SUPPLY CHAIN 4.0:

6 Ways Industry 4.0 is Transforming the Supply Chain

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Industry 4.0 is heralding the next era in supply chain management, in which suppliers and customers come together in entirely new ways, blurring the lines between the digital and physical worlds and erasing traditional organizational boundaries.

An overarching and unavoidable revolution in manufacturing, Industry 4.0 is driven by the confluence of several different technological disruptions, including Big Data and analytics, unprecedented connectivity via machine-to-machine and human-to-machine interaction, 3-D printing, automation, artificial intelligence and augmented reality. The digitization of the supply chain, or "Supply Chain 4.0," promises to reduce inefficiencies and lower costs while improving flexibility—critical ingredients for boosting resiliency.

The pandemic's disruptive impact on global supply chains has heightened the need for manufacturers to focus on risk mitigation and increasing resiliency. By capitalizing on Industry 4.0 technologies and increasing real-time visibility into every part of the value chain, manufacturers can more proactively identify areas of potential risk prior to an issue, or more quickly notice and respond to disruption.

Supply Chain 4.0 isn't just about risk mitigation. It can also be a source of competitive advantage, as every node in the supply chain is leveraged for business intelligence and greater collective benefit.

HERE'S A LOOK AT SIX WAYS INDUSTRY 4.0 IS TRANSFORMING THE TRADITIONAL SUPPLY CHAIN.

1. The Connected Supply Chain

"Smart logistics," such as automated warehousing, cargo tracking and remote fleet management, can be transformative. Recent advancements in supply chain technology give companies real-time insights into asset status and location. Cloud-based GPS and cost-effective Bluetooth Low Energy (BLE) asset tracking can provide instant updates on geography, including when cargo is in transit. Real-time tracking can be used to gauge transportation performance and delivery route inefficiencies. Automation and business intelligence technologies have been central to improving adaptability and optimizing the supply chain for variable customer demand. Internet-connected sensors can detect supply chain disruptions or quality issues and address the issue or adapt production flows in real-time with minimal human intervention. When done right, results include increased visibility, responsiveness and resiliency across the entire supply chain ecosystem.

2. Demand-Driven Supply Chain Management

Demand-driven supply chain management isn't new. What is new is the sheer amount of data available and our ability to draw insights from it. Traditional methods of demand forecasting are based on historical demand levels, but those single data points may not be reflective of the current demand environment. Embedded sensor technologies can monitor, collect and report information from the surrounding environment and respond to remote instruction. Smart analysis of that data can vastly improve the accuracy of demand forecasting and replenishment. While still not a perfect science, predictive analytics and machine learning can account for these additional variables to reliably predict demand, recognize patterns and anticipate changes.

3. Formation of the Digital Thread

The digital thread is a communication framework for sharing information to all data consumers upstream and downstream, creating a constant feedback loop. Beyond connecting data and systems, the digital thread requires the integration of workflows and people. Improved data communication will enable the whole product chain to become more responsive in terms of changes in design, manufacturing, volume, reworking and through-life service provisions. Ultimately, establishing this digital thread between suppliers, your organization and customers is the cornerstone of the evolution from supply network to integrated value chain, where suppliers and customers collaborate to achieve efficiencies and lower costs. The real value of the digital thread comes from better business intelligence and greater intimacy with supplier performance and customer behavior.

4. Value Co-Creation

The integrated value chain is predicated on a new level of transparency and information sharing, including constant, bidirectional communication and inter-company visibility into everything from inventory conditions, supply statuses and shipping delays to future-focused factors predicting shifts in demand. Best practices are shared with internal and external stakeholders to increase efficiencies and improve interoperability. End-to-end visibility is largely a function of being able to access data across business networks, also known as a "network of networks." The idea is that the synthesis of data from all supply chain entities is more valuable than data input from a single network. This sets you up for synergistic co-creation of value, where savings and opportunities are generated and shared between business partner organizations, resulting in "win/win/win" relationships.

5. Evolving Customer Expectations

Many manufacturers are reevaluating their distribution models as consumer shopping habits change. Today's retail and manufacturing customers have little tolerance for delayed or incorrect orders, meaning logistics and distribution—from warehousing to order fulfillment to shipping—must happen at lightning speed. As a result, some manufacturers are moving from direct store to centralized distribution and real-time inventory management, allowing order points to be less tied to warehouse inventory levels and more responsive to demand. As most customer transactions shifted online during the COVID-19 pandemic, manufacturers are taking a cue from retailers and building their own e-commerce capabilities. Some manufacturers may even decide to shift to selling direct-to-consumer (DTC) and leverage retailers' strategies for improving their digital customer service capabilities. This includes creating digital order forms and online store fronts, allowing for remote communication with customers. By leveraging virtual or augmented reality tools, manufacturers can even offer simulations of factory tours and showcase new products or service offerings.

6. Cyber Risk

Industry 4.0 is breaking down the traditional barriers that can stymie innovation and collaboration, but in doing so, it creates more opportunities for bad actors to break in, thus exponentially increasing supply chain cyber risks. Sophisticated attackers frequently exploit third-party vulnerabilities to gain access to their ultimate target. Any security gaps in manufacturers' supplier networks can serve as ingress points for hackers. On the flip side, manufacturers can also be the ingress point for hackers to reach their supply chain partners and end customers, resulting in reputational damage and lost business, particularly if the victim organization is deemed cyber-negligent. All suppliers should go through an evaluation process that identifies cyber risks. The identified exposures should then be addressed with contractual provisions and clear minimum standards. The measures taken should be commensurate with the risk and the value of the relationship.

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