

SAP INSIGHT





UNDERSTANDING AND MANAGING SUPPLY CHAIN RISK

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UNDERSTANDING AND MANAGING SUPPLY CHAIN RISK

by Scott R. Sykes

EXECUTIVE AGENDA

With supply chains expanding in size and complexity, enlightened professionals and companies are focusing more energy on managing supply chain risk. While the topic is gaining prominence in boardrooms, many companies do not yet have a sufficient grip on the risks they face. Globe-spanning extended supply chains are susceptible to myriad disruptions. These range from the fairly typical and mild fluctuations of the "normal" course of business to major disruptions, such as lost production capability caused by a fire at a crucial fabrication plant, or the closing of ports or transportation corridors due to a natural disaster. Many organizations do not commit the time and resources necessary to understand global sourcing and the ramifications, costs, and benefits of redesigning supply chains to better manage risk. To address this, companies can implement programs to identify and profile risk variables, quantify risk for business decision making, and implement IT solutions – leading to greater resilience and efficiency and improving the bottom line.

A WORLD OF RISK

Supply chains today are growing continuously more complex, interconnected, and global – for example, entering low-cost countries in search of good production and labor conditions or a favorable economic climate. Operations become increasingly dispersed as distances expand between links in the chain – or perhaps more accurately, between nodes in the Web. Along with the greater distances and longer lead times that result, complexity increases, while more regulatory and compliance issues pose greater operational challenges. And these are merely the broad strokes of the complicated picture of today's supply chain management issues.

There is some irony in that the very efficiency of modern supply chains can contribute to increased vulnerability. The tenets of lean production methods and just-in-time manufacturing and delivery have led to the paring and honing of supply chains into finely tuned models of efficiency. But this approach calls to attention an inverse relationship between efficiency and risk. For example, single-source supplier strategies can result in favorable volume rates and excellent service. But if that supplier has a major disruption in its supply chain, its customers are left completely vulnerable. The answer is not to disregard the efficiencies of such practices, of course, but companies must be able to understand, profile, and manage the attendant risks – for example, weighing the expense of duplicate machinery against the possibility of lost production.

Events anywhere in an organization's extended supply chain can cause disruptions and process execution failures with deep financial ramifications. Complexities arising from the number of participants in the supply chain can make it hard to identify weak spots. Companies will typically document and account for events after the fact – after the damage is done – but many do not sufficiently address these issues in the supply chain network design phase. Often, too, companies recognize immediate effects with sufficient clarity, but fail to see other more subtle, long-term – and expensive – consequences.

Understanding the implications of supply chain redesign and global sourcing in this light is essential to a company's long-term viability and economic success. Companies can take the following key steps to better address risks in their supply chains, as follows:

- Identify and profile risk variables
- Assign appropriate factors to risk for quantitative inclusion in business decision-making processes
- Understand how technology tools can enable the organization to better manage risk in the context of overall goals

UNDERSTANDING AND DEFINING RISK

The topic of risk in business is of course not a new one. Risk is the bread and butter of the insurance industry, and is defined in the abstract as the possibility of loss in the real world. Used as a noun, "risk" can refer to physical property to be protected by an insurance contract, or to an entity to be ensured, either a person or a company.

In the world of finance, the term covers a wide range of categories and nuances, but at the highest level it falls into two main categories – systemic risk and nonsystemic risk. Systemic risks refer to those unique to a particular company, while nonsystemic risks are big-picture, macro factors that affect all businesses, such as global political and financial conditions. These definitions, and the strategies and processes other industries use to understand and manage risk, can also be applied to supply chain management.

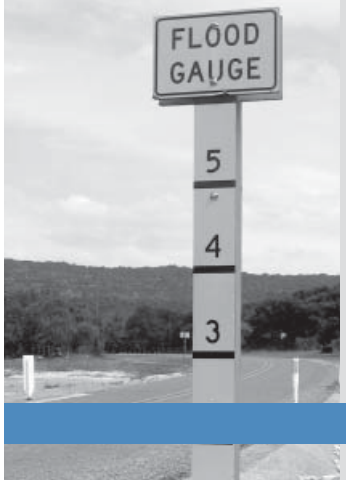
A RANGE OF POTENTIAL FACTORS

Risks to a company's extended supply chain are many. Potential disruptions can be caused by fluctuations of customer demand, financial factors such as exchange rates and market pressures, and environmental and geopolitical factors such as weather, natural disasters, political instability, and union action.

Beyond the common, low-level events that occur across the supply chain on a regular basis, less frequent but high-impact incidents create further exposure. Companies must recognize that these risks exist and work to understand both the immediate, obvious effects as well as long-range, more subtle, and distributed consequences. Companies then need to quantify the risks they face and enact strategies to manage them efficiently and effectively.

