

# Powering Supply Chain Confidence

The Role of Data and Standardization



Created With Insights From

500+
supply chain professionals

Geopolitical tensions, fluctuating demand, and increasingly stringent regulatory requirements are putting immense pressure on organizations, forcing them to rethink and transform their supply chain strategies. To remain competitive, organizations must adopt greater agility, innovation, and sustainability throughout the entire supply chain.

Success now depends on real-time adaptability, enhanced visibility, and operational innovation, all while maintaining a strong focus on sustainable practices.

# But how are organizations rising to the challenge?

Where are the pain points, and what strategies are being employed by those leading the way in supply chain management?

To answer these questions, GS1 US\* surveyed over 500 supply chain professionals, uncovering key strategies used by the most confident organizations to manage disruptions and build agile and resilient supply chains. The findings revealed that adoption of GS1 Standards and strong data management were indicators of organizational confidence and effective trading partner collaboration as well as agility and innovation.

Building on these insights, the in-depth findings in this report serve as a practical guide, helping you identify key areas for investment and innovation that will empower your organization to confidently navigate supply chain disruptions and enhance overall performance.

# What Does It Take to Confidently Manage Your Supply Chain?

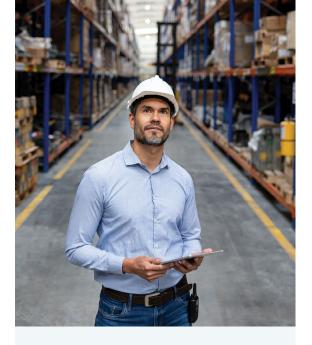
Companies that effectively manage their supply chains possess high confidence in their ability to handle disruptions. They are better equipped to adapt quickly to market changes, reduce operational risks, and maintain continuous business operations.

An overwhelming majority—99%—of survey respondents expressed confidence in their organization's ability to manage supply chain disruptions, with 35% having some confidence and 64% reporting high confidence. However, this self-assuredness doesn't always equate to effective supply chain management. Strong traceability capabilities, often driven by regulatory requirements and supported by GS1 Standards adoption, play a crucial role in ensuring resilience.

Almost half (43%) of respondents say their organization struggles to maintain full visibility into their supply chains. A similar number of respondents also indicated they are unable to manage all aspects of their supply chain operations "very well," with areas like loss prevention and tracking correct conditions, such as temperature, being the most challenging.

# Which aspects of the supply chain do you manage very well?





## **Key Findings**



GS1 Standards adoption is linked to stronger supply chain confidence and traceability

77% of companies, who self-identified to fully adopt GS1 Standards report higher confidence in managing disruptions, with improved traceability capabilities supporting resilience and regulatory compliance.



Centralized real-time data management is essential for data accuracy

Companies with centralized systems that collect and integrate data in real time are nearly three times more likely to trust their data accuracy (68%) compared to those without centralized systems (25%).



Innovation drives agility and visibility

Organizations implementing innovations like real-time tracking technologies report a 68% improvement in visibility and inventory control over those without such systems.



Sustainability practices lag despite high awareness

Although 99% of companies consider sustainability to be "very important" or "important," only 50% have implemented concrete sustainability practices.

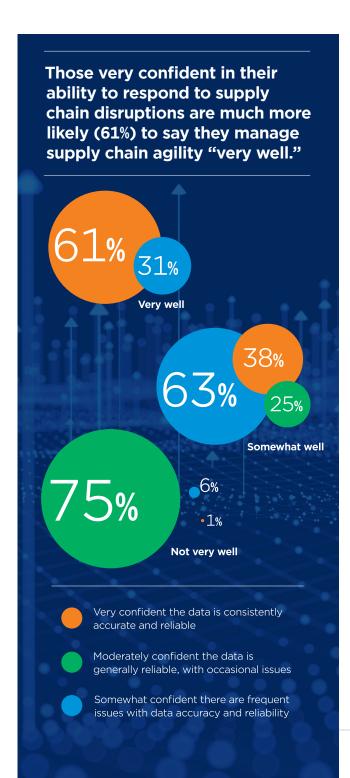


Confidence in supply chain management remains high, but visibility challenges persist

While 99% of respondents expressed confidence in their ability to manage disruptions, nearly half (43%) struggle with maintaining full visibility, particularly in areas like loss prevention and tracking conditions.

