

Organizations shifting to increasingly dynamic supply chains require digital transformation for real-time visibility across extended supply chain partners, enabling advanced analytics-driven insights.

# From Cost Center to Competitive Advantage: Supply Chain Resilience Through Digital Transformation

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## Introduction

The events of recent years have challenged global supply chains like never before. Disruption has been deep and lasting as a global health pandemic, geopolitical tensions/conflict, logistics congestion, equipment constraints, labor shortages, inflationary pressures, and security concerns have forced organizations to reexamine the vulnerabilities of operating extended global supply chains.

Exposed are the interdependencies that we all knew existed, if not how fragile they would eventually prove to be. As we come to terms with the realization that the next normal is likely to be an increasingly resource-constrained environment, organizations have largely accepted significant cost increases, choosing instead to focus on building resilience in their supply chains to ensure continuity of supply.

According to IDC's March 2022 *Supply Chain Survey*, addressing risk is taking many forms as organizations increase supplier diversity, shift from lean to dynamic networks, explore options for nearshoring and reshoring, and weigh these decisions against sustainability (ESG) initiatives, which are becoming baked into organizational DNA (see Figure 1).

## AT A GLANCE

### WHAT'S IMPORTANT

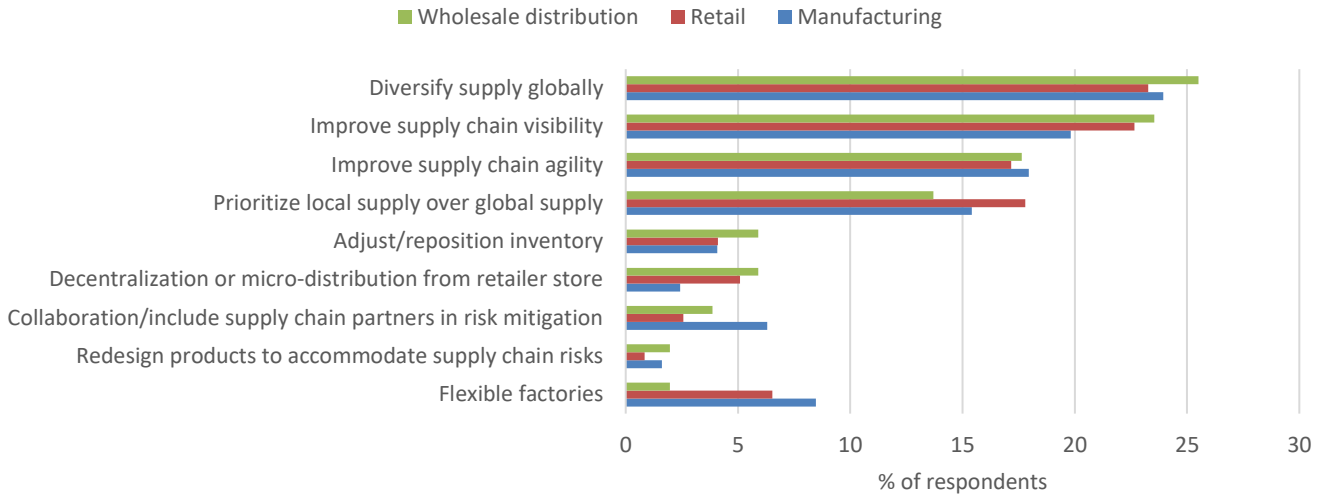
Traditional approaches to data management are failing to meet new business requirements that demand a combination of real-time connected data, self-service, and a high degree of automation, speed, and intelligence.

### KEY TAKEAWAY

There is an increasing disparity in business revenue performance between digitally enabled and nondigital organizations.

