ANALYST BRIEF
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Supply chain application purchase decisions are based not only on meeting current internal business needs and external customers' expectations but also on how the supply chain must evolve to meet future needs and expectations.

AI-Powered Cloud ERP for Supply Chain

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Introduction

The current business environment is a challenge for most companies, with various disruptions threatening to affect both revenue and profitability. Although the global COVID-19 pandemic has mostly receded into history, macroeconomics (e.g., inflationary pressures, fears of a global recession, tariffs, the Middle East War, and increasing energy costs) remain a major concern. In IDC's April 2025 *Global Supply Chain Survey,* over 75% of companies identified macroeconomic issues, either economic uncertainty generally or tariffs specifically, as their top concern over the next five years. Operations leaders (e.g., chief operating officers [COOs], chief supply chain officers [CSCOs]) rated them even higher at 82%.

Yet it is not solely external disruptions that affect company operations; there are internal challenges as well. Companies cite IT systems dominated by legacy/on-premises applications that are neither flexible nor scalable as a major impact on responsiveness (see Figure 1). In addition, companies increasingly have hybrid IT systems with a mix across implementation types (e.g., cloud, on premises) and disparate application vendors that add latency and agility.

AT A GLANCE

KEY STATS

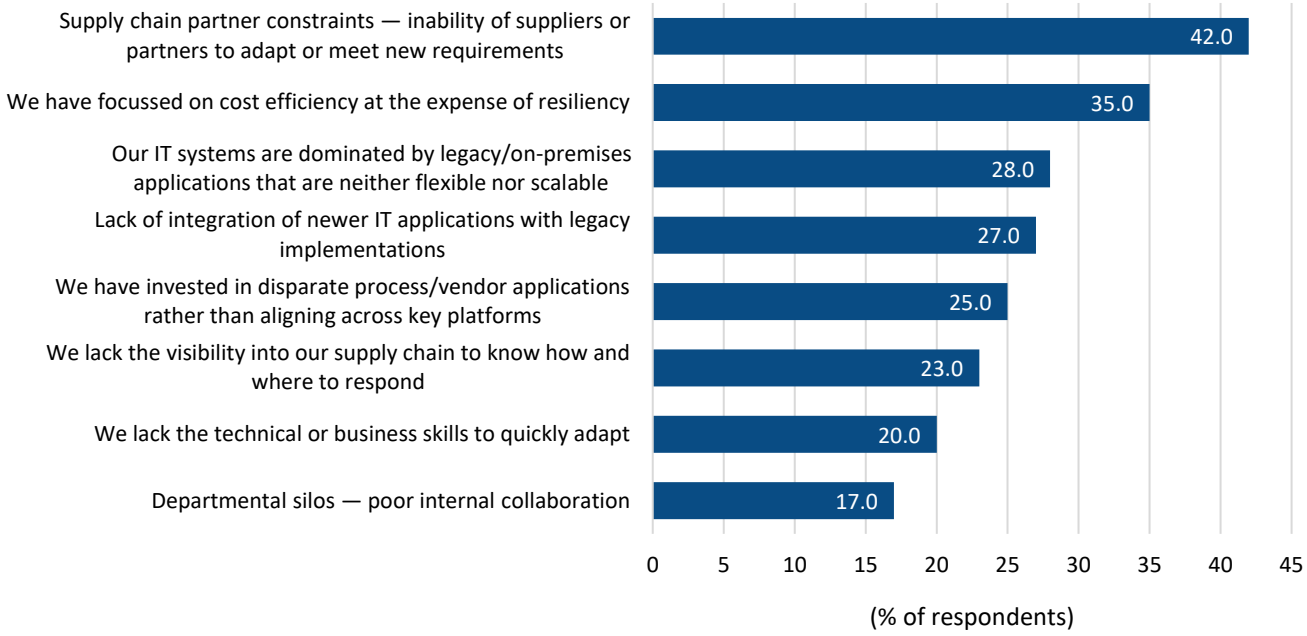
- 82% of operations leaders cite macroeconomic conditions as their top concern over the next five years.
- 60% of supply chains say the ability to respond to disruptions is impeded by legacy "drag."
- 35% of companies saw over 10% improvement in innovation time to market, and 37% saw similar magnitudes of improvement in overall people productivity from AI-powered applications.

