

# TREASURE MAPPING

Collaborating with suppliers at every tier of the supply chain improves financials and could ensure your survival in the next great disruption.

By Peter Guinto, Daniel Finkenstadt, and Robert Handfield

**M**ost supply chain disruptions have negative financial effects. The COVID-19 pandemic made this clear to acquisition and supply chain professionals and academics across the globe. Business professionals have blamed the losses on the move to just-in-time (JIT) supply chains.

It's a fair argument.

The JIT philosophy calls for suppliers to deliver components to the production line just as they're needed. The objectives are twofold. Reduce the amount of inventory sitting in the supply chain and put working capital


into production rather than building up surpluses.<sup>1</sup> As a result, JIT leaves manufacturers open to risk when supply chains no longer flow. However, blaming JIT alone is overly simplistic.

Effective JIT can have positive supply chain effects. It means using suppliers located near manufacturing sites. Japanese JIT innovators Toyota and Honda often use suppliers located within five miles of their facilities. A simple JIT-based critique fails to account for other critical elements of effective supply chain management that are inherently part of JIT. These elements include domestic supply,

visibility, and collaboration.

Horizontal integration and global diversification have resulted in larger, more dispersed, and more complex supply chains over time. The result is that manufacturers rely on enormous numbers of vendors.

One of the authors works with a client that has more than 16,000 tier one vendors across the globe. This number explodes to over 140,000 at tier two. By virtue of numbers alone, most supply chain risk comes from vendors at tier two and below. That accounts for the vast majority of the participants in the value network.



Many companies learned during the pandemic that their visibility into low-tier vendors was severely limited. This resulted in slow response times and negative financial outcomes. Most often, what companies believe are tier one supply disruptions turn out to have originated with a low-tier vendor. Perhaps a tier four vendor let a tier three vendor know about the problem many months ago.

The tier three vendor likely attempted to rectify the issue for weeks or months before alerting the tier two vendor. This cycle probably repeated at each tier before reaching the manufacturer. Supply chain disturbances and the resultant financial impacts flow uphill. Each higher tier has a larger challenge to overcome and less time to do it.

Gaining visibility into complex modern supply chains is the first step toward resilience.

In addition to visibility, companies must ensure better collaboration in the supply chain with lower tiered vendors. The U.S. government relies heavily on competition to manage vendor cost, schedule, and performance. An opposing view arose in the United States with publication by the *Harvard Business Review* of one of the first articles describing “The Japanese Way” of management.<sup>2</sup>

Toyota and Honda often are credited with bringing JIT manufacturing into the mainstream. Their supply chain management style includes far more than instilling lean principles in processes for handling inventories and maintaining safety stocks.

Equally important in this model is

close collaboration with vendors, even low-tier vendors, that amplifies responsiveness across vendor tiers. Multiyear partnerships are governed by quarterly business reviews of on-time delivery performance, cost improvements, quality performance, and innovation. This type of collaboration, strict reviews of critical key performance indicators (KPI), and assured visibility certainly carry a cost. But the return on investment, in the form of resilience, is far greater.

### **Opaque Supply Networks Lose Money**

Our experience includes managing complex supply networks and working with firms that have some of the largest supply networks in the world. That experience demonstrates that the reality of significant sub-tier vendor risk often cuts deep into performance schedules and performance and creates significant excess costs.

For government agencies, these effects cause late deliveries, inferior hardware slipping into the supply chain, and cost overruns. The commercial sector loses revenue when supply cannot meet demand. And cash flow is interrupted when deliveries are delayed.

To accelerate deliveries, firms deploy personnel to visit suppliers and newly discovered low-tier vendors in times of crisis. This costs time and money to detect and mitigate supply chain challenges in a reactionary manner.

The mitigation costs cut even more deeply into margins. So do payments and fees for expedited deliveries and shortened delivery schedules. Often, companies end up ordering from



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alternate vendors on expedited delivery schedules. Sometimes those are the vendors that lost out on competitive procurements to the ones now having delivery issues.

All the cost and revenue effects of supply problems pale, however, when compared with the costs created by breaks in assembly and production lines. *Forbes* has reported that the average automotive company loses \$22,000 per minute, or \$1.32 million an hour, when an assembly line grinds to a halt.<sup>3</sup>

With cost hikes and margin reductions like these, it is no surprise that many firms have increased safety stock levels and moved away from JIT. They're enhancing supply chain resilience, but at a cost. Storing large volumes of inventory is a recipe for material expiration and waste, reducing working capital and free cash flow.

It's not the answer.

## A Culture Change to Drive Financial Results

For decades, supply networks have become more horizontally integrated and globally diversified. This trend has spread for a simple reason. It works.

Horizontal integration allows vendors to specialize in the manufacture or assembly of a small number of items. Producing those items for many higher-tier vendors in large quantities allows companies to leverage economies of scale. They can max out improvement curve-based efficiencies. And they can innovate in both design and manufacturing techniques to create comparative advantage.

Global diversification has allowed companies and national economies to take advantage of comparative

advantages. Proximity to natural resources, lax environmental regulations, low labor costs, and low tax burdens are just a few of the comparative advantages that have allowed companies to maximize profits.

