.d., p. 5.

¹³ The White House, “Issue Brief: Supply Chain Resilience”.

¹⁴ Elizabeth Rennie, “ASCM’s Top 10 Supply Chain Trends in 2024,” ASCM (<https://www.ascm.org/>), June 12, 2023.

¹⁵ Gartner, “Multienterprise Collaboration Networks Reviews and Ratings”.

¹⁶ BSI, Beyond the storm: how organizations can transition from survive to thrive in 2023, January 2023, pp.10–17.



Visibility is foundational

In the past, transportation managers would make phone calls to locate exactly where ships may be and when they were due to dock.

Today, ocean vessels' Automatic Identification System (AIS) satellites,¹⁷ Internet of Things (IoT) connectivity, GPS-tracking sensors embedded in containers, and partnerships with shipping companies make up-to-the-minute tracking across hemispheres possible. A dashboard of continuously updated data points offers insights about where shipments are and if they're on time or meeting previously unforeseen obstacles like bad weather, port complications or hostilities.

Advanced transportation tracking platforms provide visibility to multimodal moves, including rail and drayage movements. They provide ETA calculations supported by AI-driven analytics, carbon emission insights, and demurrage and detention costs.

With access to such information, organizations can better avoid surprise costs, identify port congestion, be forewarned about berthing orders and waiting times at docks, and make proactive changes. Knowledge helps support well-informed, strategic decisions; the relationship between shipment arrival and costs can be analyzed with scrutiny. In some cases, extra expediting fees can be justified or an extended ETA can be absorbed.



A control tower is essential for intelligent sense and response

Supply chain control towers are critical for businesses to navigate supply chain disruptions and make smart decisions about handling unexpected shifts in demand. Control towers provide real-time visibility across the entire supply chain by offering continuous monitoring of inventory levels, order statuses, shipments, and production schedules. This comprehensive oversight helps companies detect disruptions early, allowing them to respond quickly to emerging issues. By integrating data from various sources, control towers enhance decision-making and foster cross-functional alignment on goals, promoting faster coordination and action.

A control tower leverages AI, such as machine learning, to project outcomes. The long-term goal is autonomous response—for now, predictive insights and prescriptive responses are realistic. Control towers can suggest optimal combinations of supply sources and routes. In some cases, decisions can be automated but, in many, humans still need to make the final decisions.



Diversification is key

Greater diversity of suppliers means an organization can turn to alternative providers if a shock disrupts the flow of materials from one source. However, this strategy breaks the long-time habits of procurement and planning teams with deep-seated trust partnerships with single suppliers. Change is hard but essential. The International Monetary Fund estimates that diversification, adding more locations and suppliers for sourcing, can reduce GDP losses from large shocks by more than half for countries in the western hemisphere, including the US.¹⁸

¹⁷ European Space Agency, SATELLITE – AUTOMATIC IDENTIFICATION SYSTEM (SAT-AIS) OVERVIEW.

¹⁸ International Monetary Fund. "Global Trade and Value Chains during the Pandemic," in World Economic Outlook, (USA: International Monetary Fund, 2022).



Closer to the consumer

Deglobalization, reshoring, and friendshoring are sometimes considered as ways to bring supply chains closer to plants and consumers, especially as fuel prices make long-distance shipping costly and tensions heighten among trade partners.¹⁹

North American transportation executives touting nearshoring anticipate that 20% of Asia-originating freight will move to closer proximity markets by 2025, doubling to 40% of freight originations by 2030, Deloitte Insights reports.²⁰ In manufacturing, expectations are similar with 62% of US factories already undertaking reshoring efforts.

Most enterprises realize that completely shutting down global commerce is not realistic and can harm alliances between nations.



Supply management

Digital supplier engagement is another element in an end-to-end supply chain strategy. With the right supply management solutions, organizations can achieve greater visibility and agility, reduce cycle times, and ensure collaboration with suppliers.

A supplier management solution allows seamless collaboration on forecasts and orders, ensuring a consistent supply while enabling quality testing to proactively address potential issues. This solution enhances agility by providing improved visibility into work in progress, automating supplier packing and ASN creation for increased accuracy, and effectively managing supplier profiles, ESG, and compliance programs to drive better overall performance.

¹⁹ Oleg Ruban, "Nearshoring, Friendshoring and Reshoring: Heads Up to Equity Allocators," MSCI (<https://www.msci.com/>), September 13, 2023.

²⁰ Larry Hitchcock et al., "The future of freight: Transforming the movement of goods," Deloitte Insights (https://www2.deloitte.com/uk/en/insights.html?icid=disidenav_insights), November 1, 2022.



Don't forget about the financial supply chain

A holistic supply chain strategy also considers the procure-to-payment processes to provide greater efficiency, enhanced cash flow visibility, and improved supplier relationships. A modern solution will help generate more compliant transactions through document automation and order collaboration. It can also reduce manual processes and can significantly speed up workflows.

Some solutions go a step further and manage the entire financial picture of the supply chain. Supply chain finance solutions improve working capital and overall supply chain liquidity. A multi-bank network platform that combines measuring financial impact with tracking the costs/revenue potential associated with shipments can help organizations make decisions about timing and priorities. Each shipment represents invoices due as well as potential revenue. Modern solutions help achieve a logical balance.



