Supply Chain Management in Novel Coronavirus (COVID-19) Crisis

Center for Supply Chain Research®, Penn State University

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Agenda

- Introduction
- Macro impacts
- Supply and demand shocks
- Supply chain–wide responses
- Supply chain node and link responses
- Breakouts
- Breakouts recap
- Helpful references
- Q&A / Open forum
COVID-19 Macro-Level Impacts

**SOCIOECONOMIC IMPACTS**

- Widespread human impact, with unknown duration and unknown impact. Public fear is longer-term and risks are invisible / unknown.
- **International trade.** Significant drop in exports from China to the US in 1st and 2nd quarters
- Widespread scope impacting both goods and services
- Reduced workforce capacity, globally

**MACRO-ECONOMIC IMPACTS**

- **Global GDP growth / Recession likelihood**
  - Broad range of economic impact estimates and timelines
  - Recession has likely already begun.
  - Variety of estimates on recovery from V to U to other potential shapes over a variety of time horizons.
  - Therefore = HIGHLY uncertain expectations
- High correlation to the global financial system
- Significant reliance on collaborative government interventions to maintain economies
COVID-19 Supply and Demand Shocks

**DEMAND IMPACTS**

- **US domestic demand pattern**
  - Rapid decrease in discretionary spending
  - Stockpiling/panic buying, particularly essential consumer goods and food-stuffs
  - Increase online shopping due to social distancing, self-quarantining, and consumer avoidance of physical stores and crowded gathering places
  - Increase demand for specific product categories for personal protection, hygiene and medical supplies

**SUPPLY IMPACTS**

- **Supply impacts**
  - Chinese manufacturers’ production delays or stoppages due to labor shortages
  - Shortage and long lead times of China-sourced supplies to US
  - Force majeure declaration by Chinese suppliers

- **Logistics impacts**
  - Labor shortage causing congestion at Chinese airports and seaports
  - Trans-Pacific ocean and air cargo capacity constraint to increase freight rates and volatility
  - Congestion at US port terminal with reduced operating hours
Supply Chain–Wide Responses

**Workforce protection and planning**
- Ensure the safety and well-being of employees
- Plan where and when employees will work in order to maintain operations

**Continuous monitoring of affected areas**
Keep business continuity/contingency plans and protocols up-to-date accordingly.

**Conduct end-to-end supply chain risk assessment and prioritize critical focus areas**

*Useful resource – COVID-19: Navigator by PwC.*
Online tool that helps companies gauge readiness to respond to disruption (available at https://www.pwc.com/us/en/library/covid-19/response-navigator.html)

**Establish and mobilize a “Command Centers” (aka “War Rooms”)**
Team empowered with clear c-suite mandate and decision rights to actively evaluate, monitor, and make decisions to address supply chain vulnerabilities

**Practice the action plans**
Companies can use roundtables or simulations to define and verify their activation protocols for different phases of response.
Supply Chain–Wide Responses (continued)

Demand sensing
- S&OP SKU-level demand signal estimates by macro scenario
- Seek and use sources of demand data that go beyond historical demand (e.g. IoT data), as demand will be very different from historical patterns

Inventory monitoring and management
- Estimate inventory along the supply chain
- Differentiate inventory management strategies using a multi-echelon optimization approach to prevent shortages
- Actively monitor inventory

Scenario planning
Deploy scenario-planning techniques to systematically evaluate the end-to-end value chain, establish action plans and be able to deploy rapidly

Close communication and engagement with supply chain members
- **Suppliers.** Reach out and maintain communication with suppliers to get visibility to the status of your inventory at the supplier location, supplier production schedules, and supplier shipment status will help you to predict supplier shortages and respond accordingly.
- Maintain contact with carriers and logistics service providers to ensure you know how and where your business will be affected.
- **Customers.** Scenario-based risk communication, and general communication regarding COVID-practices and operational situations
Supply Chain Node and Link Responses

Supply and Suppliers
- Connect with critical suppliers, and secure additional critical inventory and capacity
- Adjust geographic sourcing
- Consider back up or alternative suppliers
- Consider substitute products
- Aggressively evaluate near-shore options
- Monitor supplier financial health
- Review relevant force majeure provisions

Manufacturing
- Keep production running and build inventory in preparation for the rebound.
- Reroute production to other locations within network.
- Initiate a temporary closure or reduce production.
- Prioritize what products to produce in the event of input inventory shortages
- Leverage advanced manufacturing technologies to improve sensing and pivoting capabilities

