Supply Chain Resiliency in a Time of Disruption

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Introduction

In the age of COVID-19, supply chains are experiencing a bumpy ride. Some industry supply chains have seen significant supply disruptions but only minor demand changes, other industries have seen minimal supply disruptions but major demand changes, and still others have seen both. Regardless of the industry, supply chains are experiencing pressures unlike any we have seen in a generation.

Those who have both studied and operated supply chains for decades have always talked about the importance of visibility, agility and resiliency, but these terms are now on the tip of everybody's tongue and are taking on a profoundly more important role in an increasingly disruptive world. Indeed, IDC defines resiliency as visibility plus agility. It is not enough to be able to see what is happening, thus the visibility; the supply chain must be able to do something about it, thus the agility. Although resiliency is not something that can be achieved overnight, there are things that can be done in the shorter term to better understand the drivers of demand volatility and allow companies to better match supply with demand. When both supply and demand are highly volatile, supply chain planning with both suppliers and customers is critical.

Although now it is "easy" to see that resiliency is critical, even five years ago, IDC was suggesting that supply chain resiliency may well be the most important characteristic of the modern supply chain. Although COVID-19 is having a global impact, regional disruptions prior to COVID-19 had many of the companies IDC speaks with prioritizing risk assessment and resiliency much more highly than we had seen in the past 20 years. Yet those same companies confessed that it remains difficult to detail the business case and justify the return on investment — and to build the internal capabilities necessary to be truly resilient. It is not enough to have clarity into supply chain risks, though that is an important consideration; it is also important to be able to take the necessary corrective steps, dynamically respond if you will, both proactively and reactively, to ensure that disruptions do not persist and "time to recovery" is optimized.

In a supply chain survey fielded by IDC in the second quarter of 2020, when asked about the gaps most problematic for the future of the supply chain, respondents identified lack of resiliency as the top gap. In other words, without a resilient supply chain, survey respondents felt that they would be at a competitive disadvantage. Figure 1 details the top 5 responses.
IDC TECHNOLOGY SPOTLIGHT

Supply Chain Resiliency in a Time of Disruption

FIGURE 1: Critical Gaps in the Supply Chain

Q. What are the most important gaps that, if not addressed, will materially affect your supply chain?

IDC is often asked what it is that will define the best-in-class supply chains of the future. Our answer is that it will be companies that utilize the massive breadth of data available to organizations for resilient decision making. Now more than ever before, the ability to leverage information across the extended enterprise will be the critical capability that will require modern digital competencies as noted in Figure 1. Companies with disconnected supply chain systems and capabilities will simply not be able to do this well and will not be resilient. In an inherently disruptive world, the supply chain must be able to make the right strategic decisions efficiently and effectively. This means responsive supply chain processes that can sense changes and respond to them in real time.

Supply and Demand Shocks

Although most of the discussions about the supply chain have focused on supply disruptions (e.g., automotive parts factories closing in Wuhan, China, or meatpacking plants closing in the U.S. Midwest), IDC believes that demand disruptions are a greater worry and are not getting enough attention. If demand does not return, the restoration of supply will not matter. It is not that absolute of course because some demand issues can be traced directly back to supply interruption. However, much of the demand has been driven by the slowing of business activities. For example, if you are a candy manufacturer, your business has likely been materially affected in 2020 — not because of supply issues but because movie theaters were closed for several months before opening in late summer. Just recently, the two largest
global theaters announced that they are closing again, probably through the end of 2020, partly because consumer demand has not returned and partly because most tentpole movies have been delayed into 2021. It is critical, therefore, for the supply chain to be resilient to both supply disruptions and demand disruptions.