What are you waiting for

Response can take many forms, from changing suppliers to re-routing inventory in current warehouses. The key is understanding the potential problems early, knowing the ramifications and options, accessing facts, and collaborating with partners for answers. This is why a digital platform is important.

Accenture reports that 83% of supply chain professionals say they currently conduct network mapping on a regular basis and 90% regularly perform risk management assessment.²¹ Modeling exercises are slightly less with 77% of supply chain professionals performing modeling regularly. This survey data shows that you are in danger of falling behind the market if you are not using modern solutions to monitor your supply chain risks and vulnerabilities.

Ten steps toward a more resilient supply chain

To achieve resilience, you need a combination of strategy, tools, and action. Here are the necessary steps to help you move forward in the journey for a more resilient supply chain.



1. Connectivity and visibility

Leverage a digital foundation in the cloud, enabled with AI-driven analytics and one data thread connecting all functions, from customer accounts to inventory, order shipments, and backend financials. Real-time visibility and accessibility from any location—any branch, warehouse, or third-party location that may temporarily house components—is essential. End silos by sharing data.



2. Reliable partners

Now more than ever, organizations need a network of dependable partners that support visibility, collaboration, and ESG principles. Getting blind-sided by discovering a partner has numerous forced labor violations could be disastrous—and costly. Ask the tough questions upfront and look beyond tiers one and two.



3. Diversified resources

Adding suppliers to your network is important. But don't just add clones of the current suppliers located in the same vicinity and susceptible to the same weather and unrest. Resources should be in strategic locations, aligned to different ports, with an emphasis on geopolitical alliances for added security. Even consider different transportation options, expanding ocean, road, and rail options. If truck drivers strike, you'll need to turn to rail for last mile completion of delivery. Think multi-modal.



4. Agile mindset

Your organization must embrace change and stay open-minded to new solutions. It's not enough to detect vulnerabilities and anticipate complications. Organizations must empower quick decision-making, problem-solving, and funding investments in modern tools. Greenlight full-speed response.



5. Data-driven decision-making

Reliable embedded analytics are vital to provide answers even before you could ask the questions. Data insights should be accessible with a click. More importantly, organizations need to train in-the-trench personnel to rely on data insights to make proactive decisions. Empower the people.



6. Supplier health

As decisions are made about last-minute order cancellations, negotiating hardline contracts, penalizing not-at-fault delays, or stalling payments, it is important to remember that suppliers have viability issues, too. Look to leverage supply chain financing to provide needed capital to operate efficiently and sustainably and ensure the uninterrupted availability of materials and products. Being a ruthless business partner can leave you with fewer resources available. Build up rather than tear down.



7. Strategic reporting

Keep the C-suite informed of successes and challenges. Supply chain resilience is an executive-level priority for many organizations. But the decision-makers, especially the ones in control of budgets, must be well-informed of the big picture, including the ROI of technology investments and where more emphasis may be needed. Communicate often, citing data, not anecdotes.

**8. Response to stockouts**

If you can predict inventory shortages, you have multiple options. With a network-wide view, you can transfer between warehouses, expedite, or re-direct incoming supply to accommodate needs.

**9. Customer experience**

How long is too long for a customer to wait for order delivery? Supply chain resilience is ultimately about supporting efficient customer delivery and protecting operational cash flow. Deciding the appropriate priorities in the speed of delivery versus cost analysis is complex. Customers are important.

**10. Margins and cash flow**

A well-managed supply chain can contribute to a healthy bottom line that can withstand the ups and downs of global commerce and disruptions. Visibility into costs and revenue helps managers adjust strategies as needed. The right answers sometimes change as global conditions and company growth cycles evolve. See the big picture.



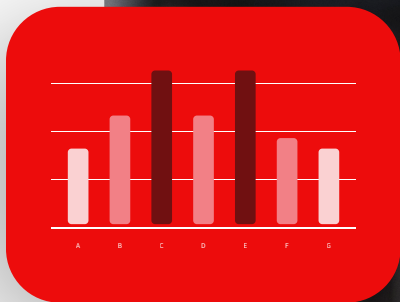
Final takeaway

Investing in resiliency is a sound strategic move. It reflects responsibility to stakeholders, including customers, and broader issues like carbon emissions. Due to resiliency, an enterprise can grow despite current volatility and any unforeseen shock waves the future may bring. By establishing a diversified supply chain network with AI-driven insights, like Infor Nexus™, organizations can be proactive, agile, and strategic in their response.

AI can support modeling and what-if explorations of bottom-line profitability algorithms and alliances. Supply chain platforms and networks can take these insights further, connecting to whole-enterprise efficiency gains, an upstream view of supplier readiness, and intelligent uses of resources and capital. The modern smart supply chain network provides a valuable competitive differentiator, helping the organization stand out in a sea of commoditized alikeness.

The well-orchestrated supply chain can outperform others and stay confidently synchronized and aligned with customer needs and enterprise goals.





About Infor Nexus

Infor Nexus is the leading end-to-end global supply chain platform, helping companies achieve unmatched visibility for over 25 years. Infor Nexus connects a network of over 90,000 brands, retailers, manufacturers, suppliers, logistics providers, and banks on a single-instance network platform to seamlessly orchestrate global supply chain processes from source to delivery and payment. Companies can streamline their operations, eliminating inefficiencies and waste, gaining data-driven insights, and optimizing the flow of capital for improved agility, resilience and sustainability.

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