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The New Supply Chain Challenge:  
Risk Management  
in a Global Economy

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**O**utsourcing. Lean manufacturing. Just-in-time inventory. While some of the best business strategies in the world can help minimize costs and free you to focus on core competencies, these strategies also may stretch your supply chain to its breaking point. Without realizing it, your company's best intentions to become a fierce competitor can leave your company vulnerable.

Significant supply chain disruptions can reduce your company's revenue, cut into your market share, inflate your costs, send you over budget, and threaten production and distribution. You can't sell goods you can't manufacture or deliver. Such disruptions also can damage your credibility with investors and other stakeholders, thereby driving up your cost of capital.

In fact, a recent FM Global study of more than 600 financial executives around the world found that respondents identified supply chain risk, more than any other, as having the greatest potential to disrupt their top revenue driver. Additionally, Georgia Institute of Technology Professor Vinod Singhal and University of Western Ontario Associate Professor Kevin Hendricks have calculated that it can take at least two years or more for companies to recover from a supply chain failure.

The worrisome news here is not just that some corporations fail to recognize how new business paradigms have changed their risk profile. Rather, it is that even among those that do, too many accept it under the mistaken belief they can't do anything about it. Still others, hamstrung by expectations narrowly colored by past experience, fail to plan for the unthinkable—the devastating hurricane, the shocking terrorist attack, or the collapse of an important supplier in the wake of political upheaval or accounting fraud. Conversely, some companies fail to appreciate the dramatic consequences that even a seemingly minor supply chain disruption can trigger.

The good news? Companies still have tremendous opportunities to reduce their supply chain risks, whether they manage all production in-house or outsource significant responsibility for the assembly, production or delivery of products. Indeed, some might argue that, in the corporate governance environment in which we operate, companies have a responsibility to shareholders to pursue such opportunities.

The question, of course, is how? How can companies manage the many risks to which modern supply chains are vulnerable, particularly when that supply chain might stretch from Singapore to Seattle, Wash., USA? The answer lies in understanding how those risks have changed, identifying the “pinch points” where problems could disrupt your supply chain, and taking appropriate measures to prevent them from harming your business.

### *The road to globalization—and greater risk*

Supply chains can be unwieldy structures, but managing them was a more tightly contained process in the past. During the 19th century, for example, in the early days of the Industrial Revolution, many textile manufacturers utilized a low-precision, high-volume business model and established rudimentary supply chains. Raw materials would arrive by rail or steamship. Factories were situated on waterways to provide their own power for production. When finished, manufacturers shipped bolts of cloth to domestic clothing producers.

Later, companies became far more vertically integrated, bringing additional supply and production functions in-house to ensure a high degree of control. Raw materials entered factories at one end, and after various applications of manpower, machinery and perhaps some chemical processes, finished goods emerged from the other.

This vertically integrated model captured the economies of mass production and was epitomized by the Rouge River automobile production facility opened by Henry Ford in 1927 in Dearborn, Mich., USA. There, iron ore and coal from Ford-owned mines arrived on Ford freighters to produce Ford steel. To ensure the availability of other necessary components, Ford owned his own timberlands, his own glassworks, his own rail lines, and even a rubber plantation in Brazil.

While few companies at the time were able to achieve the same level of vertical integration that Ford was able to pull together, most of them weren't trying to make and sell goods around the globe. Risk-sensitive enterprises could control where their facilities were sited, how they were constructed and maintained, and what work rules and safety procedures would govern the conduct of their employees. To guard against temporary unavailability of raw materials, they could stockpile inventories at comfortable levels. If a particular good was especially critical to their process, they might source it from two suppliers—just in case one proved unable to meet demand.

Even as more companies internationalized in the late 1950s and early 1960s, this model prevailed; facilities set up on foreign shores were dedicated largely to serving foreign markets, and, to a large degree, simply replicated the self-contained approach to production followed by the parent company in its home country.