The reality is that whether fulfilling supply or demand, all manufacturers (and retailers) must adapt their supply chains to operate in a fundamentally more disruptive world. In the past, disruptions have tended to be regional, and while the initial reactions have been replete with professed urgency to change existing practices, all too often that urgency passes with time and resumption of normalcy. COVID-19 is the first global disruption in decades, and while it too may pass into history with a whimper, it does feel different. Perhaps it is unreasonable to expect the global manufacturing industry to be able to turn on a dime for an event that occurs once in a century. The "carrying" costs of flexibility and large inventories of things that degrade over time, two costs that rise during a pandemic, are high. COVID-19 has exposed a material lack of visibility, flexibility, and adaptability that should be inherent to the industry.

At IDC, we have had more inquiries into demand planning year to date in 2020 than in any prior year on record. The nature of these inquiries is remarkably consistent in lamenting the problems manufacturers face in forecasting demand. While some manufacturers are quite sophisticated in terms of the tools and processes they use to arrive at a consensus forecast, many more use historical shipments as a major input. This approach is not useful when you are trying to forecast in an environment where the historical precedent is from 1918.

While part of the answer is to adopt modern technologies within supply chain planning, though even some of those companies are struggling to produce a good forecast, it is also important to begin to understand and utilize other kinds of data to inform the forecast. Indeed, thinking outside the box for new data sets such as disruption triggers and socioeconomic trends is likely to be important for the future of supply chain planning. In addition, the ability to be agile and respond quickly to demand forecast variations has just become much more important.

In the short term, supply chains should implement business continuity assessments to evaluate the recovery requirements of both supply and demand as well as look across the entire network of suppliers (components/ingredients, OEMs, logistics, finished goods) and customers and adjust the process based on the significance of the partner. Risks, disruptions, and inevitable changes must be included as part of the collective business, product, and supply chain planning and design process.

The ability to model various scenarios in the short term and effectively plan for them requires the full power of an integrated supply chain planning platform with modern technologies (e.g., cloud, artificial intelligence/machine learning, analytics, ecosystem networks) working in concert with both upstream and downstream IT systems that support product development, procurement, supply chain planning, supply chain execution, and post-sale service execution. To capitalize on the "next new normal" in the longer term, organizations should revisit, modernize, and create local as well as global supply chain contingency plans by leveraging the full span of digitized tools, which includes modern robotics, drones, and automated vehicles integrated into intelligent operational systems as part of flexible and dynamic workflows.
Supply Chain Resiliency

At IDC, we are talking both with clients and within our research about the notion of supply chain resiliency. For the supply chain to be resilient, it must have both visibility and agility. It is not enough to be able to see; the supply chain must also be able to act. It is not enough to be able to act; the supply chain must see where and how to act. Thus, visibility plus agility equals resiliency.

For both supply chain planning and supply chain execution, the supply chain must see what is happening (or about to happen) in real time and be able to react in an efficient and effective manner. A supply chain that sees something in advance but is relegated to being a spectator to an unfolding catastrophe is not resilient. In IDC’s 2020 Supply Chain Survey, 95% of respondent companies said that they have projects within their supply chains to improve visibility. Revolving around the use of data and the adoption of ecosystem networks, these efforts are a blend of supply chain planning, end-to-end supply chain, and distant tier supply. Agility is also an important focus with initiatives concentrated on agile inventory management, "smart" procurement, and manufacturing flexibility.

Although we must not forget about people and process, the role for technology and automation in a resilient supply chain future is critical. Figure 2 notes the importance of technology to supply chain resiliency both in the near term and in three years. The use of multienterprise supply chain networks to harness the power of the ecosystem increases significantly over time, as does the role for artificial intelligence and blockchain. If we expect a future where data sits at the center of the best-in-class supply chain, then these priorities make sense. Artificial intelligence is important to help control data quality and extract insight from that data. Blockchain, while not a data quality technology, is a data integrity technology and can help control data degradation.

