



U.S. SUPPLY CHAINS:

Insights into the Challenges and a Foundational Roadmap toward Global Competitiveness

MEP SUPPLY CHAIN OPTIMIZATION INITIATIVE

Supply chains cannot tolerate even 24 hours of disruption. So if you lose your place in the supply chain because of wild behavior you could lose a lot.

Thomas Freidman

The best supply chains aren't just fast and cost-effective. They are also agile and adaptable, and they ensure that all their companies' interests stay aligned.

Hau L. Lee, HBR, Oct. 2004

SUPPLY CHAIN FLEXIBILITY HAS BECOME A RALLYING CRY FOR COMPETITIVE ADVANTAGE.

As the global economy has grown in size and complexity, a multitude of factors from climate disasters and political changes, to economic downturns, currency fluctuations, and the rise of new competitors, have led to volatility and uncertainty. The effects of this complexity are driving new conversations around reshoring and suggestions that the concept of “supply chain” is antiquated given the more networked approach of global supply systems.

Companies are no longer able to rely on the conventional wisdom of lowest price, shortest lead time, and quality excellence. Top supply chain performers are creating agility throughout the whole value chain to handle this permanent market volatility. Yet, for most company leaders, deeply understanding their potential supply chain gaps and defining a long-term collaborative roadmap towards optimizing supply chain performance are a challenging task. Given this backdrop, this executive summary outlines a study conducted to provide insights into supply chain challenges.

Manufacturing executives from sixty-eight organizations, representing a cross-section of industries, company size and geography, participated in a study conducted by the NIST Manufacturing Extension Partnership system to identify and validate key performance gaps affecting U.S. supply chain performance. The study's participants ranked twenty-one assertions related to supply chain challenges. A subset of these assertions was challenges identified as “critical gap,” or “very high impact” that pose significant risk and impede supply chain performance. These assertions were further validated through detailed interviews with these leaders. From these survey results, three primary themes can be identified that serve as a baseline towards building an appropriate roadmap towards optimized supply chain performance.

THEMES	ASSERTIONS IDENTIFIED AS “CRITICAL” OR “HIGH IMPACT”
Volatility, risk and agility	<ul style="list-style-type: none">• Reduce and manage volatility• Mitigate global risks• Make better Total Cost of Ownership decisions• Increase effectiveness of ERP/MRP• Identify and address “choke points” in a sustainable manner• Recognize emergent needs for future capabilities
Collaboration and supplier sourcing	<ul style="list-style-type: none">• Enhance Value Chain collaboration among suppliers, OEM's and customers• Expand supplier matching capabilities to source for emergent needs• Improve OEM/Supplier product development collaboration
Strategic deployment	<ul style="list-style-type: none">• Document a supply chain strategy• Align supply chain metrics with long-term business focus

Volatility, Risk, and Agility

Perhaps little surprise, given the complexity of today's global context, executives in this study stated that their major challenges relate to scheduling volatility. This volatility is caused by demand variation, scheduling adjustments, expediting, and scheduling fluctuations (constant shifts in due dates). ***Fifty-nine percent of the participants agreed that “volatile changes in order schedule” occur frequently in their supply chains - the highest level of agreement with any assertion in the study; and 73% indicated that volatility has a high relative impact on their businesses - the highest impact dimension in the study.***

Relatedly, participants agreed that there is an inadequate level of understanding regarding the global risks that can disrupt a supply chain anywhere at any time. A lack of visibility across the global supply chain impedes their ability to understand current issues and pipeline constraints, or, to predict future issues. Consequently structured scenario planning, if conducted at all, is based on limited information. In many instances, even basic risk assessments are overlooked until an adverse event has occurred.

Agility was identified as the most significant opportunity area for responding to volatility. ***Agility - as it relates to scheduling volatility and global risk - emerged as the number one critical weakness in U.S. supply chain effectiveness.*** Organizational agility, from a supply chain perspective, implies the ability of the supply chain to remain flexible to current customer demands amid shifting market dynamics. Agility also implies the ability of supply chains to react in unison appropriately, maintaining acceptable levels of control amid changes. Increasing agility is essential for the mitigation of volatility leading to better long-term decision making and profitable growth.

Collaboration and Supplier Sourcing

Collaboration, or some form of the word, appears to be a common thread in discussions regarding supply chain business models. The executives in this study also agreed that supply chain collaboration is essential to achieve the standards of agility necessary to manage a global supply system. Yet, ***study participants strongly agreed there is a lack of collaboration and visibility in their supply chains***, especially in the lower tiered members of the chain. In short, they lack a synchronized plan and coordination across the supply chain.

While several participants reported great relationships with their top tier suppliers, they recognized that the relationships drop off significantly beyond that level. ***This collaboration gap may be a key factor why U.S. supply chains have not been as competitive as their potential.*** To further complicate a collaborative supply chain model, executives agreed that there is a lack of end-to-end value chain visibility.