It wasn't until globalization began to take root in the 1980s that the supply chain paradigm truly shifted, as companies began roaming the world in search of the lowest possible manufacturing costs. At the same time, they began borrowing from the Toyota Motor Corp. playbook, embracing just-in-time inventory and other lean manufacturing techniques that emphasized speed and cost reduction. They sought to eliminate redundancies from their business processes, became comfortable with the concept of the single-source supplier, and located sales and distribution facilities based on demand from particular countries and regions, rather than in one centralized location. They began outsourcing non-core activities so they could concentrate on doing a better job in those areas where they saw opportunities to build real competitive advantages.

And, they saw that, with the proliferation of the Internet and e-commerce, time became compressed. The flow of information and orders became nearly instantaneous, especially where procurement systems were electronically integrated with the sales and production systems of their suppliers.



The consequences of these changes have been dramatic. We now live in a world where the largest shoemaker doesn't actually make shoes, but only designs and sells them. A world where the largest direct seller of personal computers doesn't so much manufacture its products as it assembles them from components sourced elsewhere. In one industry after another, supply chains have been stretched farther than they have ever been stretched in the past—even as lean, just-in-time production schedules have made the consequences of a break more severe.

With operations scattered around the globe, companies face a host of new perils: political and currency risks, cyber attacks, failed communications with suppliers, just-in-time delivery strategies. And, of course, they face dramatic, unpredictable risks associated with terrorism, not to mention non-compliance with attendant anti-terrorism trade and shipping guidelines. But, companies also still face traditional property-related risks to their supply chains, such as fire, natural disasters, power-grid blackouts and equipment breakdowns.

Some companies have accepted all this as the new cost of doing business—and paid dearly when it has gone awry.

In a study of more than 800 companies that announced a supply chain disruption between 1989 and 2000, Singhal and Hendricks found that, during a three-year span, regardless of industry, disruption cause or time period, affected companies experienced 33- to 40-percent lower stock returns relative to their industry peers. Likewise, share price volatility in the year after the disruption was 13.5 percent higher when compared with the volatility in the year before the disruption.

They also determined that, in the year leading up to companies announcing a supply chain disruption, such firms experienced seven-percent lower sales growth, 11-percent higher costs, and a 14-percent increase in inventories. Additionally, those companies suffered dramatic drops in operating income, return on sales and return on assets.

Singhal and Hendricks also found that the ill effects of a supply chain disruption don't disappear quickly. Changes in operating income, sales, total costs and inventories all remained negative for the problem companies in the two years after their problems were disclosed. "Like a heart attack that cuts off the flow of blood," Singhal has said, "a supply chain glitch cuts off the flow of information or supplies. And, similar to a heart attack, it has lasting effects on a company's health."

*"In one industry after another, supply chains have been stretched farther than they have ever been stretched in the past."*

Companies need not accept these new supply chain risks as insurmountable, to be guarded against simply by purchasing larger insurance policies. Indeed, while some view insurance as a primary component of supply chain risk management, it more properly functions as a last line of defense. If a company becomes weighed down with trying to recover from a major disruption, insurance can never replace customers that impatiently turn to other suppliers. Nor can insurance replace the loss of employees, management time or reputation.

In short, insurance is merely one component of an effective risk management program that functions at three distinct levels, beginning with the prevention of potentially disrupting events. Only then does the program focus on controlling that small percentage of events that can't be prevented, and finally, on mitigating the impact of those that do occur.

Such programs are holistic in nature, drawing on the expertise of not just the company's risk management team, but on all functional arms of the enterprise, including sales, marketing, purchasing, operations and finance. Let's look more closely at how such a program might work.

## *Preventing supply chain disruption*

One of the most effective ways to manage supply chain risks is to keep them from happening. Just as Six Sigma companies utilize data and statistical analysis to measure and improve operational performance to prevent quality problems, so, too, can companies use data and analysis to significantly reduce the likelihood of supply chain disruption.

Loss analysis and engineering data, for example, have shown that, to prevent a fire in a manufacturing plant, companies should regulate the storage, use and disposal of flammable materials, keep mechanical equipment in good working order, and ban smoking on company premises. The challenge today is to extend that effort to a supply chain that may stretch around the globe and include a vast array of independent suppliers, shippers and other vendors over whom your company has no direct control and which, in every instance, add a new layer of risk to your supply chain.

