

Inoculating Supply Chains Against Black Swan Disruptions Like COVID-19

by **Matthew Lekstutis**,
Global Managing Partner, Supply Chain Consulting

Abstract

The wild swings in demand and supply differentiates the COVID-19 disruption in supply chains from other natural disasters. With the globalization of supply chain ecosystems, no national economy – and seemingly even no company – has immunity.

Unexpected changes in demand stemming from consumer behavior changes are driving the uncertainty. For example, who would have thought an outbreak of a respiratory disease like COVID-19 would drive panic demand for toilet paper, as seen in the U.S. and elsewhere? Yet when we consider the number of people required to work from home now due to stay-at-home orders, it's not so crazy that people wanted to stock up on the necessary goods that, at least during the workday, employers and schools normally provide. (For similar reasons, we might expect to see growth in consumer coffee brands, such as Folgers and Chock Full o' Nuts, as workplace breakrooms and retail coffee shops remain closed.)

As consumers reprioritize their activities, so too must companies reprioritize supply chain plans and requirements. While many personal care and healthcare-related products are experiencing surges in demand – Standard & Poor's¹ predicts more than 5% sales growth for packaged food, household and personal care products. and, notably, “starches and sweeteners” in 2020 -- many consumer durables and industrial equipment companies are experiencing a sharp decline in demand from business shutdowns. Add to this conundrum the disruption to global transportation capacity, labor restrictions, new pricing, and other market slowdowns, and you have the perfect storm.

What is a Black Swan?

“A black swan is an unpredictable event that is beyond what is normally expected of a situation and has potentially severe consequences. Black swan events are characterized by their extreme rarity, their severe impact, and the widespread insistence they were obvious in hindsight.”

—Investopedia²

Navigating this global pandemic – certainly from a public health perspective, but also for employees, managers, and business leaders – has already exposed underlying structural problems. For supply chains, the ongoing challenge -- building capabilities to identify and manage key risks to supply chains – appears even more clearly. Even robust risk management programs born out of previous “black swan” events, such as H1N1, SARS, Fukushima, and others, are being pressure-tested now. The COVID-19 outbreak materialized and threatened global society (including business) with a speed, pervasiveness and uncertainty not seen in previous crises.

Some companies have already made progress in improving agility and visibility into their supply chain. The recent TCS 2020 CIO Study³ of 1,010 CIOs in the U.S. and Europe showed that, at least in some industries such as consumer packaged goods and manufacturing, processes for logistics, distribution and supply chain management are 50% digital or better today — although some other industries (notably telecom, insurance and even media and entertainment) still struggle with the transition to digital business in these areas. But regardless of the industry, now is a critical time to leverage a data-informed approach to prioritize the greatest risks to supply and demand and to develop immediate, medium, and long-term risk mitigation and supply chain resiliency strategies.

Unlike a vaccine for the actual novel coronavirus causing this disruption, there may never be a definitive therapeutic treatment to avoid supply chain disruptions from diverse, unforeseen events. But companies can strengthen their supply chain's "immunity" against black swan events, making it more responsive in the face of global crises. Such an approach would be to combine immediate near-term remediation with a data-dependent, step-by-step process to adapt the supply chain to what may be a permanently transformed operating environment.

Formulating the Response: War Room and Crises Triage

Companies must immediately keep essential product flowing in the face of any black swan event. To do so, they should immediately establish a command center or "war room" for quick prioritization of products and customers, using a manual allocation process, perhaps with supplemental "surge" labor to brute-force non-standard solutions. Driven by new priorities, the logistics function must overcome its chokepoints and manage product flows in a new, challenging transportation environment. For example, price increases and lower service levels stemming from canceled airline flights and diminished commercial air capacity from overwhelming demand are an immediate issue. And, there are port closures and product quarantines complicating sourcing and routing. Each product movement may become a real-time decision regarding cost

and value tradeoffs. Companies should plan to implement quick, centralized workflow and approval processes for any changes made.

Crisis Response Support

In the short term, companies must act on a “best available” data-intensive identification of the end-to-end supply network ecosystem, from raw material sub-tier suppliers to the ultimate end users of their products. Where is each node located? What is its size and relative value? What are the fulfillment and flow patterns that drive demand creation and supply replenishment? What are the lead times and service-level agreements? This data capture allows for the development of a rapid response to disruption scenarios and the evaluation of response strategies. For example, if a factory closes due to a natural disaster, or a nation's freight transportation unions go out on strike, how can the firm best adapt and respond to these supply chain events? In addition to data regarding the physical nodes in the supply chain, companies should also aggregate and utilize data to segment their product portfolio along criteria such as demand volatility, volume and value. This can be used to identify valuable product sources, customers, and channels to prioritize in the event of a discontinuity.

Digital Twin and Visibility Tool Enablement

After the immediate business continuity issues are resolved, cost containment and revenue preservation become paramount. Companies should assess the entire enterprise supply network ecosystem for threats that may disrupt the ability to service customers or drive operating costs to unsustainable levels. This is based on finding the greatest potential failure points -- for example, sole-source suppliers or a concentration of manufacturing or distribution facilities in infection “hot spots.” Enabled by a “digital twin,” companies can assess the agility of the supply chain to rapidly ramp up or ramp down throughput or reroute the network around choke points. The digital twin combined with real- or near-real-time dashboards -- enabled by advanced analytics, IoT, and blockchain technologies -- can provide the visibility to the supply network ecosystem to enable actions that can be prioritized based on urgency, time-to-value, and complexity. Some examples:

- Fast-tracking identification and qualification of alternate supply sources
- Redeployment of strategic inventory to prevent stockouts in case of labor disruptions or border closures
- Alternative shipping modes (both inbound and outbound) with trade-offs on cost, time, availability and flexibility
- Increased communication and transparency of demand forecasts or supply status, collaboratively improving plan accuracy and avoiding “bullwhip” effects with upstream and downstream partners

Simulating Disruptions Drives the Risk Response Requirements

In the longer term, solving for any particular emergent black swan crisis is necessary but not sufficient. A robust and integrated risk management program driven by leadership and spanning the entire supply network ecosystem is critical. Formal, multi-functional reviews must be set up where risks can be continuously simulated and evaluated by identified risk owners as circumstances change.

Using today's visibility and planning tools for scenario simulations and modeling, mitigation plans can be evaluated in terms of capacity, out-of-stock potential, implementation time and cost and other factors. Sophisticated risk management tools can now integrate with ERP systems; by including third-party risk data, they can increase real-time event monitoring and visibility into potential problems ahead. But to move quickly, transparency with partners – even including them in such activities – is critical to avoid miscommunications and delays. A governance structure must be in place whereby critical business objectives and risk tolerances are communicated by leadership and propagated down through the organization and its supply and distribution constituents. Similarly, risks and proposed mitigations and costs must be shared across the organization, escalating to management for rapid approval whenever necessary. In short, the tools can enable smart decisions, but real leadership is required for the decisions, actions and changes to result.

Robust and Resilient in the Face of Crisis

Armed with a formal structure and framework for supply chain risk response will enable companies to reflect, digest, and respond to a risk environment that considers exigent crises such as COVID-19 as well as other events or circumstances, large or small. Lacking such a program, any tactical response to the pandemic must be considered in the context of investing in the strategic changes to processes and infrastructure required to ensure business continuity and sustainability in the face of future unique and unexpected global operating disruptions. Inoculating the supply network ecosystem against the next black swan – and the wedge of swans sure to follow – improves the overall health of the enterprise.

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