For decades, the effects of large scale supply chain disturbances, such as Hurricane Katrina in 2005 and the 2011 Japanese tsunami, were isolated in geographic regions. They disrupted only handfuls of companies. And those affected companies learned how visibility and collaboration with low-tier vendors could have improved financial outcomes.

In general, the global supply chain was on cruise control. Meanwhile, China's rise as an economic power created a low-cost manufacturing capability for the world.

The pandemic changed all this. CEOs and COOs began to ask their chief procurement officers and chief supply chain officers, "What if China really is serious about taking Taiwan?" The Russian invasion of Ukraine has made it clear that we are not heading for a world where the potential for geopolitical conflict and widespread supply chain chaos is high. We are already there.

The world also is starting to recognize that the low-cost goods enjoyed as a result of world trade have a dark side. High-tech devices, electronics, and batteries rely on rare earth mineral supply chains. More people are becoming aware of the devastating environmental impacts of mining for minerals like lithium and secondary processing of minerals like magnesium.

The effects are not only environmental. Supply chain regulations are being stiffened worldwide to halt the consequent human suffering. Child and slave labor in cobalt supply chains in the Congo. Forced labor of the Uighurs to generate polyciliate. Slave and child labor also have been traced to everyday goods, including textiles and food.

The Uighur Forced Labor Prevention Act, the German Supply Chain Act, and other similar laws are creating a framework that requires enhanced awareness of multitier supply chain dependencies. Under this new legal structure, goods can be seized, significantly disrupting supply networks. Penalties also can be assessed.

The global landscape is changing. Consumers and nations are awaking

and unwilling to indirectly support crimes against nature or the less fortunate. They rebel against a regime in which buyers work only with their direct suppliers.

Business culture must change from the bottom up and the top down. Manufacturers and assemblers of end-items, and the companies and governments that buy them, must ask where their tier-one vendors are getting their goods. That same question must flow out to every supply tier. Vendors must get comfortable with answering these questions.

At every level, the questioning must clearly define why it is important to collaborate. This collaboration cannot simply be a pretext for cutting low-tier vendor costs or they will not participate.

Supply networks must adopt multitier supply network collaboration or suffer penalties under new regulations and face dire financial consequences. They will be displaced by competitors that collaborate more deeply with their multitier networks.

### New Leaders and New Tech

The supply chain has been viewed as a cost center for decades. As companies moved away from product manufacturing toward product integration, the opportunities to cut costs in the supply base grew. Reducing supplier costs through competition or through buyer-mandated price reductions became commonplace. Each time a vendor change occurred, a new, low-tier supply network would become part of the supply chain.

With a massive global market for low-cost parts, low transportation costs for goods, and American hegemony, global cooperation became easy. Now,

with new pandemics looming, climate change and increasingly extreme weather, and the rising potential for military conflict between great world powers, supply chains are being buffeted.

Supply chain leaders must do more than merely cut costs. To drive superior financial performance in today's conditions, leaders must engage vendors at all tiers. They must collaborate to assure that all participants in their value chains build resilience into their operations.

As we saw during the COVID-19 pandemic when more than 700,000 businesses closed in one quarter, the global supply chain crisis threatens more than financial performance.<sup>4</sup> It threatens firms' existence. Supply chain and procurement leaders need strong communications and team-building skills to drive change in supply base management. Equally important are analytical skills and the ability to use and meaningfully incorporate new technology.

Consider a firm with 156,000 tier-one and tier-two vendors. Meaningfully monitoring and communicating with such an enormous number of firms requires more than spreadsheets and drop boxes.

Top firms are investing in supply chain technology to create control towers for multitier visibility and continuous monitoring of their networks. Supply chain managers are capitalizing on advancements in artificial intelligence and machine learning.

Deploying these tools and making them integral to everyday business will be key to financial performance and even survival when the next great supply chain disruption occurs. **CM**

**Peter Guinto** is President of the Government Affairs Division at Resilinc.

**Robert Handfield, PhD** is the Bank of America University Distinguished Professor of Supply Chain Management at North Carolina State University and director of the Supply Chain Resource Cooperative. He also serves as an adjunct professor with the Supply Chain Management Research Group at the Manchester Business School. Handfield is the consulting editor of the *Journal of Operations Management*, one of the leading supply chain management journals in the field, and is the author of several books on supply chain management, the most recent being *Supply Market Intelligence*, *Supply Chain Re-Design* and *Introduction to Supply Chain Management*.

**Daniel J. Finkenstadt, PhD** is an active-duty Air Force contracting officer, researcher and principal at Wolf Stake Consulting, LLC. He has over 20 years of contracting experience at every level of government from operational base support to space development to academia. He is a consistent contributor to *Contract Management Magazine*.

*Disclaimer: The claims, opinions and positions of this article are those of the author and do not represent the official position of the DoD or U.S. Air Force.*

### ENDNOTES

- 1 [https://www.washingtonpost.com/outlook/five-myths/supply-chain-myths/2021/11/24/f439dbec-4ca1-11ec-b0b0-766bbe79347\\_story.html](https://www.washingtonpost.com/outlook/five-myths/supply-chain-myths/2021/11/24/f439dbec-4ca1-11ec-b0b0-766bbe79347_story.html)
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