# Confidence Is Closely Tied to Key Operational Capabilities That Strengthen Supply Chain Management

Companies that exhibit high confidence in their ability to manage disruptions are notably more likely to excel in supply chain visibility and agility. For instance, only 29% of highly confident companies report supply chain visibility as an issue compared to 43% overall. Similarly, 61% of those with high confidence report managing supply chain agility "very well" compared to just 31% of those with moderate confidence and none of the companies with low confidence.



## Full Adoption of GS1 Standards Is Correlated With Organizations' Confidence in Managing Disruptions

Adoption of GS1 Standards has proven to be a strong indicator of high confidence in managing disruptions. About 77% of companies that claim full adoption of GS1 Standards report high confidence in managing disruptions compared to 50% of those with partial adoption and 25% of those considering adoption. This correlation underscores the importance of GS1 Standards in enabling operational confidence and improving organizations' overall supply chain management.

Organizations with high confidence in their ability to manage supply chain disruption:

77% | Full adoption of GS1 Standards

50% | Partial adoption of GS1 Standards

25% | Considering adoption of GS1 Standards

## Real-Time Data Management and Accuracy Increase Supply Chain Confidence

Centralized data management plays a critical role in increasing supply chain confidence. About 56% of highly confident organizations have implemented centralized systems like TMS, ERP, PIM, or WMS systems to manage disruptions in real time.

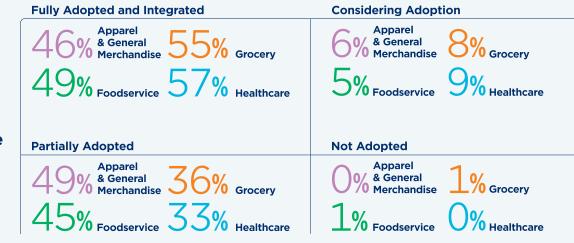
Data accuracy is equally important, as nearly two-thirds (68%) of highly confident companies trust the accuracy and consistency of their data through these systems. In contrast, only 51% of companies with moderate confidence and 25% of those with low confidence report the same level of trust in their data. Despite these clear benefits, 44% of organizations overall still lack a centralized data management system, potentially undermining their ability to respond effectively to supply chain disruptions:

55% | Highly confident organizations have implemented centralized data management systems

**44%** | Organizations lack a centralized data management system

Adoption of GS1 Standards also varies across industries, with industries that are more regulated, such as healthcare and grocery, leading the way.\*

\*Survey respondents were asked to self-identify their level of GS1 Standards adoption.



## **Greater Automation Associated With Higher Levels of Confidence and Agility**

Automation is another key factor in supply chain confidence. Only 19% of companies surveyed say they have fully automated supply chain processes. However, 72% of highly confident companies have achieved full automation compared to just 27% of moderately confident companies. This automation directly impacts agility, with 61% of fully automated companies managing agility "very well" compared to 38% with partial automation and 25% with no automation at all.

### **Automation in Supply Chains is Key to Confidence**

72% | Highly confident organizations are fully automated

19% | Total organizations are fully automated

## Highly Confident Companies Manage Consumer Demand Fluctuations Very Well

Effectively managing consumer demand fluctuations is another critical component of supply chain success, and confidence plays a key role in how well companies navigate these challenges. Among companies with high confidence in their ability to manage supply chain disruptions, 51% report handling demand fluctuations very well. In contrast, only 39% of companies with moderate confidence say they manage these fluctuations effectively, and the number drops to just 25% for companies with low confidence.

# Adoption of GS1 Standards Enables an Agile, Sustainable, and Innovative Supply Chain

Adopting GS1 Standards significantly boosts not just confidence in managing disruptions, but supply chain agility, sustainability, and even innovation. When considering agility, more than half (58%) of the surveyed companies with GS1 Standards adoption report managing supply chain agility "very well." In contrast, only 42% of companies with partial adoption feel the same. The ability to manage supply chain agility "very well" further declines for those considering adoption (36%) and for those with no plans for adoption of GS1 Standards (14%).