**FIGURE 2: Achieving Resiliency — Use of Technology**

![Graph showing the use of technology in supply chain resiliency over 12 months and 3 years.](image)

- Multienterprise cloud networks
- Software as a service/cloud applications
- Internet of Things
- Robotics
- Artificial intelligence
- Blockchain

\( n = 816 \)

*Source: IDC’s Supply Chain Survey, 2020*
Referring back to Figure 1, we note that for the foreseeable future, the reality is that companies that invest in resiliency and digital competencies will outperform those that do not. The impact of COVID-19 seems likely to persist at least through 2021, perhaps longer. If the "last" normal was about the supply chain reacting to COVID-19, the "next" normal looks like it will be about adapting to COVID-19. What the next "next" normal looks like after 2021 remains to be seen. Although it is possible that the supply chain will return to its pre-COVID state, it seems much more likely that we will see some fundamental, structural changes. At the core of those changes will be the adoption of far broader and deeper modern supply chain planning that requires both comprehensive visibility and much closer connection to key suppliers, manufacturing, and logistics as well as broader adoption of technology to enable automation.

Part of making the supply chain resilient means ensuring that the organization can manage across the four Ws: weather, war, workers, and "w"egulation. In the case of COVID-19, the impact has been mainly on workers. Although we have seen significant inroads of automation in the supply chain, factory and distribution operations still rely materially on people. Supply chains will always, and should always, rely on people for most decision-making and service tasks. There are, however, many rote or repetitive tasks that are better handled with automation. Whether organizations are assessing maintenance issues with drones, moving inventory around warehouses with automated guided vehicles (AGVs), or even using driverless vehicles for certain transportation routes, part of resiliency is having ways to manage the operation of the supply chain through automation should people be a limitation.

Benefits

In 2017, IDC conducted a survey focused specifically on the state of resilience in the supply chain and defined supply chain processes and technology maturity dimensions as part of that assessment. Broadly, the less mature stages of supply chain resiliency tended to be characterized by siloed or highly reactive behaviors, while the more mature stages tended to be characterized by proactive or even predictive behaviors. Mature supply chains were more likely to look at supply chain process planning globally, were highly collaborative both within departments and across the entire organization, and had a more progressive view of the use of people/process versus the use of technology.

IDC saw a similar story when assessing the maturity of technology. Companies that had prioritized resiliency in their technology investments were materially more mature than those that had not. Indeed, the more technologically mature companies had widespread adoption of key technologies, systems-driven communication and collaboration, and enterprisewide supply chain planning and execution. They had prioritized full integration between internal applications and significant integration with both upstream and downstream trade partners to ensure applications were purpose designed to address risk and support resiliency.

In 2020, technological maturity is more important than ever. If organizations cannot see what is happening and respond quickly, they will not be resilient. Companies that have embraced supply chain resiliency using an integrated supply chain capability and multienterprise networks with upstream and downstream collaboration indicate a broad range of benefits. These capabilities do not just happen, and many established supply chains are finding themselves poorly positioned to compete in a fast, highly disruptive environment.
Supply chains that successfully enable visibility and agility, adopt comprehensive analytics, and employ cognitive technologies will have a step up on competitors that do not. Benefits that drive significant business capabilities include the following:

» **Superior financial performance.** IDC estimates coupling analytics and resiliency to extract broader financial insights will be worth 3–5% of incremental revenue as well as a 2–3% margin for industry leaders.

» **More effective innovation delivery.** IDC estimates resiliency enables a 10% systemic reduction in innovation costs and a 30% reduction in new product lead times.

» **Less system disruption and/or better response.** Digital commerce networks, advanced analytics, and better integration of demand and supply networks can cut supply chain recovery time by 50%.

**Considering Oracle**

Oracle’s suite of supply chain planning products includes Oracle Cloud Demand Management, which combines forecasting algorithms with flexible analytics to anticipate customer demand. The cloud-based demand management solution gives organizations immediate feedback on new products, business segments, and customer behaviors, along with time-phased replenishment requirements, so that organizations can seize opportunity from change.