Warehousing and Distribution
- Reroute orders fulfillment locations, diverting from the affected facility (e.g. closure, reduced operation) to others
- Prioritize/allocate available supply for fulfillment – Strategies may range from “first come first serve” to “fair share” (proportional to expected volume) to “differentiated” based on strategic importance

Transport and Logistics
- Mode and route modification
- Rate and capacity planning for the short-term recovery phase in impacted regions – Book capacity early and lock in the best rates
- Temporarily store closures (e.g. Nike, Abercrombie & Fitch, Under Armour)
- Reduce store operating hours (e.g. Walmart, Publix Super Markets)
- Instigate restricted sales on certain products in high demand (e.g. Walmart, Target, Publix, Wegmans, Stop & Shop)
- Contactless delivery option for online orders

Retailing
- Temporary store closures (e.g. Nike, Abercrombie & Fitch, Under Armour)
- Reduce store operating hours (e.g. Walmart, Publix Super Markets)
- Instigate restricted sales on certain products in high demand (e.g. Walmart, Target, Publix, Wegmans, Stop & Shop)
- Contactless delivery option for online orders
Breakouts
Helpful References

- John Hopkins COVID-19 tracker - CSSE @ JHU
- CDC - CDC.GOV Corona Virus 2019
- Freightwaves Transportation Platform - Freightwaves.com
- Freight Transportation Intelligence - Freight Intel
- PwC's COVID-19 Navigator - COVID-19: What US business leaders should know
- Bloomberg Opinion - Experts on Impact Video
- BCI Corona Resources - latest COVID-19 Resources and News for Resilience Professionals

- Wharton / UPENN - Coronavirus and Supply Chain Disruption: What Firms Can Learn
- Deloitte - The heart of resilient leadership: Responding to COVID-19
- The Supply Chain Engineer - Coronavirus: What You Can Still Do to Harden Your Supply Chain
- Supply Chain Management Review - SCMR @ MODEX
- Gartner - Coronavirus: How to Secure Your Supply Chain
- NASPO - Coronavirus and Supply Chain Risks
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About This Document

With the fluid nature of this document, the focus is on providing a snapshot of impacts and responses to the COVID-19 crisis, with the focus on supply chain and logistics management. Data is based on a review of literature published as of March 14, 2020, including management journals, industry reports, and relevant news resources. Content was analyzed to discuss actions taken and industry impacts as of the time this resource was published.

Contents

Impact of Coronavirus (COVID-19) on Supply Chains

- 1. Supply Chain Disruptions
- 2. Impact on Manufacturing

Responding Strategies

- 1. Supply Chain Disruption
- 2. Impact on Manufacturing
- 3. Impact on Logistics

Table 1: Observations of Supply Chain Disruptions for COVID-19

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<th>Impact</th>
<th>Response</th>
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<td>Economic downturn</td>
<td>Production disruptions</td>
<td>Production rescheduling and capacity utilization</td>
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<tr>
<td>Global trade restrictions</td>
<td>Supply chain disruptions</td>
<td>Immediate and long-term strategies</td>
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</tbody>
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References

1. [Source 1]
2. [Source 2]
3. [Source 3]
Let’s Hear Your Thoughts

What questions do you have about anything that’s been shared?

What information didn’t you hear that you’d like to know more about?

What role can CSCR® play in the coming weeks (months?) to provide value to you?
STEVE TRACEY

Professor of Practice, SC&IS
Executive Director

- Center for Supply Chain Research®, Penn State University, and
- Penn State Executive Programs, Penn State University

Your Executive Director

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APPENDIX
## Issues of Local Concern / How Can I Help?

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<tr>
<th>Initiative/Resource</th>
<th>Link/Location</th>
<th>Contact Person</th>
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| The Student Emergency Fund  | [https://app.mobilecause.com/e/IUo4ag?vid=62htd](https://app.mobilecause.com/e/IUo4ag?vid=62htd) | Anna Barone  
Director, Student Care & Advocacy  
acb25@psu.edu |
| The Lions Pantry            | Services Rd, State College, PA 16803                                        | Tim Balliet  
Director, The Center for Character, Conscience, & Public Purpose  
trb133@psu.edu |
Executive Director  
rrovansek@pacewater.com |
| State College Community     | [https://tinyurl.com/downtownStateCollege](https://tinyurl.com/downtownStateCollege). | Each local business’ contact info is listed in the linked doc |