FIGURE 1: **Mitigating Supply Chain Risks**

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



n = 1,109

Source: IDC's Supply Chain Survey, March 2022

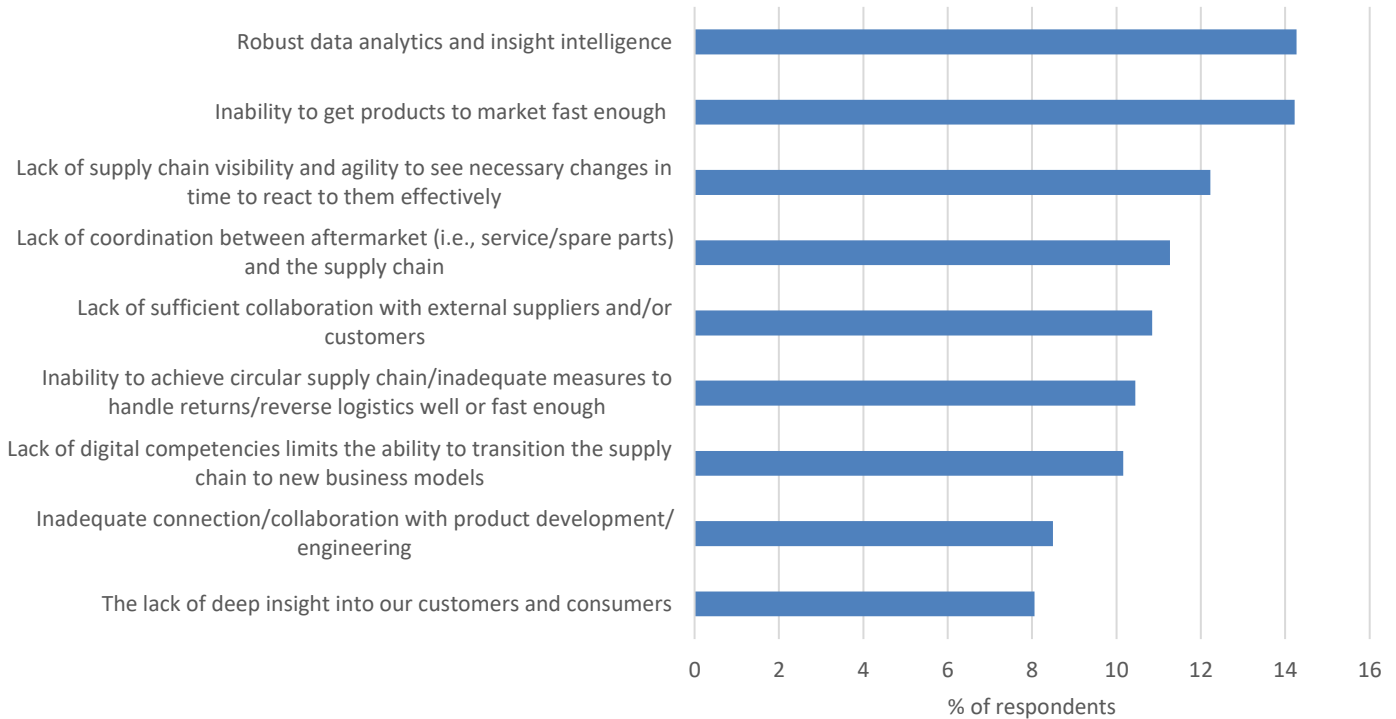
Across industries, organizations striving to achieve resilience in this increasingly dynamic environment will be required to harness data to increase visibility, cultivate timely intelligence through advanced analytics, and develop organizational agility to move swiftly as actionable insights are uncovered.

### **Digital Transformation to Create and Sustain a Competitive Advantage**

Traditional approaches to data management are failing to meet new business requirements that demand a combination of real-time connected data, self-service, and a high degree of automation, speed, and intelligence. Results from IDC's March 2022 *Supply Chain Survey* highlight the top responses for the most problematic gaps facing supply chains, which, if not addressed, will include a lack of analytics (predictive and prescriptive) and insight intelligence, a lack of supply chain visibility and agility (resilience), and a lack of collaboration among supply chain partners (see Figure 2).