# Of those who say they have the ability to manage supply chain agility "very well":

58% | Companies have fully adopted GS1 Standards

**42%** | Companies have partially adopted GS1 Standards

**36%** | Companies are considering adopting GS1 Standards

14% | Companies are not considering adopting GS1 Standards

## 68% of Companies With Full Adoption of GS1 Standards Have Effective Traceability Processes

Traceability is another area where GS1 Standards make a meaningful difference. More than two-thirds of companies (68%) that have fully adopted GS1 Standards report effective traceability processes. By comparison, only 48% of companies with partial adoption and 30% of those considering adoption report similar levels of traceability effectiveness. Not a single company that said they weren't considering adopting GS1 Standards reported having effective traceability processes.

## 70% of Companies Focused on Sustainability Have Fully Adopted GS1 Standards

GS1 Standards adoption is also closely tied with the progress companies are making on sustainability initiatives. About 70% of companies that prioritize sustainability have fully adopted GS1 Standards compared to only 40% with partial adoption and 39% of those considering adoption.

## 60% of Companies With Full GS1 Standards Adoption Lead in Data Accuracy and Innovation

Full adoption of GS1 Standards also correlates with greater data accuracy and innovation. 60% of surveyed companies that have trust in their data have fully adopted GS1 Standards compared to 35% of companies with partial adoption and 25% of those considering adoption. Companies that have fully adopted GS1 Standards are also more likely to embrace cutting-edge technologies such as real-time tracking, predictive analytics, and RFID, positioning them as leaders in supply chain innovation.

## 63% of Companies With Full GS1 Standards Adoption Prioritize Trading Partner Collaboration

Fostering effective collaboration among trading partners is crucial for optimizing supply chain efficiency and coordination. Those with full adoption of GS1 Standards are also more likely to understand and prioritize trading partner collaboration. About 63% of companies with full GS1 adoption say they prioritize partner collaboration in harmonizing supply chain operations compared to 40% with partial adoption and 42% of those considering adoption.



# **GS1 Standards Adoption** in Small Business

Only 38% of companies with 1-100 employees have fully adopted and integrated GS1 Standards compared to 52% of companies overall. They are also less likely to be as confident in their ability to manage supply chain disruption, with 11% saying they are "not very confident" compared to only 1% of all respondents.

For small businesses, prioritizing investments in GS1 Standards can be challenging due to perceived concerns about implementation costs and the complexity of integration. However, small business advocates of GS1 US emphasize the long-term value of this investment.

Locally, a platform bridging online shopping and local stores, relies on GS1 Standards to connect shoppers with nearby retailers. "Without having access to standard information, it would be a mess. GS1 Standards ensure a source of truth about each product," notes Locally's founder.

Similarly, Wild Routed, a lifestyle brand focused on sustainability, uses GS1\* barcodes to enhance its credibility and expand into larger retail markets. Co-founder Diana Ingles shared, "GS1 barcodes represent quality—not only do our customers see that as credible but so do future retailers who are a bit bigger than where we are right now."

66

GS1 barcodes are the real deal. No one else was really on par with them in terms of having the backend and being able to assign things, which is a huge benefit. We have products we want to get into stores, and it integrates well with their point-of-sale systems."

— Team Manticore

## **Hear for yourself**

Scan to watch Team Manticore's journey with GS1 Standards, or visit www.youtube.com/watch?v=CAWqKnXp0X8

These businesses demonstrate how GS1 Standards allow organizations to streamline operations, improve traceability, and collaborate more effectively with partners—all critical for remaining competitive in today's fast-paced and complex supply chain environment.

# Centralized Data Management: A Key Capability for Real-Time Agility

The ability to capture, analyze, and derive actionable insights from data is essential for enabling effective supply chain management and agility. Respondents indicated that their organizations were using data in a number of ways, with some of the primary uses being to more accurately forecast demand (46%), gain real-time visibility (45%), and enable omni-channel fulfillment (42%).