WHAT'S IMPORTANT

In an environment where decisions need to be made in hours or even minutes, operating with older, poorly integrated tools can lead to uncompetitive performance.

FIGURE 1: ***Limitations to effective supply chain response***

Q ***What has prevented your supply chain from responding more effectively to market changes/disruptions?***



n = 1,848

Source: IDC's Global Supply Chain Survey, April 2025

Disruptions rarely affect one "domain" in the supply chain, whether planning, warehousing, logistics, or even direct procurement, so tools that focus on a single domain will not optimize response. The ability to combine the power of AI, data, and applications on one platform connects supply chain processes end to end and increasingly differentiates supply chain performance. It is not hard to imagine a future where supply chain management is defined within the intersection of applications, data, and AI, each leveraging the other two and driving the business forward. Specifically, organizations tell IDC that AI is the most important technology for their supply chain, both in the short term and the long term. Traditional AI/machine learning remains important for demand planning and algorithmically driven processes, and generative AI (GenAI) is increasingly used to manage supply chain skills training and regulatory compliance, while agentic AI is emerging as a mechanism to drive productivity. In IDC's April 2025 *Global Supply Chain Survey,* over 37% of companies have seen productivity improvements in excess of 10% by applying AI to business processes and worker capabilities.

Over the next three to four years, advancements in generative and agentic AI will drive applications to a point where the majority of offerings will be significantly enhanced and augmented by agent-driven capabilities. Agentic AI will require visibility into the end-to-end workflow and its associated data to be most effective at enabling board optimization across the supply chain.

Think of each agent as a specialized AI service constantly communicating and learning in real time. These agents work as a coordinated network, each taking cues from the others. A sudden shift in demand might trigger the supply chain planning agent to reallocate factory resources, the finance agent to update projections, and the workforce agent to recommend additional staffing. All of this happens simultaneously, connected by the unified data and solid applications previously discussed.

The business impact is felt widely and across multiple functions — whether it is the chief financial officer looking for ways to balance suitable growth with business profitability, the chief procurement officer looking to improve supplier performance and manage procurement risk, or the chief operating officer/chief supply chain officer looking to identify disruptions and respond quickly to minimize impact or to seize on new business opportunities. No function is unaffected by operational disruptions, and all will benefit from a collective set of tools that both align and prioritize speed and agility.

Supply chain priorities

Supply chain application buying behaviors and needs have been gradually evolving for some time. Successive global/regional disruptions continue to reveal persistent "cracks" in the supply chain and accelerate the speed at which change is occurring. Application purchase decisions are based not only on how the supply chain must meet both current internal business needs and external customers' expectations but also on how it must evolve to meet future needs and expectations. The biggest barrier that COOs/CSCOs and their teams face is having the right data (depth and breadth) and insights to fully understand what is happening in the supply chain in real time, what the correct reactive/proactive steps are, and how best to implement them quickly to ensure that supply chain operational capabilities remain strong. Recently, a high-tech supply chain leader noted to IDC that "Data and analytics challenges are preventing us from making timely and fully informed supply chain decisions. Too often, we must rely on instinct and gut feel to make highly impactful decisions. Sometimes, we get it right; sometimes, we don't. We need the right data and intelligent insights at our fingertips."