FIGURE 2: **Addressing Future 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 Supply Chain Survey, March 2022

Supply chain leaders understand what their experiences and the lessons of recent years are telling them and are in search of the "connective tissue" to synthesize internal data with data coming from upstream and downstream sources along the supply chain in a true end-to-end (E2E) solution. Indeed, in IDC's 2022 *Supply Chain Survey*, when participants were asked about the steps their companies are taking to mitigate their supply chain planning challenges, 34% said they are looking for ways to better integrate their supply chain applications. Creating a holistic view across the supply chain to increase visibility and agility requires aggregating and managing data from many disparate sources, on-premises and cloud, to account for risks while capturing opportunities that would otherwise be overlooked with a narrow, inward-looking focus.

An increase in collaboration and data sharing among organizations is opening the door to gain E2E visibility to their supply chain — upstream to understand supplier constraints, downstream to see customer demand, and in between to understand logistical constraints that are seemingly being endlessly rebalanced. Organizations beginning to participate in these ecosystems will benefit from platforms that synthesize data (live and historical) from disparate sources (i.e., TMS, OMS, WMS, or YMS) with data coming from supply chain/logistics partners, enterprise systems, and external databases. The advent of digital tools (IoT, edge, digital twins) and the reduced cost to deploy are providing access to cloud-enabled data in real time across extended global supply chains, which create extensive visibility potential for supply chain professionals.

Embarking on a data journey to create actionable insights through predictive and prescriptive analytics is where value is generated from this increased visibility. There is a growing performance gap between digital organizations and nondigital organizations, highlighting that deploying the right tools and expertise to create actionable insights by transforming data into information and knowledge generates value for organizations. Next-level supply chain orchestration follows by progressing from making decisions based on what has happened or is happening (descriptive), to what is going to happen (predictive), to optimizing what organizations would like to happen (prescriptive) through automated and interactive functionality.

Speed to decision provides a distinct competitive advantage in an increasingly resource-constrained world.

This progression provides organizations with a path to automate decisions, mitigating constraints and disruptions in real time (or near real time), accelerating time to value, and uncovering opportunities for growth that may have been overlooked. The objective stance of a data-driven approach removes bias and more closely ties these decisions to data and organizational goals. Decision automation will help free up already scarce talent from rote tasks, allowing that talent to focus on adding value as supply chains become increasingly dynamic and decisions around capacity and constraints are made with greater frequency, at shorter intervals, and require optimization across an increasing number of variables and decision options.

## Benefits

Creating the data fabric, or connective tissue, to bridge siloed functions and disparate data sources and become collaborative at scale opens the door to transform the supply chain from a cost center/support function into a competitive advantage. The portability to support on premises, cloud (private and public), and hybrid in a single API provides next-level supply chain orchestration, allowing organizations to begin operating from the same playbook across business functions and through their supply chain processes, including:

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

For most organizations, this connective tissue will represent significant progress in their journey toward supply chain maturity, moving further away from the practice of managing and collaborating around spreadsheets, which remains prevalent in the industry. Organizations aligning supply chain activities around a data-driven approach where a single source of truth is established should expect improvements in demand forecasting, capacity planning, product safety, transportation and inventory management, maintenance, and time to react to disruptions.

Accomplishing this alignment without the need to rearchitect entire systems speeds digital transformation, opening the door to artificial intelligence/machine learning (AI/ML) optimization capabilities and decision automation across planning functions where speed to decision provides a distinct competitive advantage in an increasingly resource-constrained world.

Incorporating new and more advanced forms of analytics to supply chain problems will prove advantageous, as will the speed by which criteria can be continuously evaluated for optimality as supply chains become increasingly complex. From gathering data to applying the right math and statistics and analytics to drive an outcome and push it into an

operational system, time to decision is of the essence. Digital transformation makes timely, informed decisions in an increasingly dynamic supply chain environment. It facilitates supply chain orchestration from first mile to last mile and from raw materials to finished product, creating a holistic, customer-centric supply chain where speed to decision becomes a competitive advantage.

## Considering InterSystems

InterSystems IRIS for supply chain is a next-generation data platform built for implementing real-time, intelligent architectures that drive efficiencies throughout the supply chain. InterSystems provides the connective tissue to integrate disparate data sources, sense disruptions, and provide actionable predictive and prescriptive insights in real time to support various applications and scenarios.

