insights

SUPPLY CHAIN RISK
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Supply Chain Risk Insights

Protecting your value chain

Also in this issue:

- Business continuity and risk management
- Best practices for tackling supply chain risk
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- Coping with the effects of port closures
- Due diligence

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An insider's view

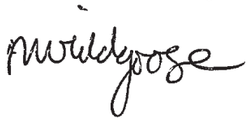
Nick Wildgoose
Global Supply Chain Product Manager

Welcome to this latest edition of insights which features a series of articles on the topic of supply chain risk. The year 2011 saw a number of natural disasters that led to significant and costly supply chain disruptions. This illustrated the global interconnectivity of risks with, for example, production in the US stopping because of issues in Japan. It is important to ensure the resilience of supply chains not just in financial terms but also because of their importance from a social perspective, for example, the consequences of failures in food and pharmaceutical supply chains. Drawing on the knowledge of supply chain risk experts, key institutions and industry bodies, themes covered include:

- Ensuring your business continuity and risk management involves your critical supply chains
- Best practices that might be considered in tackling supply chain risk
- How to carry out appropriate due diligence with suppliers
- Making the financial case for improving supply chain risk management
- Care and protection of cargo at sea
- Impacts that port closures could have on your supply chain

The articles were written by business journalist Catherine Bolgar, and were featured along with other supply chain risk thought leadership insights on our microsite supplychainriskinsights.com, produced in collaboration with the custom content team at The Wall Street Journal. It is important to remember that your supply chain is exposed to both physical and non-physical threats, for example, IT failure, and that it is no longer good enough just to focus on your tier one suppliers.

We hope the content of this latest brochure, which follows similar Supply Chain Risk Insight Documents from 2009 and 2010, will encourage you to develop a deeper understanding of your supply chain. It is only by understanding and controlling your supply chain that you are able to manage risk, optimize innovation and control costs. If you do not control your supply chain there is also a significant danger that your reputation will be damaged.



Nick Wildgoose

Business continuity and risk management must involve your supply chain to be effective

You say you have a business continuity plan, a system to avoid the risks of a malfunctioning production line and backups in place. You also believe that you can switch production to other locations and that your employees know what to do in an emergency.

But what about your supply chain itself?

In fact, few companies have integrated their suppliers into their business continuity management, says Lyndon Bird, international and technical director at the Business Continuity Institute (BCI), an international body for developing and sharing best practices in business continuity management, based in Caversham, U.K.

It's never been more important to involve suppliers in business continuity plans, because companies have shifted more and more responsibility outside their own walls, creating a complex web of interdependent relationships, notes Goh Moh Heng, president of the BCM Institute, a Singapore-based international training and certification organization that trains professionals and companies about business continuity and disaster recovery.

"This web is a double-edged sword," Dr. Goh says. "On the one hand, dependence on external parties introduces points of failure that can have huge impacts on an organization's fulfillment capability, particularly for just-in-time (JIT) operations, while having little control over the external parties' processes."

The March 2011 earthquake and tsunami in Japan show just how far the ripple effect of a supply-chain disruption can reach. While physical damage was concentrated in ▶

the northern part of the country, it spurred electricity shortages and rolling brownouts elsewhere in Japan. That led to shutdowns at factories far from the disaster, even causing production interruptions across the globe.

Major car manufacturers have factories around the world, but they depend on parts from suppliers that were in the disaster zone or those affected by the power shortages.

Sony Ericsson, the mobile handset maker, recently said in a statement, quake-related supply-chain disruptions would delay the broad launch of a new phone and restrict production of other models.

"Productivity can be disrupted despite an absence of physical damage," says Linda Conrad, director of strategic business risk and customer relationship leader for Zurich Financial Services in New York. "Companies need to think beyond their traditional contingent insurance coverage toward supply-chain disruption, which can come from any cause, not just physical damage."

Physical damage has not been the only cause of business disruption in recent years, according to Zurich's database of disruption events. Business disruptions can come from many sources, such as information technology outages, port closures, strikes or regulatory changes.

Knock-on effects mean it's more important than ever to map out the value chain from end to end, including inter-dependencies. Companies need to ask "what are the triggers or drivers that would cause a risk to come to fruition?" Ms. Conrad says. Then, they need to determine what they would do to mitigate the risk or the severity of the disruption.

Most companies look at what they can do to respond to a crisis, which is reactive, she says. It's more important to be proactive, by coming up with preventive measures and continuity plans. Those measures should involve critical suppliers to be better prepared for change, and we must sometimes change the way we prepare.

"When companies are planning proactively for business resilience, it becomes a competitive advantage," she says. "Because you're back in the market more quickly than your competitors, you can benefit from a lower cost of recovery and even gain market share."

