

BEYOND RISK MANAGEMENT: Making the case for supply chain resilience investment

Investing in resilience beyond traditional risk management can deliver long-term operational, financial, and competitive advantages, turning adaptive capacity into a strategic asset for future-ready supply chains.

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In today's world of persistent supply chain disruption—including pandemics, trade wars, traditional wars, and intensifying natural disasters—resilience has become a primary topic in supply chain circles. In fact, it appears most often in session titles at the upcoming Council of Supply Chain Management Professionals (CSCMP) EDGE event, surpassing sustainability and AI.

Yet, resilience remains elusive for many companies because it is difficult to define and measure, making initiatives difficult to justify. Managers often approach resilience through risk management, aiming to reduce or eliminate specific risks. A better strategy is to build resilience action: the ability to adapt core supply chain capacities to shifting market conditions.

In my work as director of the MIT

Humanitarian Supply Chain Lab, I have seen stronger crisis performance from organizations that invest in understanding their systems and building adaptive capacity. Still, companies focused on delivering consistent quarterly results may balk at the investment of time and money in resilience, with returns over the long term. As an instructor in the MIT Supply Chain Management program,

I have long taught a course on supply chain financial analysis. Our consistent focus on using the language of finance to communicate supply chain value broadened during the COVID-19 pandemic to focus more explicitly on resilience initiatives. Our students have learned that resilience can be justified as a strategic investment with clear benefits in maintaining operations and margins during times of disruption. Supply chain professionals can and should prepare the financial case for resilience investments in their organizations.

Resilience action, not risk management

It is tempting to approach resilience by updating prior approaches to risk management and business continuity planning. These methods identify potential threats and their business impact in defining how to manage and control the risk. But today's increasing uncertainty in geopolitical and climate conditions alone make it difficult to define an accurate portfolio of threats. Add to that the increasing complexity of outsourced global supply chains, and it seems impossible to anticipate the butterfly effect of any single disruption. Thus, initiatives taking this approach will struggle to define an effective set of risks to manage.

Rather than starting with external threats as a risk management approach demands, resilience action begins with a deeper understanding of product flows across multi-tier supply networks, the operational capacities enabling these flows, and the internal and outsourced resources required.

Planners can then identify critical capacity concentrations and design systems that can adapt—rerouting flows and reconfiguring capacities—regardless of the disruption's cause.

The shift from identifying and preventing risks to understanding and adapting capacity has high potential for spillover effects in competitive markets. Adaptation is not only useful in disruption, but also enables agility in response to major shifts in market conditions such as product launches, competitor moves, or consumer trends. Moreover, cultivating a deeper understanding of your company's supply chain ecosystem often yields the fruits of innovation and improvement. Resilience initiatives that allow your supply chain to adapt to dynamic markets are not just a defensive move but offer strategic advantage.

Making the case for strategic investment

Despite surging interest in supply chain resilience, it is difficult to make the case for significant investment. Unlike inventory reductions and cost-saving initiatives, resilience investments rarely yield quick returns as the free cash flow benefits may not be realized within the three-to-five years normally used to evaluate capital expenditures.

However, such investments can yield significant returns for patient investors. For example, Toyota, which pioneered the just-in-time inventory strategy, made a strategic inventory investment following the 2011 earthquake that severed their supply chain for a protracted period. It invested in stockpiles ranging from two to

six months of microcontroller units and other microchips. Years later, when COVID-19 triggered a global shortage of semiconductors, Toyota was largely unscathed while most automakers were forced to suspend production. Such windfall was not likely projected in the 2011 business case. However, a \$2B inventory investment in 2012 offers positive NPV for a \$3B EBIT increase in 2021.

In addition to tangible cash flow benefits, a firm's reputation can benefit notably from effective resilience investments. For example, Florida Power & Light Co. (FPL) wrote a blog following Hurricane Irma in 2017 to specify the benefits of resilience efforts made 12 years earlier.¹ Following Hurricane Wilma in 2005, where 3.2 million FPL customers in 21 counties lost power, the company invested \$3 billion to harden the grid, such as replacing distribution and transmission structures with stronger wood, concrete or steel. While the impact from Irma was more widespread than Wilma, with 4.4 million customers losing power across all 35 counties served by FPL, the grid was more resilient. The average FPL customer outage was 5.4 days for Wilma but only 2.1 days for Irma, resulting in useful political capital returns for the public utility from their financial investment 12 years earlier.

Despite such success stories, long-term investments are often difficult to justify given prevailing corporate strategy. Investments

are often skewed toward meeting short-term profit targets aligned with the increasingly common practice of issuing guidance, or voluntary disclosure about projected financial results. Concerned about this trend, in 2018 Jamie Dimon and Warren Buffett called for public companies to move away from quarterly earnings guidance, which "leads to an unhealthy focus on short-term profits at the expense of long-term strategy, growth and sustainability." Noting that the nation's greatest achievements derived from long-term investments, they asserted that public companies owe it to the 100 million Americans who invest in them to "get this right."²

A new approach: Operational insurance with a group discount for resilience co-operation

Given prevailing practices focused on short-term earnings, the case for supply chain resilience investment might require a new approach. Corporations, and many individuals, regularly make small investments that they hope never pay off even in the long term: insurance.

The operations research literature can be used to reframe resilience as operational insurance, with "premiums" in the form of higher buffers for variability in operations: time-inventory and/or capacity.³ Time-inventory buffers are explored in research topics such as Time-To-Recover and Time-To-Survive. Our lab has an active research

agenda on capacity calibration and intervention, including policy recommendations for the government to facilitate private sector capacity following disasters.

Companies that do not invest in resilience face higher costs to hit revenue targets following disruptions. Such costs eat into the margins expected by corporate finance. Given increasing disruption, operational insurance can be a compelling option for C-suite leaders seeking to increase their ability to meet corporate guidance with financial analysts, especially when incorporating potential spillover effects from innovation and improvement.

To make the operational insurance case more attractive, companies can explore the potential for a group discount. The COVID-19 pandemic revealed the benefits of collaboration when managing a crisis, such as hospital CEOs who convened regularly to make plans to meet the health needs of communities. Our research activities as part of the Supply Chain Analysis Network (SCAN), sponsored by FEMA, regularly convene supply chain leaders from sectors such as grocery, freight transportation, and fuel distribution for disaster preparedness planning and adaptation. Using a cooperative strategy, we can invoke public sector facilitation through waivers, access, and even direct resources to ultimately accelerate systemic recovery for all. For example,

we are now engaging companies with various catastrophic scenarios following a San Andreas earthquake in Southern California, which would lead to significant disruption across North American supply chains. We invite supply chain professionals to join our new Supply Chain Resilience Cooperative in exploring a group discount on operational insurance for your firm. By shifting from reactive risk management to proactive operational planning, resilience becomes an attractive investment in core capability for future-ready supply chains. •

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References

1. Miranda, M. (n.d.). "Hurricane Wilma 15 years later." Available at <https://www.fpl.com/blog/hurricane-wilma.html>. Accessed August 5, 2025.
2. Dimon, J. and Buffett, W. (June 6, 2018). "Short-termism is harming the economy." The Wall Street Journal. Available at <https://www.wsj.com/articles/short-termism-is-harming-the-economy-1528336801>. Accessed August 5, 2025.
3. Spearman, M. L., & Hopp, W. J. (2021). *The case for a unified science of operations*. Production and Operations Management, 30(3), 802-814.