Which of the following does the data captured and shared in your supply chain equip you to achieve?

- 46% | Support accurate demand forecasting
- 45% | Facilitate real-time supply chain visibility
- 42% | Enable omni-channel fulfillment
- 42% | Enable basic operational efficiency
- 42% | Enable data-driven decision-making
- 30% | Drive large-scale automation and optimization
- 25% | Get to market efficiently
- 15% | Prevent counterfeits
- 11% | Better meet consumer expectations

The ability to manage supply chain disruptions effectively is also closely tied to the accuracy and accessibility of data. Companies that have adopted centralized systems for real-time data integration are significantly more likely to be confident in their data accuracy and reliability.

## **Regular Audits Improve Data Accuracy**

Regular data audits ensure the reliability of supply chain systems. How frequently organizations conduct data audits often depends on whether they've got a centralized data management system. Nearly half (49%) of companies with centralized data systems say they conduct regular supply chain audits, which help identify areas for improvement and ensure data accuracy. In contrast, only 38% of companies using manual or decentralized systems perform regular audits, potentially increasing their vulnerability to inaccuracies.

68% of companies using centralized data systems trust the consistency of their data compared to only 29% of those relying on manual or decentralized processes.



We have centralized systems that collect and integrate data in real time



We collect data from multiple sources but integration is done manually



Data collection is inconsistent and integration is challenging

- Very confident the data is consistently accurate and reliable
- Moderately confident the data is generally reliable, with occasional issues

Somewhat confident there are frequent issues with data accuracy and reliability



## Partner Collaboration Is the Key to Harmonizing Supply Chains—and Centralized Data Management Is a Critical Component

While 99% of respondents identified partner collaboration as a critical factor in aligning supply chain processes, companies with centralized data management systems report greater ease in collaborating with external partners, with 63% stating that improved data sharing practices have led to better efficiency in areas such as inventory management and distribution. In comparison, only 41% of companies without centralized systems report the same level of collaboration success, as fragmented data often leads to misalignment between partners.

Despite the clear benefits of collaboration, many companies still face challenges when working with their trading partners. The primary obstacles include technological barriers (57%) and misaligned goals (57%), problems that often indicate or result in inconsistent or outdated data that fails to reflect the real-time status of the supply chain.

## Aligning Data Sharing With Trading Partners Maximizes Efficiency

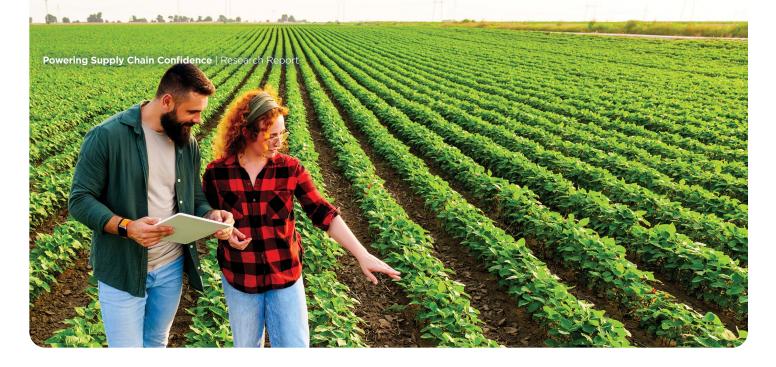
To fully realize the benefits of centralized data systems, companies must prioritize alignment and data sharing practices with their trading partners. About 63% of companies that emphasize partner collaboration report enhanced efficiency in inventory management, thanks to improved data sharing. This highlights the importance of fostering strong data integration and communication across the supply chain to achieve optimal performance.

63% | Companies emphasize partner collaboration and report enhanced efficiency in inventory management

Technological barriers to data exchange and misalignment of goals with trading partners are top challenges to effective partner collaboration.