Capabilities of Oracle Cloud Demand Management include the following:

» Multidimensional demand modeling that adapts to the business

» Top-down and bottom-up forecasting

» Flexible time buckets, units, and currencies for operational and financial planning

» Capturing of internal and external data

» Identifying demand patterns and changes via real-time updates

» Monitoring changes in demand signals via exceptions and notifications

» Bayesian forecasting engine that handles multiple causal factors

» One-click baseline, seasonal, trend, and causal factor analysis

» Configure-to-order (CTO) product planning

Oracle’s Cloud Supply Planning is designed to give organizations simpler, faster, and better ways to tactically plan for and execute operations strategy. The supply planning solution detects issues, prioritizes competing demands, and intelligently reschedules and reroutes global supply to minimize disruptions and take advantage of opportunities as they occur.

Capabilities of Oracle Cloud Supply Planning include the following:

» Plan a global supply chain across multiple tiers

» Calculate statistical safety stock requirements

» Generate supply plans that include outsourced manufacturing and upstream suppliers
Plan process, discrete, and mixed-mode manufacturing
Dynamically prioritize and reschedule demands based upon business requirements
Automatically evaluate and address material and capacity constraints
Analyze exceptions, determine root causes, and make intelligent action recommendations
Model what-if changes to capacity, demand, supply, and items
Compare the effectiveness of alternative plans
Release the best plan for execution and cancel or reschedule supply orders as needed

Oracle's Sales & Operations Planning (S&OP) helps organizations consistently and profitably execute on their strategy, aligning operations on a common set of forward-looking metrics and a shared operating plan for achieving objectives. When it’s time to move plans into execution, S&OP from Oracle helps translate S&OP decisions into tactical plans and continuously monitor performance to ensure operations stay on target.

Oracle's Collaboration and Visibility product helps organizations increase supply visibility, automate vendor-managed inventory practices, and secure supplier commitment to order forecasts, thus driving more responsive trading relationships.

All of Oracle's supply chain products are designed to optimize an organization’s demand and supply plans with automated planning, scenario modeling, and machine learning–guided problem resolution to drive better planning results, improved accuracy, and profitability.

**Challenges**

Although Oracle has been making good progress in the supply chain management (SCM) marketplace, it is a highly competitive space. Moving aggressively to the cloud has been a productive transition for Oracle, but it has brought the vendor into competition with companies providing several, albeit smaller, cloud-native offerings. While IDC expects Oracle to continue to be a significant player in the SCM marketplace, and to continue to see strong growth numbers, the company must be mindful of the increasing number and variety of competitors.

**Conclusion**

The supply chain is now a key function for companies to realize their business aspirations. In a world where disruption is the next normal, a resilient supply chain that has both visibility and agility will be critical. As companies think about the supply chain and the role that it plays in their business, they should consider the following:

Connect supply chain systems to all key enterprise systems, including manufacturing and ERP.

Look for capabilities that provide visibility across the supply chain to enable an agile response to both supply and demand fluctuations.

Invest in a modern, flexible supply chain suite.

Explore modern digital technologies. They are important ingredients to enable the visibility and agility necessary for true supply chain resiliency.
About the Analyst

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Simon Ellis is responsible for providing research, analysis, and guidance on key business and IT issues for manufacturers. Mr. Ellis has 30 years of experience in the manufacturing industry as both a market researcher and an end-user practitioner working across all major areas of the supply chain.

**MESSAGE FROM THE SPONSOR**

**About Oracle**

Oracle has been a leader in North America in the Supply Chain Management (SCM) market for the past five years. Oracle's market share in 2019 was more than double the nearest competitor. Oracle Cloud Supply Chain Planning is purpose built for and with customers, leveraging next generation technology to evolve core planning functions for demand management, supply planning and sales and operations planning. Supporting a wide range of global customers across all industries, Oracle supply chain planning offers resilient and agile solutions for any planning environment. Take some time to explore how Oracle Cloud is helping customers deliver better planning results, faster.

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» [New Rules for Supply Chain Insights, Collaboration, and Overall Resiliency](#)

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