SPOTLIGHT
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Sharpening the supply chain into a competitive advantage requires delivering timely insights with digital tools that pair near-real-time visibility with advanced analytic capabilities.

Unlocking the Power of Data to Address Risk and Deliver Value Across Supply Chains

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AT A GLANCE

WHAT'S IMPORTANT

Two of the top supply chain gaps cited that will be problematic if not properly addressed are:

- Lack of visibility and agility to see changes in time and be able to react
- Development of robust data analytics and insight intelligence

Introduction

The fragility of lean supply chains has been exposed in recent years by a series of disruptions that have proven to be deep and lasting. Among the issues that uncovered structural problems of supply chains are a global health pandemic, geopolitical conflict, logistics congestion, equipment constraints, labor negotiations/shortages, security, inflationary pressures, and a strong U.S. dollar.

Efficient operators, accustomed to being characterized as best in class, were conversely punished rather than rewarded for running operations according to plan as sustaining any semblance of operational excellence proved difficult, if not impossible. Caught flat-footed with dwindling inventories to support operations and sales, supply chain leaders have been under increasing pressure to "just move my stuff" with little regard to profitability. In this challenging environment, significant price increases were accepted as organizations across industries shifted strategy toward ensuring continuity of supply.

While disruption is nothing new to supply chains, the magnitude experienced in recent years has forced organizations to rethink their supply chain strategies rather than take the view that they weathered the storm and intend to return to business as usual as quickly as possible. It's important to understand that risks must be proactively addressed rather than waited out once disruption occurs. A shift has occurred across industries even as the magnitude of disruption begins to soften and a new landscape begins to take shape where transportation networks remain in flux and cost structures remain fluid. We see this in results from IDC's 2022 *Global Supply Chain Survey,* where respondents across industries indicated the steps they are taking to mitigate risks in their supply chain including geo-diversifying their procurement footprints and shifting inventory strategies to "just in case" with cultivating resilience becoming a primary objective for supply chain teams (see Figure 1).

FIGURE 1: ***Steps for Mitigating Supply Chain Risks***

Q What steps are you taking to mitigate risk in your supply chain?

n = 1,004

Source: IDC's Global Supply Chain Survey, March 2022

Just as a renewed focus takes hold, inflationary pressures and the emergence of a strong U.S. dollar are creating an interesting pull between resiliency and efficiency. Striking the appropriate balance between these pressures will be unique to each company, product, market, or customer, requiring extensive visibility in near real time if evidence-based decisions are to become more than aspirational toward the management of dynamic supply chains.

The challenge of visibility is being able to collect and integrate data to create a holistic view of the supply chain. It's highly likely that wherever our goods are, there is an electronic record but that data too often remains siloed where, on its own, its value is limited. The ability to integrate data from a variety of disparate sources, in near real time, begins to unlock the end-to-end visibility that becomes the foundation of managing a supply chain in times of regular operation and disruption.

Change management, adoption of new processes among users within organizations, and securing capital for improvement of supply chain processes are top business challenges that organizations face. Resolving the technical challenges to create visibility and changing business practices to leverage newly found insights are two sides of the same coin; they must be delivered concurrently for the business to truly realize the benefits. Understanding priorities for a given customer or market is essential to determine which factors are relevant to their organizational ambitions so trade-offs can be quantified and measured for effectiveness, up to and including the impact of unfulfilled demand.