At times companies may have to examine assumptions and think in new ways. "Rare" occurrences are in reality anything but rare for a large organization with a far-flung supply chain crisscrossing the globe, running a gauntlet of tornadoes in the Midwest, earthquakes on the Pacific Rim, and war in the Middle East. A further, more insidious risk is posed by the threat of intentional disruptions caused by criminals and terrorists. These risks require special attention because of their adaptive nature: unlike random breakdowns, intentional disruptions can be targeted toward perceived soft spots and weaknesses in the extended supply chain.

While potential risks to the supply chain may be obvious, this area of supply chain management has not yet received due attention. However, more and more forward-looking companies and supply chain professionals are moving toward adopting the mathematical and statistical methods more commonly associated with the fields of finance and insurance.



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MEASURING AND PROFILING RISK

For companies that have not yet begun to enact risk management processes, a good first step is to gather as much data as possible on current business operations, including data about suppliers, customers, and the organization's production and fulfillment departments. With this information companies can begin to establish a baseline risk profile. Companies with enterprise software and integrated supply chain management capabilities will have an advantage here, with better access to the information they need, thanks to enterprise-wide data and process interconnectivity.

PROFILING THE SUPPLY SIDE

To get a more complete picture of their inbound supply chains, companies should compile a profile of their supply bases. This data should cover a wide range of supplier information, including the following:

- Total number of suppliers
- Geographic location and diversity (of production and shipping centers, as well as headquarters)
- Production capacity
- Production flexibility – for example, can the supplier manufacture the company's product line at multiple locations?

Aggregating supplier data will allow companies to study and perform analysis on this information. Vulnerabilities can be prioritized and mapped, making it easier to consider the likelihood, consequences, and costs of taking – or not taking – preventative actions. Again, IT can greatly facilitate this process, with automated information collection and built-in analytical tools.

Companies can use supply profiles to identify vulnerabilities in their supply chains. A supplier might have several manufacturing plants, for example, but they are all in the same region – open to potential disruptions caused by local economic conditions, political situation, or natural disaster. Companies can then strategize, creating contingency plans, lining up backup sources, and thinking proactively.

Then there is the issue of single sourcing. To what extent do the advantages outweigh the risks? The impact of such methods on efficiency, cost savings, and stronger relationships is undeniable, but at what cost? Supply chain risk management will help organizations answer such questions.



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PROFILING THE DEMAND SIDE

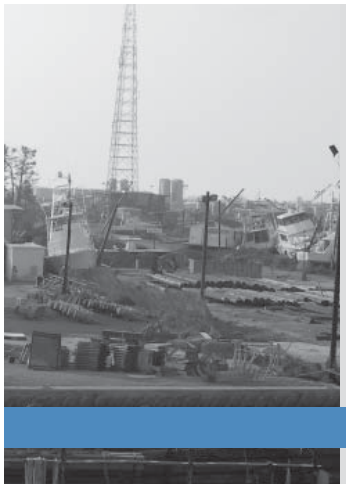
Companies can follow the same process in examining the demand side of the equation. Looking at its outbound supply chain, a company can determine whether it is overly dependent on a small number of customers. The company may look at geographical data for overreliance on a single "ship-to" locale or a particular distribution center, trucking corridor, or port. The dangers of such a heavily concentrated customer base were revealed on a large scale during the tragedy of Hurricane Katrina in 2005.

While companies may not be able to take direct action on behalf of their customers, they can share information. For instance, a company might communicate that it is insufficiently diversified on the demand side, thereby essentially informing the customer of its own exposure. Companies can also encourage the kind of actions they prefer through contract agreements and other methods.

PROFILING FULFILLMENT AND PRODUCTION

Organizations can next look to their "internal" networks and create a profile of their goods or services as well as their customer fulfillment networks. These networks may not be literally internal, of course, due to outsourcing and partnerships, complicating the profiling process but certainly not decreasing its importance.

Data on a company's fulfillment and production can help determine if there is a good mix of products and a geographically dispersed distribution of inventory. An organization may find that though it ships both by freight and air, it is using a common "ship-from" node, leaving the company exposed to a disruption such as a natural disaster or labor disagreement. This example also shows the need to look deep into the data, as a preliminary glance would have shown a seeming diversity and flexibility in using two different modes of transport, not revealing the potential "choke point" of a single ship-from node. With a baseline risk profile in place, companies are in position to aggregate their findings and begin to create and implement risk management strategies.