Managing disruptions and constraints across the entire enterprise and global ecosystem is the key to accelerating "time to value." It is imperative to predict disruptions and prescribe actions in real time, and with accuracy, during a period of significant volatility across the supply chain. Supply chain management is all about the data. InterSystems IRIS is an intelligent data platform with embedded ML and interoperability capabilities to complement existing systems and applications. This platform provides real-time, accurate insights with prescriptive recommendations, both ML and real-world process based, to optimize real-time human decision making. Benefits include:

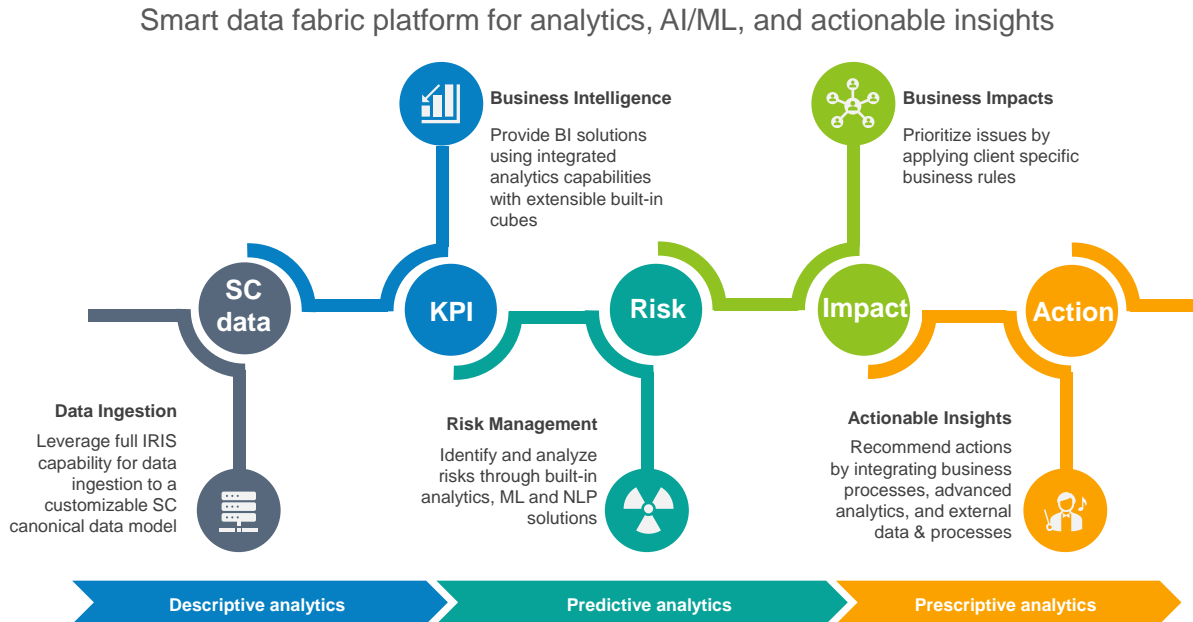
- » Being able to predict part/item shortages, late shipments, stock-outs to improve production efficiencies, S&OP, and demand fulfillment
- » ML-driven demand sensing to improve demand forecasting for product availability
- » Predicting sourcing constraints at supplier level
- » Prescriptive analytics to optimize transportation options to optimize carbon footprint
- » Automated optimized replenishment by sensing real-time demand changes through AI/ML
- » Rebalancing inventory and transportation at optimal operational costs to meet demand expectations

All this can be achieved with a modern data platform that provides the foundation of four key capabilities: data ingestion, data integration, embedded analytics, and embedded interoperability in *one single unified platform* using a smart data fabric architecture. Namely:

- » **Data ingestion:** The ability to ingest data from any source in any format, including real-time event and transactional data as well as data at rest, from internal and external applications and data silos
- » **Data integration:** The ability to integrate and harmonize data into a consistent format to provide a consistent representation of data from disparate sources and in different formats
- » **Embedded analytics:** The ability to apply a range of analytics, including real-time analytics processing on incoming data, such as business rules, machine learning, business intelligence, and natural language processing, to provide retrospective, predictive, and prescriptive insights
- » **Embedded interoperability:** The ability to integrate data and business processes between systems to enable seamless and accurate real-time orchestration and optimized, intelligent processes

All four capabilities are required to work together to provide actionable insights with prescriptive solutions. InterSystems IRIS data platform bridges data silos and interoperability challenges and brings business processes and data together for intelligent informed decisions (see Figure 3).