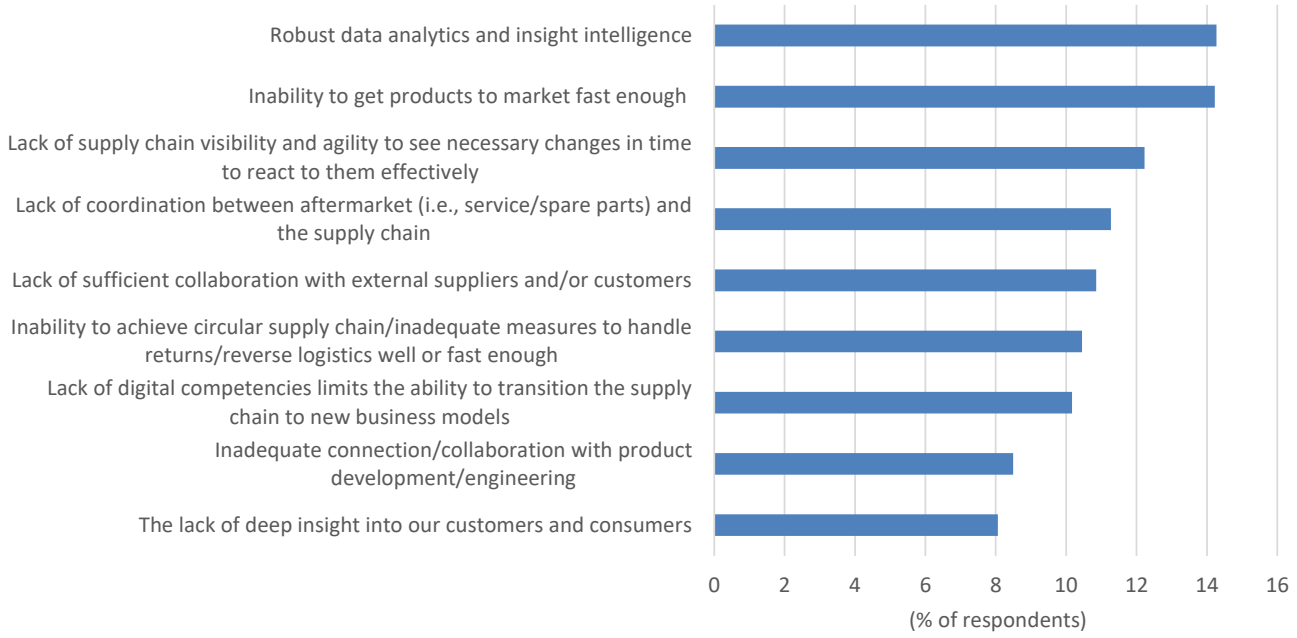
Individualized, Granular Supply Chain Performance Through Digital Transformation

Visibility is a foundational element in developing supply chain intelligence, not only to see where goods are but also what it costs, in both monetary and environmental terms, to get them to their destination. Analytic capabilities shape increased visibility into timely and relevant insights to help organizations understand the trade-offs that exist across their supply chains and to continuously assess these parameters for optimality.

It is essential for organizations to know and understand what it is that they need to be agile about and to recognize that their priorities will change with time. Structuring data around these parameters allows for constant refreshment, incorporating new data sources as they become relevant to achieving success across the supply chain and letting them subside when they become less so. Organizations currently solidifying targets for sustainability or decarbonizing supply chain operations highlight this point as new technologies are enabling organizations to begin this journey. The flexible digital tools to synchronize this data and measure progress allow sustainability initiatives to be taken in concert with cost and service objectives and be effectively balanced for optimality as organizations work to address the most pressing gaps in their supply chains today (see Figure 2).

FIGURE 2: ***Most Pressing Supply Chain Gaps***

Q ***As you think about the future of your supply chain, what current gaps are likely to be the most problematic if not addressed?***



n = 1,109

Source: IDC's Global Supply Chain Survey, March 2022

Intelligent supply chain orchestration requires a data-driven (evidence-based) approach to continuously evaluate the channels through which goods and materials are flowing, at a time when these environments are becoming increasingly dynamic. Organizations benefit by creating a holistic view across the operational landscape and integrating insights gleaned from continual analysis into broader implications for the business. Initiating a maturation from making decisions based on what has happened (descriptive), to what will happen (predictive), and progressing to becoming capable of molding what you would like to happen (prescriptive) means transforming data -> information -> knowledge -> wisdom. This transformation systematically generates insights by providing an understanding of which levers can and should be pulled to generate desired outcomes.

