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ESG WHITE PAPER

Turning Data into a Strategic Asset for a Modernized, Future-proof Supply Chain

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Abstract

No organization's global supply chain has been untouched by the many unforeseen events that have ravaged the ability to move products from the point of manufacturing to the point of consumption. Public health threats and geopolitical events are just a few challenges to global supply chains—and they all appear to be happening concurrently. Whether you're talking about business-to-consumer or business-to-business supply chains, the impact of these events has been undeniable. When evaluating their own supply chain risks, organizations should expect the unexpected, and plan their systems accordingly. And organizations need new ways to use data to promote efficiency, visibility, and resiliency in their global supply chains.

Introduction

All too often, organizations have not viewed supply chain resiliency as suitably strategic and important. While most organizations talk about the importance of supply chain resiliency, they often sacrifice its importance to lower costs. Smaller-scale disruptions were viewed as annoyances and inconveniences, and organizations often mitigated their impact with workarounds. Today, however, supply chain vulnerabilities have been exposed by severe, often unexpected issues. Natural disasters, political unrest, global health threats, and more have a larger-than-ever adverse impact on organizations' visibility into demand patterns and purchasing behavior, including:

- Big-impact geopolitical events such as the war in Ukraine, which jarred supply chains for oil and farm commodities.
- Regulatory snarls, which precipitated a temporary but devastating shutdown of the United States' pre-eminent supplier of baby formula due to product quality violations.
- The rising costs of transportation in wholesale distribution and third-party logistics.
- The "Great Resignation," which dramatically cut organizations' ability to simply fulfill orders from the factory to the warehouse to the customer's site.

This has forced organizations to confront the challenge of "balance," specifically juggling how much additional costs they are willing to incur to achieve higher levels of resiliency. Without a proper weighing of both sides, organizations may find themselves taking on higher-than-necessary costs to achieve much higher levels of resiliency, typically resulting in higher prices for merchandise. Instead, this evaluation should be implemented at a more granular level, requiring better data and more informed analytics.

In many ways, global supply chains have become victims of their own success due to these and many other factors. To drive down costs, concepts such as lean inventories, just-in-time manufacturing, and strategic sourcing all streamlined the supply chain but also made supply chains highly vulnerable to disruption due to these unexpected events. Ultimately, many of those vulnerabilities led to lost sales and a diminished customer experience.

At the same time, both business customers and consumer buyers have become more insistent, expecting—and even demanding—rapid deliveries of customized orders. The negative impact on supply chains has been undeniable, and it must be fixed immediately or risk the potential for degraded customer experiences.

This means that organizations need better systems and processes to buttress their supply chains now and in the future. And that modernization must be driven by efficient, strategic, and automated use of relevant data. Organizational leaders also must think about their potential supply chain risks differently: The days of smoothly running systems are gone,

replaced by uncertainty and heightened challenges. This means systems and processes must be engineered that can deal with constant disruption.

Why Legacy Supply Chain Solutions No Longer Meet Organizations' Needs

Supply chain management systems have been a widely deployed and strategic application for decades in a variety of vertical industries, including manufacturing, retail, and wholesale distribution. More recently, rapidly transforming markets such as healthcare, energy exploration, and transportation/logistics have become important segments for supply chain management. Over the years, organizations have updated, upgraded, and improved their supply chain systems with new functions to improve efficiency or enhance their compliance and regulatory reporting. But the rapid and relentless pace of change in technology, business processes, and customer demands has forced organizations to modernize their traditional supply chain management systems.

Earlier systems do not possess the end-to-end visibility needed in a business environment where “unanticipated events” happen with more frequency and have a growing impact on supply chains’ resiliency, availability, and accuracy. The lack of comprehensive, 24/7/365 global visibility means that organizations lack the deep insights and analytics necessary to make split-second decisions on everything from chip availability for automotive manufacturing to food supplies for worldwide restaurant chains.

Too often, those legacy systems were built on rigidly designed platforms that not only failed to deliver performance on a global scale, but also lacked contextual intelligence to anticipate potential problems and to recommend alternative solutions. While COVID-19 has been a major force impacting global supply chains, it is far from the only factor influencing the reliable flow of goods from their initial sources to their final destinations. Not only that, but the pandemic may simply be a harbinger of more rapidly occurring threats, even as governments and the private sector collaborate to anticipate and steel against supply chain threats.