It is possible. It begins with taking the time to identify key products, revenue drivers, core business processes and locations in the supply chain—from procurement of raw materials to delivery of finished goods—as well as the types of events that could disrupt them. Then, take steps to prevent these “pinch points” from squeezing shut.

Think, for example, of the way companies have traditionally sought out locations for manufacturing facilities. In addition to taking into consideration the availability of an adequate labor force and reasonable proximity to raw materials and customers, companies favored sites that historically weren't exposed to flooding or windstorms, had good access to transportation networks, and were in countries with stable governments and reliable legal systems. Today, companies that are looking to add a supplier partner or outsource manufacturing to a third party can apply the same standards when deciding where to look for them. Similarly, if companies follow strict safety standards in their own facilities, they can choose suppliers that do the same.

If your business is important enough to a supplier, that provider even may allow you to audit its facilities or agree to make safety or security changes to achieve preferred supplier status. Companies that are truly committed to this process sometimes go so far as to look at the suppliers of their suppliers.

Unfortunately, many companies rush to revamp their supply chains without giving much thought to such measures. As they outsource to China, Hungary, India, Malaysia, the Philippines, Vietnam and other developing countries, they often unknowingly take on greater exposure to natural disasters, lower safety standards and less reliable legal systems.

The message isn't that companies should never outsource to low-developed high-exposure territories, but rather, that companies can help themselves by factoring the attendant risks into the decision-making process and weigh those risks against the potential rewards. Then, where the risks are deemed unacceptable, look for ways to prevent or control them.

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That said, it would be a mistake to focus only on trying to manage catastrophic supply chain disruptions. Yes, one major disaster can wipe out a company or product line. But, so can a series of minor disruptions. If companies are consistently a week late meeting customer demand, for example, or if retailers' shelves routinely are not stocked with their products, the chances of staying in business fall precipitously. In short, good supply chain management considers more than costs, it also considers customer satisfaction.

### *Using global sourcing to minimize risk*

Fortunately, one of the very trends that has increased supply chain risk—globalization—also provides opportunities to manage that risk. Globalization allows us to site facilities in safer locations, tap into educated overseas workforces and set up production centers closer to sources of raw materials. Also, by opening the door to using vendors and suppliers from around the world, globalization often increases, exponentially, the number of vendors and suppliers that companies can tap to fill gaps in their supply chain.

The trick is to make certain the alternate suppliers your company chooses are truly divorced from the risks borne by their preferred counterparts. Suppose, for example, a company buys commodity semiconductor chips for use in one of its main products. Taiwan is the center of the commodity chip industry. If both the preferred and alternate suppliers are located there, the same earthquake, power failure or political upheaval could knock both out of commission at the same time.

Prior to Hurricane Katrina in 2005, companies whose supply chains were dependent upon access to the Mississippi River via the port of New Orleans, La., USA, might have imagined that contracts with multiple shippers inoculated them against transportation risk. After Katrina, one of the most devastating natural disasters in U.S. history, the fallacy of that thinking was exposed: nothing was moving through New Orleans.

Choosing alternate suppliers prudently means taking into consideration a wide variety of factors. Do they get their electrical power from the same grid that serves your primary supplier? Do they rely on the same transportation systems? Do they buy their raw materials from the same place? The fewer questions like these that can be answered in the affirmative, the more reliable the alternate supplier must be.





### *Controlling supply chain disruption*

Where risks are deemed small enough to be withstood, or, in those rare cases where they simply cannot be prevented with certainty, companies can nonetheless take measures to control them. Consider the earlier example of measures taken to prevent fire in manufacturing facilities by controlling the use of flammable material, keeping current with equipment maintenance and prohibiting smoking. However effective these policies and procedures might be, they aren't guarantees. Accidents can still happen and a fire can break out. Accordingly, companies might want to install sprinkler systems and ask for comparable precautionary measures from suppliers.

In the same way, companies might employ computer technology to more tightly integrate order and inventory systems with suppliers' systems to guard against communications breakdowns that could disrupt the supply chain. Again, the goal is to limit the business impact should a supply chain disruption occur. A key tool: the supplier contract, which can be used to specify a wide variety of performance and risk management standards. These are particularly effective when paired with appropriate oversight controls.