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STRATEGIES FOR MANAGING RISK

Businesses have tended to consider supply chain risk management to be just another operational hurdle to pass – another regulatory requirement, another expense. But with modern, extended supply chains, the risks facing businesses and management teams are no longer limited to a single location. Through outsourcing, partnerships, and contracting, supply chains now take businesses outside organizational walls, across great distances and political and cultural barriers. Informed companies are beginning to recognize both immediate and long-tem opportunities for competitive advantage in supply chain risk management. This is borne out by recent trends showing more and more attention being paid to this issue at the boardroom level.

Risk management is best thought of as an ongoing process, a program of continuous improvement. Establishing baseline profiles and historical data will enable companies to fine-tune analysis and forecasting, aggregate data to smooth out statistical fluctuations and ease forecasting, and better discern between "normal" disruptions that are part of everyday business and potentially serious breakdowns.

NARROWING THE GAP

Supply chain management professionals and organizations can institute a number of strategies to narrow the gap between the current state of risk management and the optimal level. Some ideas include the following:

- Build a comprehensive model of the global supply chain, capturing business activities and key supply chain operations of primary partners, suppliers, and customers.
- Use this model to identify risks that can be ameliorated through business strategy or process changes – for example, having flexible production supplier contracts or reserve production capacity.
- Implement IT solutions that connect business data and processes from end to end, providing visibility into planned events, warnings for unexpected events, proactive exception management, and so forth.
- Encourage and develop a culture of risk management by undertaking initiatives such as contingency planning programs or involving key personnel in risk management functions.
- Use principles of continuous improvement with annual "supply chain drills" that test and scout for weaknesses, blind spots, and trouble areas in the extended supply chain.



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TECHNOLOGY ENABLES RISK MANAGEMENT

As mentioned above, IT tools can help companies aggregate baseline data and create supply chain profiles. Enterprise-wide software solutions can also help traditional supply chains evolve from linear and sequential operations to adaptive networks capable of adjusting intelligently to changing economic and market conditions. The same functionality that supports supply chain network visibility, cooperation, and analytics can also enable supply chain risk management. Companies can synchronize supply to demand, and sense and respond to supply chain events through an adaptive network with real-time distribution, transportation, and logistics capabilities.

Implementing enterprise-wide software solutions can be crucial because in many cases companies actually possess the data they need, but disconnected systems impede the ability to make the right data accessible to the right people at the right time. With an end-to-end software solution, the overall result is a more transparent, responsive supply chain network that supports organizational efficiency as well as flexibility and resilience.

CONCLUSION

In recent times risk management is gaining a higher corporate profile. Companies of vision are allocating more and more resources to the topic, and this trend is likely to continue. As supply chains extend and become ever larger and more complex through the pursuit of new markets for goods and new suppliers for product components, supply chain management and risk management become more inextricably linked. And with expansion of supply chains the risk of disruption grows as well. In addition to known challenges such as port closings and regulatory compliance issues, companies must put themselves in a position to deal with larger disruptions – disruptions that may well be unexpected and statistically rare, but which are nonetheless inevitable.

Understanding risk is the first step to managing it, and companies can begin by identifying and profiling risk variables, assigning factors to risk so they can be assessed quantitatively, and using IT tools to help better understand and manage risk. Taking such steps can help companies be better aware of potential risks and more able to handle supply chain disruptions – putting them in position to be looking for business opportunities when others may just be looking for a way out. And the same strategies, processes, and IT capabilities that enable supply chain risk management can also help improve day-to-day business in areas such as fulfillment, procurement, supplier relationships, and inventory management – thus improving technology ROI, helping to align risks with corporate goals, and making a positive impact on the bottom line.

ABOUT THE AUTHOR

Scott R. Sykes is a principal of supply chain solutions at SAP America. As a member of the Council of Supply Chain Management Professionals (CSCMP), he was a speaker at CSCMP's 2006 Annual Conference in San Diego, California, copresenting Dr. C. John Langley's "11th Annual Third-Party Logistics Study" findings in the current research and surveys track. Sykes authored the technology enablement section of the report, which is available at **www.3plstudy.com**.

SUGGESTED RESOURCES

The following organizations offer a wide range of resources on their Web sites, covering topics such as business risk, quantifying risk, supply chain management, and many other related areas.

Contingency Planning Management Group
CPM Group, a global supply chain management organization, offers at no charge a number of excellent resource guides and an archive of articles on various subjects related to contingency planning. **(www.contingencyplanning.com)**

International Risk Management Institute
This organization focuses more on insuring against risk than in mitigating risk through better strategy and design, but offers a great deal of free information on risk management. **(www.irmi.com)**

Lloyd's of London
The famed Lloyd's is adept at quantifying business risks, from truck fleets hauling hazardous materials to the throwing arms of professional quarterbacks. Lloyd's is a good source for background information related to quantifying risks. **(www.lloyds.com)**

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