What legacy systems lack—and what modernized systems must deliver—is the ability to scale their supply chains more broadly and faster



than ever and to do so with more intelligence, more automation, and more resiliency. In fact, new generations of supply chain management are key elements in many organizations’ digital transformation initiatives. The good news is that many organizations have already begun moving in this direction. ESG research reveals that 73% of organizations describe their implementation, execution, and optimization of a range of digital transformation initiatives as being in process or mature.¹ On the flip side, however, is the reality that many organizations’ supply chain management systems still look and operate as application silos, stove-piped among other business functions rather than technically and operationally linked.

A View into the Future

It is important to note that legacy solutions (or new versions of those solutions) will likely still be required. The idea of a “rip-and-replace” strategy for systems is highly implausible as supply chain management systems are tightly integrated into an organization’s full palette of business processes. With that said, in the future, supply chains will look and operate like interconnected ecosystems of solutions, not a monolithic solution over such functions as R&D, manufacturing,

¹ Source: ESG Research Report, [2022 Technology Spending Intentions Survey](#), November 2021.

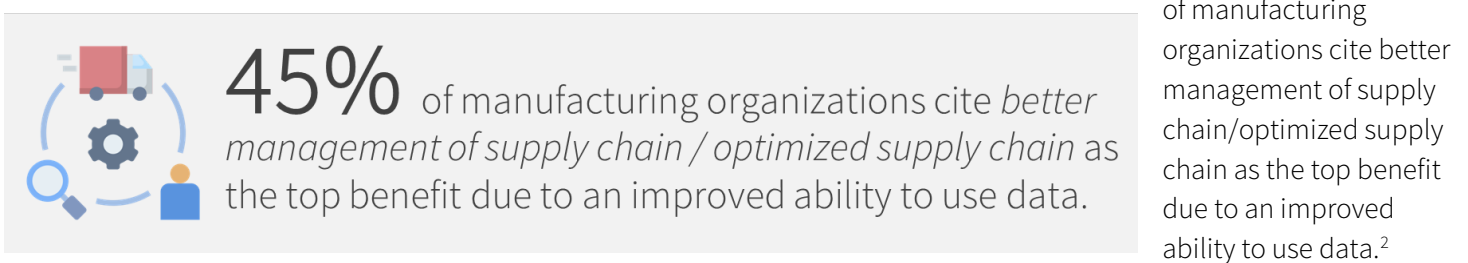
fulfillment, and logistics. To make that happen, organizations should move toward a flexible, scalable, robust, and resilient data platform, integrating analytics, automation, security, and end-to-end visibility throughout both modern and future supply chains.

What to Look for in a Data-centric Supply Chain Solution

To combat the escalating and broadening set of challenges facing global supply chains, organizations need to harness as much data as possible from all points in the supply chain. But just having a huge volume of data is not enough; in fact, without the right mix of contextual and predictive analytics, organizations may become paralyzed by an inability to make sense of that data.

For instance, let's suppose a system indicates that an important supply of components is late in arriving at a manufacturing facility. Does that indicate that container ships have run into an unexpected squall on the high seas, there's a data entry error, or gangs of pirates are systematically targeting freighters?

For instance, having the right data from the right data source at the right time may make the difference between making a smart decision to increase component orders and an ill-informed decision to switch to new logistics partners. In fact, 45%



To do that, organizations need to give considerable thought to what their modernized supply chain management systems must do, especially when it comes to having truly global visibility. Among the key functions and capabilities to look for are:

- **Data platform architecture.** The days of point products, potentially stitched together with a few application programming interfaces or tactical re-coding, are over. Only by engineering supply chain management around a platform can organizations create a true supply chain ecosystem that integrates applications, data, and business processes throughout the full span of the global supply chain, generating more precise visibility.
- **End-to-end visibility.** Snags in global supply chains can occur anywhere: a manufacturing plant in Malaysia, a distribution outpost in Majorca, a component supplier in Mexico, or a retailer in Michigan. That kind of interconnected supply chain ecosystem generates a ton of data, and it all must be visualized and considered in the proper context.
- **Platform flexibility.** Organizations should look for the ability to integrate both third-party and homegrown solutions to avoid the costly and inefficient “rip and replace” processes that often are the byproduct of the need for new capabilities.
- **Multi-cloud/hybrid cloud design.** Building, maintaining, and scaling global supply chain management systems with end-to-end visibility have become increasingly expensive from an infrastructure standpoint. It's best to deploy cloud-based solutions to take advantage of easier, faster, and more predictable technology refresh cycles and to ensure that

² Source: ESG Complete Survey Results, *The 2022 State of DataOps*, August 2022.

supply chain workloads can operate seamlessly both in the cloud and on legacy on-premises infrastructure, if necessary.