This maturation is a significant challenge that requires differentiating between those things that can be controlled and those that cannot, a point drilled home through the experience of recent years. Even as point solutions may work very well for their intended purpose, integrating data from these sources to create a more holistic view across the end-to-end supply chain is required to extend the view beyond organizational walls. Synthesizing data (live and historical) from disparate sources opens the door to understand trade-offs that exist in the supply chain. From P&L to customer service and beyond, providing the opportunity to make decisions that are more closely tied to organizational strategy, deriving actionable insights that uncover opportunities for growth, accelerating time to value, and allowing for decision automation to mitigate constraints or disruptions in real time (or near real time) ultimately create value that transforms the supply chain from a cost center into a competitive advantage.

Bridging systems that manage transportation (TMS), order management (OMS), warehousing (WMS), and yard management (YMS) with enterprise systems creates alignment internally to which suppliers, logistics partners, and relevant external data sources can be incorporated to provide extensive visibility across supply chain operations. The data fabric, or connective tissue, enables collaboration at scale, thus building the path by which best-in-class siloed systems are utilized to create a holistic view across the supply chain, both in depth and in breadth, to see and understand what is happening across the entire system. This includes but is not limited to the dimensions of supply, cost, and carbon footprint, where factors should be continuously evaluated for optimality as the business landscape demands. Breaking down silos where data exists across organizations and functions leads to improvements in:

- Demand sensing and forecasting
- Extended (continuous) S&OP
- Inventory optimization and deployment
- Intelligent sourcing
- Supplier network monitoring
- Transportation optimization
- Global trade optimization
- Smart warehousing

Supply chains scale quickly in multiple dimensions, which means that aggregating and creating insights from all relevant data becomes very challenging. Even as commonalities exist by industry and region, finding the optimal balance of cost, quality, service levels, agility, resilience, and sustainability is a unique fit for each product, company, market, or customer. Connecting these point solutions is complex but necessary to understand and communicate the trade-offs that are being accepted as decisions are taken and new KPIs are developed that incentivize collaborative outcomes.

As data across these sources is synchronized, a single source of truth is established, delivering valuable insights and allowing teams to begin operating from the same playbook across business functions and enterprises, opening the door to optimization through AI/ML deployments, "what-if" scenario modeling, and automating decisions. Upskilling employees with low/no-code platforms and further democratizing data across organizations provide instant access to practitioners who know the business best and support the career ambitions of employees, helping to reduce attrition in an environment where it is difficult to attract/retain talent as employees become free to shift their focus toward more value-added tasks.

As organizations aspire toward a "segment of one," it should be recognized as a journey that is not achieved overnight. It is an iterative approach that becomes scalable with effort and over time until a customer-centric supply chain materializes, where supply chain orchestration becomes possible from first mile to last mile.

Benefits

Increasing efforts to drive improvement in implementing analytics functionality are aimed at allowing supply chain teams to become predictive where possible and responsive where not possible. The importance of allowing fact-based decisions to be made in a timely manner is increasingly important in an environment where access to resources is not guaranteed and reduced time to decision creates a distinct competitive advantage.

Creating a single source of truth by connecting disparate data sources improves demand forecasting, capacity planning, product safety, inventory management, maintenance, and service-level decisions within organizations without the need to replace or re-architect entire systems. Increased agility and responsiveness by creating a better understanding of what is critical and what is not moves organizations away from one size fits all for every situation. Continuous optimization generates a greater understanding of the holistic impact of both tactical and strategic decisions, creating better alignment across functions and organizations as leaders clearly understand and communicate trade-offs across the supply chain.

Creating the process flow – from getting the data necessary all the way through applying the right analytics to drive an outcome and push it into an operational system – empowers employees at all levels of the organization to identify and act on opportunities and inefficiencies to create instant value. The application of new and more advanced forms of analytics to supply chain problems ensures decisions are tied to overall strategy. As organizations embrace the mantra "think big but start small," taking an iterative approach to scale these applications provides an environment where growth occurs organically as "wins" are realized within organizations and across functions where incremental improvements can potentially yield millions of dollars in savings.