### *Mitigating damage*

When catastrophic supply chain disruption occurs, a quick response can help minimize the consequences. Successfully accomplishing this requires companies have two measures in place before the disruption occurs. The first is a business continuity plan. The second is an insurance program with ample and stable capacity that can reimburse a company for operational and financial losses directly attributable to an interruption of business activities.

A business continuity plan should be both broad and deep, covering a wide range of contingencies: disaster recovery, the safety of employees, the retrieval of backup business data, emergency communications, the possible relocation of business operations to an alternative location, and the sourcing of goods from alternative suppliers. Ironically, the biggest hurdle to developing such a plan is not usually human ingenuity or industry, but lack of imagination.

*“Few have much experience managing supply chain risk across oceans and continents.”*

Numerous catastrophes during the past decade, from the Kobe, Japan, earthquake in 1995 to Hurricane Katrina in 2005, have shown we routinely underestimate—or simply ignore—the degree to which disasters can disrupt businesses and the supply chains on which they depend. The Kobe earthquake killed more than 6,400 people, destroyed 100,000 buildings, closed Japan's largest port for two months, and caused more than US\$100 billion in damages. Among the companies forced to scramble for alternate production and transportation were several of the world's major auto manufacturers. Toyota alone was unable to produce 20,000 cars on schedule after damage to plants left it short of critical components.

The problem in planning for disasters of such magnitude is that our expectations tend to be colored by our past experiences—and few have lived through a major fire, much less a major earthquake or hurricane. Similarly, few have much experience managing supply chain risk across oceans and continents. Deloitte, in its risk management study, *Disarming the Value Killers*, found that many of the greatest market capitalization losses in the world were attributable to events that were considered extremely unlikely—and for which

those companies seemingly failed to plan. Many of the companies cited in the study lost more than 20 percent of their market value in the month after the negative event, and it often took more than a year before their shares regained their original levels.

*“When it comes to your insurance program, it pays to know how your policy will respond, should you ever have an insurable loss.”*

By working with business continuity experts, companies can better understand the risks they face and better prepare themselves to prevent, control and mitigate them—however unlikely they might seem at first glance or however far outside conventional wisdom. Where companies often fail to fully plan is by looking at risks too narrowly, such as simply planning for IT business continuity, and not inoculating the business built around it to the same degree.

And, when it comes to your insurance program, it pays to know how your policy will respond, should you ever have an insurable loss. Do you know whether your insurer has the financial strength to pay for your loss? Does your insurer have the stability, so you can be confident it will be around should you have a claim? Additionally, does it have a history of paying claims, promptly and fairly?

Likewise, does your company have enough coverage? Carrying too little insurance can have serious consequences in times of potential disaster. Thus, it is far better to ensure your insurance coverage is in-sync with the actual replacement value of goods and materials. Also consider the advantages of seeking more coverage at a higher deductible than having low limits with a low deductible.

While all this may sound like common sense, it isn't always common practice. It pays to check with your company's insurance manager to see how your company's program is structured, and whether insurance can make your company whole again in a worst-case scenario.

### *Why the benefits of supply chain risk management outweigh the costs*

To be sure, managing supply chain risk can add costs. It can cost more money to choose a supplier in a politically stable country with higher wages than one in a developing nation with cheap labor. It can be more expensive to build or lease backup operations centers, invest in property loss prevention measures and buy insurance. But, if these precautions prevent or minimize a supply chain disruption even once, companies might easily earn back their investment many times over.

In the meantime, companies can take solace in knowing the costs of a risk management program that places an emphasis on prevention and control can be offset, too, in the form of lower insurance premium—not to mention increased capacity and higher limits—for property, casualty and business interruption insurance. That's because an effective supply chain risk management program really does reduce the chance a company will suffer a catastrophic business disruption. Consider it a wise investment.

By implementing a holistic, enterprise-wide supply chain risk management program, companies also can uphold their commitment to providing strong corporate governance on behalf of shareholders, which ultimately boosts shareholder value. Companies that don't are, in a very real sense, working without a safety net. In today's high-risk world, that's never a smart idea.

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