<b>3/%</b>	integration and data exchange
57%	Misalignment of goals and priorities between partners
38%	Limited visibility into partner operations and inventory levels
37%	Difficulty in sharing accurate and timely product information
11%	Resistance to change or adoptio of new collaboration tools

**Technological barriers to** 



## **Navigating Regulatory Challenges**

Managing regulatory compliance is a significant challenge for many organizations. In fact, only about half of companies surveyed report that it's "completely true" that they can effectively manage the various aspects of regulatory compliance in their supply chains. This points to a considerable gap in compliance preparedness and a need for enhanced focus on meeting regulatory requirements.

To what extent is it true that your company is able to manage the following aspects of regulatory compliance in its supply chain?

- 55% | We can prevent counterfeits of our products.
- 53% | We can trace product beyond 1 up and 1 down.
- **52%** | We have processes in place to ensure health and safety standards are met throughout our supply chain.
- 46% | We can withdraw products from the market with precision (i.e., by lot/batch) during recalls.
- 45% | We can provide transparency into sourcing.

## **Actions Taken to Improve Compliance**

Despite these challenges, many companies have taken proactive steps to improve their regulatory compliance efforts. Common actions include developing effective tracing processes (64%), continuously evaluating regulations (63%), and deploying audits (59%).

Which of the following actions has your company implemented to improve compliance?

- 64% | Developed effective traceability processes by mapping all suppliers, sub-suppliers, products, components, materials, and ingredients in a centralized system with unique identifiers
- 63% | Evaluated regulations to stay informed on local, national, and international laws and assessed how these requirements apply to our supply chains

- 59% | Deployed audits, tests, and assessments, and responded to them in a timely manner to ensure compliance with various regulations.
- 46% | Used centralized technology systems with pre-built data templates instead of simple tools like spreadsheets to manage complex compliance efficiently.

Different industries face unique regulatory demands, requiring them to track specific regulations based on their operational needs. For example, healthcare and food industries may prioritize product safety regulations, while industries like electronics and automotive focus on environmental and import/export regulations. Each sector must tailor its approach to compliance to address the particular regulations that apply to its products and supply chain.

### **Confidence Is Linked to Better Regulatory Compliance**

Companies with high confidence in their ability to manage supply chain disruptions are generally more adept at navigating regulatory compliance. These organizations tend to have more robust systems in place for monitoring, tracking, and adhering to regulations. In comparison, companies with lower confidence levels often struggle with compliance due to fragmented processes and less comprehensive regulatory oversight.



# Sustainability and Innovation: Driving Long-Term Supply Chain Resilience

As environmental concerns and social responsibility increasingly influence business decisions, companies are recognizing the importance of integrating sustainable practices into their operations. In fact, 99% of companies consider sustainability to be either "very important" (55%) or "important" (44%).

### The Gap Between Awareness and Action

Despite the widespread acknowledgment of sustainability's importance, there remains a significant gap between intent and action. This indicates that while sustainability is high on the corporate agenda, many organizations have yet to fully operationalize these goals into concrete initiatives.

Which of the following sustainability practices are integrated into your company's supply chain?

52% | Waste management and recycling programs

48% | Sustainable packaging

48% | Certifications and impact accounting

45% | Sustainable sourcing of materials

32% | Reuse and resale

29% | Reduction of carbon footprint

23% | Energy efficiency Initiatives

10% | Use of renewable energy resources

### **Innovation as a Catalyst for Sustainability**

To drive both sustainability and long-term supply chain resilience, innovation plays a key role. Companies that are investing in cutting-edge technologies, such as real-time tracking, predictive analytics, and automation, are better positioned to achieve their sustainability goals while also enhancing operational efficiency. By prioritizing both sustainability and innovation, organizations can ensure they remain adaptable in the face of evolving regulatory and environmental pressures, ultimately building a more resilient supply chain for the future.

**See How Companies Are Creating a Foundation for Sustainability** 

Scan to learn more, or watch here at www.gs1us.org/articles/sustainable-supply-chain



## Sustainability Practices in Small Business Supply Chains: Small Businesses Are Investing in Sustainable Packaging and Sourcing

Despite some challenges, sustainable packaging and sustainable sourcing of materials stand out as areas where smaller companies are keeping pace with their larger counterparts. Among companies with 1-100 employees, 48% have implemented sustainable packaging, closely aligned with the 48% overall average. Additionally, 43% of companies with 1-100 employees are focusing on sustainable sourcing of materials, just slightly behind the 45% overall average. This suggests that, even with fewer resources, smaller companies are prioritizing these key sustainability initiatives.