This lack of visibility creates barriers for effective demand planning, product development, and system process improvements. The visibility gap is due, in part, to the cost of IT systems and consulting support that inhibits the necessary investments by medium and smaller companies. Additionally, companies struggle to effectively deploy their disparate information systems (e.g., ERP's) as collaborative tools that can achieve coordinated scheduling and collaborative communication. Consequently, companies tend to engage with their lower-tier suppliers only if there is a problem, or if a supplier has a critical input worth tracking.

To maintain global growth and relevance, U.S. supply chains must collaborate in activities that support a continuous innovation process. Not surprisingly, given the visibility and collaboration gaps, this study also found a lack of coordinated product development and innovation among supply chain members.

Study participants further agreed that the ability to identify, source and expand qualified suppliers that support future growth is a critical need. Yet, these same companies do not regularly conduct analyses to identify and address specific supplier constraints ***at all levels*** of the supply chain. Understanding future investments for growth is a key weakness, along with the ability to source the manufacturing capabilities that will sustain those market investments.

Additionally, once sourcing activities have begun, many U.S. companies do not have the capability or tools to effectively model decisions that optimize their sourcing approach. ***A critical gap finding is that supplier sourcing***

methods do not use supply chain modeling to evaluate total ownership cost as a decision input. While the concept of reshoring garners significant attention, having effective and meaningful costing models and tools are essential.

Given the challenges of global change, tight supply chain performance requirements, and rapidly shifting markets, it is not surprising that collaboration and supplier sourcing are noted as a critical theme for furthering supply chain performance.

Strategic Deployment

Effective supply chain collaboration requires strategic, long-term goal alignment. Yet, participants indicate that they structure activities principally around short-term metrics focused on lowest piece costs, on-time delivery performance, shortest lead times, and cash. These supply chain executives noted a gap in employing an objective dashboard of supply chain effectiveness. Furthermore, most study participants were unable to identify a documented supply chain strategy that included concise, well-defined supplier performance metrics.

Consequently, long term supply chain visioning is generally not aligned with long-term, strategic growth goals of the company. Investments tend to be focused on cost-saving process improvements that drive short-term results. Because this short-term focus appears to be prevalent in supply chains, re-aligning supply chain metrics with long-term business focus, both internally and externally, may help guide manufacturers toward better deployment related to growth planning and supply system agility.

A strategic deployment approach suggests creating bold strategic steps that are fully aligned with a company's strategy. This means shifting the focus from individual supplier development projects to optimizing the whole supply chain. Underpinning a strategic deployment is ensuring a clear definition of the overall value created by the supply chain.

Optimizing the Supply Chain

This study acknowledges the challenges and gaps for effective supply chain optimization. Streamlined operations, just-in-time deliveries, and an expanded global marketplace have produced greater risks and volatility. These risks to performance execution require new levels of agility only to be accomplished through more effective collaboration among the supply chain, or alliance partners. The resultant agility can lead to more effective responsiveness to the demands for increasing performance in lead times, quality, costs, and innovation deployment.

But, understanding the risks related to volatility may be inhibited by less than optimal collaboration among the supply chain partners. As leaders grapple with these challenges, defining an organizational roadmap towards optimized performance can guide a company towards effective long-term results.



CHECKLIST FOR SUPPLY CHAIN OPTIMIZATION ROADMAP

Strategy Development

- ✓ Use the themes from this report to spur a dialogue and deep investigation around your bold steps for strategic success and to gain consensus around your company's long-term plans.
- ✓ Assess the supply chain maturity of your organization and your supply chain.
- ✓ Align supply chain objectives with your organizational objectives.

Plan Supply Chain Optimization

- ✓ Assess supply chain visibility beyond the first tier.
- ✓ Develop a comprehensive network diagram and identify constraints to the system.
- ✓ Evaluate supply chain risks and deploy risk mitigation practices.
- ✓ Implement total cost of ownership decision-making models.
- ✓ Align supplier performance metrics with the strategic direction.
- ✓ Communicate the supply chain strategy throughout the organization.

Engage Supply Chain Partners

- ✓ Communicate the supply chain strategy into the supply base.
- ✓ Share strategic objectives.
- ✓ Deploy a constraint-based approach to improvement.
- ✓ Improve collaborative approaches and identify opportunities for strategic alliances.

Implement Supply Chain Optimization

- ✓ Improve supply chain visibility throughout the supply chain.
- ✓ Focus on constraints to realize lead time reductions and throughput improvements.
- ✓ Analyze and forecast total cost of ownership on an on-going basis.
- ✓ Implement collaborative product and process innovation practices.
- ✓ Conduct constructive performance assessments of subsequent tiers based on strategic objectives.
- ✓ Strengthen supply chain capabilities through continual sourcing and supplier scouting.