- **AI-powered predictive analytics.** Artificial intelligence tools and machine learning algorithms are essential in order to provide enough power and context to make smarter decisions on countless data points and to derive true insights—not just more noise.
- **Enhanced security, governance, and risk management.** With so many systems, devices, data sources, and applications working together to feed information to global supply chain management systems, there are innumerable vulnerability points for data breaches and other disruptions. The breakdown in global supply chain data for even a day can represent huge financial, operational, legal, regulatory, and customer perception problems.
- **“What-if” scenarios and remediation actions.** Having data—even the right data—isn’t always enough to make hair-trigger decisions. Modern supply chain management systems need to integrate what-if options with recommendations on how to overcome or avoid problems before they escalate.
- **Support for sustainability initiatives.** Sustainability has quickly become a must-have capability for global supply chains, and systems must account for issues that influence their ability to avoid waste and improve reusability.
- **Consulting expertise for improved business processes and workflows.** Having smart, experienced, and collaborative team members from outside the organization goes a long way toward extending the capabilities of an organization’s technologies and its hard-working, but often over-extended, in-house teams. Also, since supply chains have become truly cross-industry, there’s an opportunity to work with partners that have solved supply chain problems in other industries, but that are quite relevant to an organization’s challenges in their own industry.
- **A bias for interconnected domains.** This includes frameworks like customer experience, where a commitment to enhancing customer satisfaction can yield substantial improvements in the demand cycle that can help solve potential supply chain issues. It also can influence customers’ choices to align with what is—or what will become—available.
- **Reutilization of data for different use cases.** For instance, organizations can use near-real-time tracking data to spot and resolve immediate operational issues, such as determining whether and why an already-scheduled ride is late. Using the same data collected over time and analyzing it under different lenses can yield new, often unexpected, insights.

Teradata’s Data Platform for Global Supply Chain Modernization

One technology partner with considerable experience in building modernized, data-centric supply chain management systems is Teradata. The company’s Vantage platform is designed for multi-cloud and hybrid cloud environments and is engineered to unite a wide range of data sources, applications, and feeds in a comprehensive, high-visibility supply chain ecosystem.

Vantage—an as-a-service solution—is configured as a full platform stack, including the Teradata data platform, cloud service provider resources, and full-spectrum management. It is an analytics-driven solution, designed to handle a wide range of what-if scenarios using predictive, prescriptive, and descriptive approaches. Teradata has optimized Vantage to be the foundation of a high-visibility supply chain ecosystem through the availability of a wide range of application programming interfaces, industry-standard plug-ins, extensions, and connectors. This helps connect supply chain data

with other business processes and applications, such as accounting, manufacturing, order entry, fulfillment, R&D, and customer experience.

By deploying Vantage on a leading cloud platform, Teradata enables customers to more easily and reliably scale up their supply chain management systems as business conditions dictate without having to commit to expensive and time-consuming CapEx build-outs. This is done by leveraging highly automated management and monitoring, rather than requiring the onboarding of a lot of in-house personnel or expensive consultants for specialized tasks. Additionally, Vantage was designed for the realities of modern-day workload migration, enabling clean portability of workloads from on-premises systems to a single-cloud or, more likely, a multi-cloud setting.

The Bigger Truth

Regardless of industry, geography, or organizational size, making global supply chains more efficient, agile, and resilient against inevitable and unpredictable forces is more important—and challenging—than ever.

Organizations from retailers to manufacturers to fulfillment partners all are striving to improve the customer experience from the time a product is ordered until it arrives, as expected, at the customer destination. Doing so requires systems that use data more strategically and efficiently in areas such as predictive analytics, enhanced supply chain visibility, and optimized, actionable insights.

Teradata Vantage is a data-centric, cloud-based platform that helps organizations modernize and future-proof their global supply chains against unexpected threats, challenges, and hiccups. It is engineered for the requirements of modern IT architectures, contextual data, and customer-centric digital transformation.

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