## Missed Opportunities in Waste Management and Reduction of Carbon Footprint

There are significant gaps in areas like waste management, recycling programs, and reducing carbon footprints. For example, only 36% of companies with 1-100 employees have adopted waste management practices compared to an average of 48% across all company sizes. Additionally, just 25% of small businesses have integrated carbon footprint reduction into their supply chains compared to 29% overall.

The main barriers to implementing sustainability practices were identified as insufficient technology and infrastructure (63%), lack of supplier compliance (42%), and cost constraints (26%). These challenges were more pronounced for small businesses than for larger ones.

By fully integrating sustainability into their supply chains, small businesses can not only reduce their environmental impact but also meet consumer expectations and regulatory requirements, positioning themselves as leaders in the push toward a more sustainable future.

See How GS1 is Transforming Sustainability With Standards

Scan to watch, or visit www.youtube.com/watch?v=lxAHsnHLmGM

# **Innovation in the Supply Chain: Driving Agility and Sustainability**

Almost every organization understands that innovation plays a critical role in enhancing both agility and sustainability within supply chains—and can lead to a competitive edge.

How important is investing in supply chain innovation to your organization?

- 59% | Very important
- 40% | Somewhat important
- 1% | Not very important
- 0% | Not at all important

As companies seek to improve their responsiveness to disruptions and optimize operations, several key innovations are being implemented:

- 43% | Companies are using real-time tracking and monitoring technologies, which provide greater visibility into supply chain operations. These tools enable quicker responses to disruptions, ensuring a more agile supply chain.
- 41% | Companies are adopting predictive modeling and data analytics to forecast demand and optimize resource allocation. By anticipating future needs, companies can better align their resources, reducing excess inventory and minimizing disruptions.

Which of the following supply chain innovations, if any, are you implementing currently?

- 43% | Real-time tracking and monitoring
- 41% | Data analytics and predictive modeling
- 38% | Al and machine learning
- 38% | Sustainable practices and eco-friendly packaging
- 38% | Automation and robotics
- 33% | Enhanced traceability and transparency
- 27% | Use of 2D barcodes/QR codes or RFID
- 25% | Improved supply chain collaboration and integration with suppliers
- 22% | Cutting-edge data carriers, such as DNA tagging, diamond dust, etc.
- 11% | Personalized logistics and delivery options

Those organizations where innovation is most important are the most likely to have integrated 2D barcodes. By providing more detailed product information, enabling interactive marketing opportunities, and improving tracking and traceability, 2D barcodes are driving both operational efficiency and richer, more personalized customer interactions, making them a key innovation tool for forward-thinking companies.

#### Powering Supply Chain Confidence | Research Report

## Innovations Supporting Both Agility and Sustainability

Investing in innovation not only enhances agility but also supports sustainability initiatives by reducing waste, optimizing inventory, and ensuring efficient resource use. For example, companies that implement real-time tracking technologies are 68% more likely to report improved visibility and better inventory control than those without such systems. This demonstrates how technology-driven innovations can simultaneously improve operational efficiency and drive progress toward sustainability goals, making them essential for future-proofing supply chains.

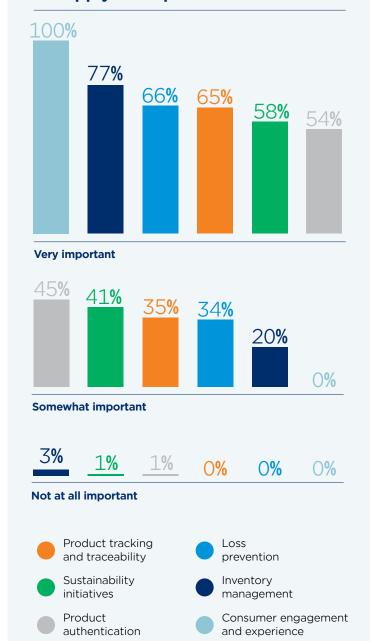
By embracing these advancements, organizations can significantly improve their ability to adapt to both market fluctuations and environmental demands, securing a more resilient and sustainable supply chain.

