Rethinking Resilience in Global Supply Chains

By Karan Girotra , INSEAD Associate Professor of Technology and Operations Management

Attempts to diversify may make supply chain disruptions more damaging when they occur.

The increasingly global and complex nature of supply chains carries elevated risk of costly disruptions caused by a variety of unpredictable factors – natural disasters, industrial accidents, political shocks, etc. At the same time, an intensifying emphasis on efficiency has removed nearly all the slack from most firms' supply chains. In response to both pressures, many managers have been *diversifying their supplier networks* – fearing that relying too much on any one supplier would enhance exposure to potential disruption, and would also grant that supplier a dangerously advantageous bargaining position in price negotiations.

Other common strategies for reducing the risk and potential impact of supply chain disruptions include investing in *long-term relationships* with suppliers (since long-term partners presumably receive more responsiveness from suppliers in case of disruption, including preferential access to services as they come back online), and partnering with suppliers in *logistically efficient*

Copyright © INSEAD 2024. All rights reserved. This article first appeared on INSEAD Knowledge: https://knowledge.insead.edu

locations where possible. Anecdotal evidence suggests the above three strategies as the best practices for managing supply chain uncertainty.

However, while managers mostly worry about the prospect of big, sudden shutdowns, it's the everyday snags – logjams at the local customs office, for example – that could end up costing the most in the end. Viewing disruption as a low-level constant spiking infrequently into outright disaster, rather than solely as a risk to be minimised, may lead to a different prescription for resilience. In this analysis, diversification, in particular, has decided disadvantages, as spreading the same amount of money across numerous suppliers gives firms less leverage in influencing the day-to-day behaviour of each one. Conversely, having fewer partners allows managers to monitor more easily how each one copes with minor mishaps, thereby allowing for a more informed selection.

Given that there are advantages and disadvantages on both sides, well-rounded consideration of the issue could leave managers at an impasse. A firmer sense of how sourcing strategies might affect disruption recovery time has been elusive, due to limited availability of data. My recent working paper "**Recovering from Supply Interruptions: The Role of Sourcing Strategy**" (co-authored with **Serguei Netessine** and Nitish Jain of London Business School) is the first large-scale academic attempt to gauge the success of specific resilience-building strategies using empirical data.

Taking the measure of disruptions

The United States Department of Homeland Security requires U.S.-based firms to provide comprehensive transit information on all sea imports (including supplier's and buyer's name and address, as well as description and quantity of cargo), via a document known as the bill of lading. We employed a "supplier intelligence data service" to obtain more than 45 million bills of lading for the period from June 2006 to June 2011, which we then narrowed down to slightly more than two million transactions tied to 1,549 buyer firms.

Through the bills of lading, we tracked fluctuations in the quantity of goods each firm imported. We then compared firms' actual deliveries to desired quantities, with the aid of research-verified models of inventory management. This method allowed us to pinpoint supply chain interruptions (by noting when shipments apparently fell short of the intended quantity) and measure the length of time it took for them to be resolved.

Copyright © INSEAD 2024. All rights reserved. This article first appeared on INSEAD Knowledge: https://knowledge.insead.edu

Drawing once again upon the bills of lading, we assigned each firm a value for supplier diversification, long-term supplier relationships, and sourcing from logistically efficient locations – so as to determine what, if any, perceived connection there might be between the three best practice sourcing strategies and the firms' supply chain resilience.

The advantages of narrowness

Our results make a convincing case for the virtues of narrowness in supply chains. We find a statistically strong correlation between the extent of diversification and longer recovery times following supply chain disruptions. Put plainly, all else being equal, for an average firm it takes longer to untangle snags in more dispersed supply chains. While these findings are strong and hold across many importing sectors, managers should be careful in applying these findings to their own firms, as much may depend on their unique situation in trading-off the benefits of diversification and any disadvantages in lengthening recovery of supply chains. That is perhaps our most counter-intuitive finding.

More in line with received wisdom, we conclude that a supply chain with more long-term relationships will bounce back faster after a disruption.

We could find no statistically significant correlation between logistically efficient sourcing locations and recovery outcomes. Thus, based on our evidence, it is impossible to say whether supplier location matters for supply chain resilience. Please note, however, that in quantifying supply chain disruptions we controlled for sourcing lead time, which could have artificially dampened the effect of geographical location upon the results.

Strength in numbers

Nowadays, supply chains are threaded through with sophisticated data collection tools funnelling actionable information back to managers. Yet, our paper suggests that managers should also be looking outside their own network, using publicly available information such as bills of lading to benchmark performance against industry peers. In our results, for example, there were clear differences in outcomes for retailers as compared to manufacturers (though these were less significant than the cross-industry averages). In their greed for ever more granular data on their own supply chains, managers should not overlook the efficacy of external, industry-focused approaches.

Copyright © INSEAD 2024. All rights reserved. This article first appeared on INSEAD Knowledge: https://knowledge.insead.edu

Karan Girotra *is the Paul Dubrule Chaired Professor of Sustainable Development and an Associate Professor of Technology and Operations Management at INSEAD.*

Follow INSEAD Knowledge on ***Twitter*** *and* ***Facebook***

Find article at

https://knowledge.insead.edu/operations/rethinking-resilience-global-supply-chains

---

About the author(s)

Karan Girotra Karan Girotra is a Professor at Cornell Tech and in the Johnson School at Cornell University.

Copyright © INSEAD 2024. All rights reserved. This article first appeared on INSEAD Knowledge: https://knowledge.insead.edu