FIGURE 3: **InterSystems IRIS for Supply Chain**



Source: InterSystems, 2022

### Challenges

Platforms such as InterSystems IRIS that provide visibility and create actionable insights across the supply chain spectrum must be prepared to deliver a seamless digital integration as expectations are high and missed pockets, or black boxes, where inventories have been lost for unpredictable periods of time in recent years can quickly dissolve confidence.

E2E visibility and optimization hinge on the ability to accurately and confidently predict between, and within, particular nodes of the supply chain including suppliers, terminals, and customers. Capabilities that simplify this complexity into easily understandable dashboards for analytics integrations can prevent failure to launch by less sophisticated customers that may be unable to distinguish one product from the next.

Further, as many organizations enter this space using the mantra "think big, start small," the InterSystems platform must scale well by providing value immediately where quick wins allow for organic growth within organizations. Companies that can meet the challenge of integrating on-premises and cloud data sources with little to no implementation work can create brand loyalty across an increasingly crowded space.

## Conclusion

Platforms such as InterSystems IRIS are in high demand. The events of recent years have solidified in the minds of organizations operating globally distributed supply chains the critical importance of integrating previously siloed data to build resilience by accounting for externalities that can impact success. It is no longer acceptable for organizations to segment ownership across their supply chain and firefight once disruption is experienced, as the opportunity to positively impact the situation will almost certainly have passed. Onboarding the capabilities to predict and proactively address issues across supply chain partners must be prioritized.

As supply chains become increasingly dynamic, what is important to measure today is not necessarily what will be important to measure tomorrow. The ability to adapt models to incorporate the most relevant information, from a range of disparate sources, in an objective manner is critical for organizations wishing to stay one step ahead of the competition, particularly in an environment where access to resources is not guaranteed.

Sustaining long-term success in this environment dictates that organizations form a holistic view across their supply chain to ensure problems (and opportunities) are visible, can be swiftly analyzed for optimality through predictive and prescriptive methodologies, and are acted upon in a timely manner to achieve a competitive advantage in supply chain operations.

## About the Analysts



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Mr. 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 has over 20 years' experience in global supply chain management and holds an M.S. in Business Analytics from the University of Colorado and a B.S. in Logistics & Supply Chain Management from Iowa State University.



### ***Simon Ellis, Program Vice President, Supply Chain Strategies***

As a program vice president, Simon Ellis is responsible for providing research, analysis, and guidance on key business and IT issues for manufacturers. He currently leads the Supply Chain Strategies practices at IDC Manufacturing Insights, one of IDC's industry research companies that address the current market gap by providing fact-based research and analysis on best practices and the use of information technology to assist clients in improving their capabilities in critical process areas.

## MESSAGE FROM THE SPONSOR

**More About InterSystems**

Established in 1978, InterSystems is the leading provider of next-generation solutions for enterprise digital transformations in the healthcare, finance, manufacturing, retail, consumer goods, logistics and distribution sectors. Organizations depend on InterSystems IRIS data platform to integrate and complement their existing supply chain applications and IT infrastructure to provide real-time, intelligent, actionable insights into supply chain disruptions, and accelerate time to value.

InterSystems cloud-first data platforms solve interoperability, speed, and scalability problems for large organizations around the globe. InterSystems is committed to excellence through its award-winning, 24x7 support for customers and partners in more than 80 countries. Privately held and headquartered in Cambridge, Massachusetts, InterSystems has 36 offices in 25 countries worldwide.

For more information, please visit: [www.InterSystems.com/SupplyChain](http://www.InterSystems.com/SupplyChain).



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