# Innovation in Supply Chains: A Gap Between Small and Large Businesses

Innovation is key to improving both agility and sustainability in supply chains, yet smaller businesses are adopting these technologies at a slower pace. Key findings from the data include:

- 64% | Large companies (5,000+ employees) have implemented data analytics and predictive modeling, but only 36% of companies with 51-100 employees have adopted these
- 44% | Large companies (5,000+ employees) use automation and robotics compared to 27% of companies with less than 100 employees
- 44% | Larger companies (5,001+ employees) have adopted AI and machine learning compared to 27% of small companies (1-100 employees)

# How important is innovation to your company, and how has your company integrated 2D barcodes or RFID into its supply chain processes?





Companies Implementing Real-Time Tracking Technologies

68%

More likely to report improved visibility and better inventory control than those without



Building an agile, innovative, and sustainable supply chain requires a combination of key attributes that empower organizations to respond swiftly to disruptions while driving long-term resilience and competitiveness. The heart of a successful supply chain starts here:

- **1. Integrate GS1 Standards** across your supply chain, ensuring seamless data flow and traceability.
- **2. Implement comprehensive data management systems** that provide real-time insights and analytics for informed decision-making.
- **3. Automate supply chain processes** from procurement to delivery to maximize efficiency and agility.
- **4. Foster collaboration** with trading partners through integrated systems, shared goals, and joint performance metrics.
- **5. Lead in innovation** by adopting cutting-edge technologies and practices to stay ahead of industry trends.
- 6. Address regulatory compliance by developing a robust system for monitoring and adhering to regulatory requirements to prevent disruptions and build trust with stakeholders.

**7. Integrate sustainability practices** into your supply chain to achieve long-term success and resilience.

Regular audits and the ability to track evolving regulations further ensure that companies remain compliant while maintaining the flexibility to adapt quickly to market and environmental changes. Equally important is trading partner collaboration, which fosters alignment across supply chains, enabling smoother operations and more cohesive sustainability efforts.

The combination of automation, real-time data, strong regulatory oversight, collaborative partnerships, and GS1 Standards adoption is essential for achieving high levels of agility, sustainability, and innovation and positions organizations for success in an increasingly complex global supply chain environment.

## **Methodology**

This report is based on a survey conducted by Redpoint, exclusively for GS1 US, gathering insights from 505 supply chain professionals across a variety of industries during August 2024.

The respondents were selected based on their seniority and responsibilities within their organizations, ensuring the data reflected the perspectives of decision-makers with deep involvement in supply chain management.

Here are the key aspects of the survey methodology:

### **Respondent Qualifications**

- C-level executives (27%)
- VPs/Executives (43%)
- Directors (30%)

### Responsibilities

- Supply chain optimization (35%)
- Procurement and sourcing (20%)
- Logistics and transportation (14%)
- Operational efficiency (10%)
- Product life cycle management (8%)
- Quality assurance (5%)
- Data analytics and reporting (5%)
- Sustainability and environmental impact (3%)

#### **Industries**

- Healthcare (30%)
- Foodservice (26%)
- Grocery (22%)
- Apparel/General Merchandise/Retail (22%)

### **Number of Employees at Company**

- 1-100 (16%)
- 101-500 (35%)
- 501-1,000 (31%)
- 1,001-5,000 (13%)
- 5,001-10,000+ (5%)

#### **Type of Company**

- B2B and B2C (41%)
- B2B (39%)
- B2C (19%)
- Educational institution (1%)

### **About GS1 US**

GS1 US\*, a member of GS1\* global, is a not-for-profit information standards organization that facilitates industry collaboration to help improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading partner collaboration that optimizes their supply chains, drives cost performance and revenue growth, while also

enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code (EPC\*)-based RFID, data synchronization, and electronic information exchange. For more information, visit www.gslus.org.

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