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Driving Toward a Circular Economy: How supply chain transformation supports sustainability

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How can business leaders think about sustainability in this moment, while attending to more immediate, survival-mode issues of basic commerce? Nearly three years of supply and demand volatility have seriously battered industry's ability to maintain steady production and deliver goods around the world. Clearly, new strategies are needed to build stronger, more resilient supply chains, redesigned to support new realities. Modernized systems are needed to handle increasingly complex operations.

And yet, the call for action to counter a looming environmental crisis is growing louder and more urgent. The world can't wait, according to the latest science. It may seem dramatic – but supply chains have an important role to play.

Here's the good news: new technology, collaboration and cross-industry implementation of data standards to facilitate improved product track-and-traceability will support enduring solutions on both fronts. These critical components of supply chain modernization are already underway.

HOW CIRCULARITY FIGURES INTO SUPPLY CHAIN OPERATIONS

Product and material shortages that hobbled supply chains in the past few years have made quite an impression on the public consciousness. Suddenly, resource limitations became a tangible reality for consumers, who learned they can't always get what they want, and for manufacturers and businesses unable to procure the parts and ingredients they needed.

Out of this new awareness comes a shift in perspective. Waste takes on new meaning when viewed as an irretrievable loss of something precious. It adds an economic dimension to escalating environmental concerns. Threatened with intermittent material and product scarcity, manufacturers are rethinking procurement and retailers are rationalizing their product offerings. Consumers are looking for ways to reduce consumption of disposable goods. People are learning less wasteful behaviors – bringing their own bags to the grocery store; purchasing pre-owned and refurbished products, instead of new; fixing things instead of throwing them away.

These are the principles behind the vision of a circular economy – a new paradigm that is gaining traction with businesses, environmentalists, regulators and economists alike. Until now, the world has run on a linear economy unrealistically based on the assumption of unlimited resources. We have been overlooking long-term consequences while going about our business, wasting valuable materials in a world with finite resources.

Those days are over. It has become abundantly clear that new strategies are needed to better support true sustainability for both the planet and its inhabitants, including the industries providing what we want and need. The supply chain is incredibly important for this transformation to a circular economy that reduces waste and conserves resources while serving productive commerce.

EVERYONE NEEDS MORE INFORMATION

Industries are working collaboratively to improve supply chain resilience and effectiveness for the complicated requirements of a modern, technology-driven economy. Consumers are demanding much more information about the products they buy, and shopping in more modalities (online, in store, and everywhere in between). They are learning to expect transparency and looking for products that align with their values.

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In a recent study, 85% of consumers surveyed said they had shifted toward being more sustainable in the past five years, and they will continue to expect sustainability in the products they buy. Giving customers access to detailed product information is now crucial for sales in any channel. Digital technology and standardization enable the data capture and interoperability that make the information accessible.

You need a good deal of information to establish the circularity and sustainability of a product. What materials were used, and where were they sourced? How have those materials and products been used before? Are they recyclable? Can they be upcycled or reused? Will it be the right product with the right attributes? If material substitutions have been made, what are they? The details matter.

DATA STANDARDS HARMONIZE SUPPLY CHAIN COMMUNICATIONS

As a product moves through the supply chain, it has to be tracked and traced to enable improved visibility. Every stakeholder along the way must be capable of receiving, understanding, adding and transmitting information that documents the product's journey. It only works when the necessary data is standardized in a common language that all trading partners can ingest and understand. Global data standards provide that language, and are essential to long-term, sustainable supply-chain solutions.

Specifically, three key standards are used to homogenize the data stakeholders need to share. They include unambiguous, unique product identification, location identification, and chain of custody documentation. All are crucial to tracking product movement.

- **Product identification.** Standardized product identification allows all stakeholders to refer consistently to a single product across the global supply chain and throughout the product's lifecycle. Every product must be uniquely identified with a GS1 Global Trade Item Number (GTIN), encoded in a barcode that can be scanned at every stop.

- **Location identification.** A Global Location Number (GLN) denotes any specific facility or location where a product or its materials may be scanned. Locations can be defined in very granular terms, such as a specific growing field or production line, enabling real-time visibility as to the product's origin, route and progress in transit.

- **Chain of custody.** GS1's Electronic Product Code Information Services (EPCIS) is a data sharing standard for enabling visibility within and between organizations. It helps provide the "what, when, where and why" of products and other assets, enabling the capture and exchange of interoperable information about status, location, and movement. EPCIS helps stakeholders verify the provenance of raw materials, supporting industry's digital transformation to circularity.

Together, these data standards make it possible for trading partners up and down the supply chain to understand exactly what a product is, where it came from and where it is now. They enable automated information exchange between all stakeholders in real time. This information gives companies the opportunity to adjust their sourcing and production strategies when necessary, providing a new level of resilience for uncertain times.

COMING FULL CIRCLE

Traceability is essential for modernizing global supply chains not only for more sustainable and effective commerce, but also for creating accountability that is at the core of a circular economy. To build circularity, companies must be willing to rethink their production, distribution and consumption models based on accurate information from their suppliers and trading partners. Raw materials sourcing is a key consideration that can only be clearly managed with full transparency, collaboration and interoperable information exchange between all stakeholders in a product's lifecycle.

The world is changing fast. Supply chains have been beleaguered and beset by external circumstances – a pandemic, material shortages, economic volatility, shifting priorities, supply and demand fluctuations, and a lack of visibility needed to manage distribution of products amidst all these moving parts. Meanwhile, digital technology has changed the way people shop, along with just about every other aspect of modern life. And at the very same time, the plight of our planet is becoming an urgent concern that keeps people up at night.

The adoption and implementation of data standards across industry will help clarify communications between supply chain partners and enable improved ordering and inventory management, product transparency, and real-time decision-making when adjustments must be made to navigate the vicissitudes of modern commerce. Those same strategies are also essential ingredients for building a circular economy, whose time has come.

All this supply chain modernization, leveraging digital technology and data standards to enable increased resilience, is already in motion. And despite the complexity and tremendous scope of this transformation, it will support industry's gradual transition to a more circular, responsible and sustainable way of life.

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