Considering Teradata

Teradata is known as an enterprise analytics company with its connected multicloud data platform. The company's enterprise analytics products are designed to solve business challenges from start to scale. Teradata aims to provide enterprises with the flexibility to handle the massive and mixed data workloads of the future, today. The Teradata Vantage architecture is cloud native, delivered as a service, and built on an open ecosystem. These design features make Vantage the ideal platform to optimize price performance in a multicloud environment. The company's experience working with thousands of customers and partners around the world, across a wide range of verticals and industries, makes us the most effective platform for delivering business outcomes and unlocking unlimited value by turning data into your greatest asset.

Challenges

Foundational to creating E2E visibility through data orchestration is ensuring that data hygiene is prioritized to provide a consistent view across connected systems. Data integrity must be maintained to foster trusted relationships between businesses in the value chain as systems are connected and data is shared across organizations.

Ensuring protection of data sources is equally important, as much of the data needed will be production critical. Security gaps must be addressed to ensure there is no risk of corruption that could potentially bring production systems down. Addressing these gaps well across multicloud, hybrid, third-party, and homegrown platforms is challenging, as it is almost certain that not everyone in the supply chain will be working in the same environment.

AI/ML algorithms must be aligned with business objectives and understood by practitioners as they attempt to deliver value for their organization. Digital tools must be simplified and capable of delivering relevant and meaningful insights by end users who may lack a technical background and could lead to questionable insights – insights that are at best not helpful but at worst can be harmful as organizations simply arrive more quickly at bad decisions. Timeliness of insights is critical to gain a competitive advantage from platforms like Teradata's, where speed of processing data and running analytics needs to be fast enough at massive scale to ensure that timely insights and organizational agility are synchronized to realize maximum value from the visibility and insights that are generated.

Conclusion

Access to timely, accurate, and relevant data is essential to advancing supply chain maturity to create and sustain a competitive advantage. In its many forms, disruption has become a constant companion of extended global supply chains. Inflationary pressures and the emergence of a strong U.S. dollar are creating an interesting pull between resiliency and efficiency in supply chain operations. The ability to identify and manage risks proactively, through the aggregation of data from both internal systems and external sources, is required to begin making objective decisions to preempt disruption and identify future opportunities.

Inflationary pressures and the emergence of a strong U.S. dollar are creating an interesting pull between resiliency and efficiency in supply chain operations.

Synthesizing data across disparate sources allows organizations to see and understand what they can control, quickly differentiate from those things that they cannot, and become agile in the face of future disruption. Organizations are diversifying supplier footprints and reevaluating structural elements of the supply chain at shorter intervals to increase resilience. As these complexities grow, they must be managed through data to understand, accommodate, and create transparency to the trade-offs that exist across a supply chain.

Platforms such as Teradata's create the intelligence for organizations to evaluate their supply chain across an increasing pool of factors, objectively and at an increased cadence to continually refine and optimize the supply chain as conditions on the ground change. Reducing risk exposure and time to decision is critical to integrate decisions across the supply chain, automating continuous optimization while ensuring decisions are consistently taken in alignment with broader organizational strategy to fully support business objectives.

About the Analyst

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Travis Eide is the research director of the IDC Worldwide Supply Chain Strategies Program, responsible for providing research, analysis, and guidance on key business and IT issues pertaining to manufacturing, retail, and healthcare supply chains. He currently leads the Worldwide Supply Chain Strategies: Transportation, Logistics and Global Trade Management practice, providing fact-based research, analysis, and insight on best practices and the use of information technology to assist clients in improving their capabilities in these critical supply chain fulfillment areas.

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Teradata and its partners deliver a real-time, resilient, and dynamic supply chain solution. We help improve forecasting and demand planning to meet customer expectations while achieving operational excellence.

- Integrate supply chain data with other technology solutions to power data-driven operational processes
- Integrate disparate data sources to improve visibility
- Provide sophisticated analytics and AI to build next-gen forecasting and demand planning models
- Execute analytics at scale and process data at a product and customer level to drive intelligence in forecasts and demand plans
- Automate insight integration to improve availability of forecasts across physical and digital channels

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