Solving these supply chain data challenges is a high-priority initiative and investment for CSCOs. Specifically, their priorities include:

- Supply chain business processes and data silos that inhibit or prevent broad learnings and data usage
- The ability for supply chain operational staff to easily utilize the insights from data analytics in the timescales required
- Integrated solutions that can be easily and quickly implemented and operated by nontechnical resources that reside in the supply chain or at least outside of IT (Some users may require options for advanced functionality.)
- Products and solutions that dramatically improve the supply chain's current ability to extract intelligent insights from operational data
- Embedded intelligence and AI tools that support existing automated processes and enable new ones
- Best-in-class data security
- Costs/pricing that align with the value that is created by the solution that is purchased

Beyond these strategic objectives, the ability for more tactical or operational roles to do their jobs more efficiently and effectively is critical. Supply chain workers will have tactical or operational roles in specific areas of the supply chain and be very focused on the challenges and opportunities specific to their role. A warehouse manager, for example, will be

most interested in tools and applications that can provide better analytics about inventory and product flow within the warehouse. Conversely, a transportation manager will care about how tools and analytics can help better plan and deploy trucks. This is all about operational roles doing their jobs well and having the tools they need to be both efficient and effective. While they may conceptually care about overall supply chain strategy, the principal focus is on the day-to-day challenges of their jobs and how they can better utilize data and analytics in service of that goal.

Leveraging a modern cloud-based/AI-infused ERP with deep functional integration for supply chain efficiency and resiliency

Evolving AI tools increasingly need a modern ERP to drive differentiated performance, so how are outdated systems keeping pace? Although there certainly are options to layer AI over traditional systems, the disadvantages of latency and inefficient data access are likely to persist. In IDC's 2024 *Application Services Survey,* 70% of companies said that their application portfolio either requires modernization today or will require it within the next five years. These remaining applications are expected to necessitate more sophisticated modernization tactics and approaches because of operational risks tied to transforming their underlying technical architectures.

So what should that single platform ERP look like to support supply chain resiliency in disruptions? Such a platform should be easy to deploy and cloud native. It should also have a predictable cost of ownership, embedded intelligence, and access to enriched data, along with industry depth and expertise. Finally, it should be expandable at will to support future growth needs.

If you cannot predict a disruption, you had better be able to respond to it quickly. In other words, anticipate where you can, and be quick to respond where you cannot. Those supply chains that can see earlier and react more quickly will outperform those that cannot. A high-tech supply chain planning manager told IDC, "Although visibility and collaboration are key competencies for our supply chain, we continue to look for technology tools to continue to allow us to make planning decisions more quickly." The benefits of better and more integrated supply chain tools are significant. For AI specifically, 35% of companies saw over 10% improvement in innovation time to market, and 37% saw similar magnitudes of improvement in overall people productivity.

Conclusion

Growing businesses face both obstacles and opportunities at every corner. There is a need for speed and modernization, but silos, antiquated processes, and disconnected data can slow progress down. Indeed, the rapid speed of innovation has opened up the business world and brought new business challenges. Yet companies often don't know where and how to start.

As disruption continues to plague the supply chain, operating with older, poorly integrated tools can lead to uncompetitive performance. In an environment where decisions need to be made in hours or even minutes, IT system drag is no longer tolerable.

Modern applications, leveraging data and rapidly evolving AI tools within a single ERP platform, are becoming best practice. IDC would recommend that companies explore these platforms to see what they can do for their supply chain and the business. As IDC has noted for years that if the supply chain doesn't work, the business doesn't work.

About the analyst

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As group vice president, Simon Ellis currently leads the U.S. Manufacturing Insights, U.S. Energy Insights, and Global Supply Chain Strategies practices at IDC, specializing in advising clients on manufacturing/energy strategies, supply chain digital transformation, sustainability, cloud migration, network, and ecosystem design. Mr. Ellis works with end-user companies, supply chain organizations, and technology providers to develop best practices and strategies leveraging IDC quantitative and qualitative data sets. Within the Supply Chain practices, Mr. Ellis contributes extensively to the Supply Chain Planning and Multi-Enterprise Networks Strategies practice while overseeing the Supply Chain Execution practices.

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