It isn't enough to see whether key suppliers have their own business continuity plans. "A business continuity program keeps them in business, not necessarily you in business," notes Mr. Bird of BCI. "You want to ensure continuity of supply to you."

Ms. Conrad warns that many companies have outdated continuity plans. "People listed as emergency responders aren't even at the company anymore because parts of the company have been divested. Companies may even merge or open new locations without adjusting their resiliency efforts."

While buffer stocks can eliminate many problems related to short-term interruptions, it can be too costly to keep stocks of everything. Rather than issuing a blanket decree for extra inventory, companies need to look at critical choke points in the supply chain and address those.

> "Companies need to consider a wide range of potential causes for supply-chain disruption, not just physical damage."

Many companies focus on areas with the highest insured value—a factory, or a supplier's factory, says Ms. Conrad. From a property standpoint, a factory is worth a lot of money. But if you have three factories and only one distribution center, "from a criticality perspective, that distribution center is more of a pinch point, even if that building isn't as valuable."

Similarly, companies often rank suppliers by spending. However, they might not be the suppliers most critical to your business, she says. A hospital might spend huge sums on magnetic resonance imaging equipment, for example, but "it can't even open its doors without rubber gloves. So from a criticality perspective, they need to protect the supply of gloves."

Business continuity management "is about priorities," Mr. Bird says. "It actually focuses attention on what is (A) important and (B) urgent."

Another way to mitigate disruptions in one place is to have multiple suppliers, spread out geographically. Many companies, seeking to drive down costs, have consolidated suppliers. Particularly in Japan, the birthplace of just-in-time (JIT) delivery, companies have developed close relationships with suppliers. The integration has brought trust and the ability to speed product development, but has come at a cost of diversification of risk.

"The major disaster brought into question whether assumptions like having a single inventory or tying oneself to a single supplier is the best way to make a business resilient," Mr. Bird says.

Relationships remain important, however, notes Ms. Conrad. "You want to be as important to your suppliers as they are to you. If something happens, you want to be the first customer that they give supplies or capacity to. Working with suppliers can help you move up that pecking order."

Companies can include penalty clauses in their suppliers' contracts for failure to provide supplies on time. This can be especially important for smaller companies that might otherwise find themselves waiting in line behind bigger competitors, says Dr. Goh of the BCM Institute.

While big companies have been trending toward consolidating orders with one or two suppliers to reap volume discounts, smaller companies might find it wise to do the opposite, to reduce risk.

"A choice of suppliers would allow companies to get supplies from alternative sources and not be held hostage to any one supplier," Dr. Goh says. Similarly against the grain, he adds, a smaller company that relies heavily on a particular part may want to avoid JIT arrangements and keep a small inventory of critical parts.

Another tip for companies of any size is to test suppliers' resilience before there's a crisis. Testing can be as simple as placing an extra-big order without warning and seeing whether the supplier can deliver, he says.

Instead of thinking of JIT, companies would do well to also think of JIC: Just In Case, Ms. Conrad says. "What would you do just in case your just-in-time supplier doesn't come through?"

The goal, she says, is "a no-surprise culture."

Best practices for tackling supply chain risk

Most companies conduct due diligence on strategic suppliers before signing procurement contracts. But what's the best way to do it, to balance cost and risk?

Several industry organizations have developed methods not just for procurement but for supply-chain risk management in general. The reasoning: procurement and supply chain best practice shouldn't be shut into a silo but integrated into the overall strategy of the organization including a broad supply-chain risk management program. Here's a look at three approaches: Gold Certification, SCOR and ISO standards such as 31000 and 28000.

Gold Certification

The Chartered Institute of Purchasing and Supply (CIPS), based in Stamford, U.K., has over 60,000 members globally. CIPS first developed certification 12 years ago and added Gold Certification in 2004.

Gold Certification looks at the wider strategic intent of an organization and how the procurement and supply chain function fits into its strategic needs, says David Noble, CIPS chief executive. Gold Certification explores such areas as strategic intent, supply-chain management, supply-relationship management, innovation, continuous improvement, risk assessment, business continuity planning and other areas.

CIPS uses 16 maturity profiles to support the analysis as well as other popular tools and techniques such as organizational SWOT (strengths, weaknesses, opportunities, threats) and PESTLE (political, economic, social, technological, legal, environmental) analyses. A company provides a dialog to show how it is meeting its strategic intent in the areas of people, processes, infrastructure, tools and metrics.

"Gold encourages organizations to look holistically across the 16 profiles matched against strategic intent and across the organization, rather than just matching to set standards," Mr. Noble says. "The process encourages organizations to look at where the risks lie in people, processes, infrastructure, etc. Groundwork needs to be thorough, so questions asked include: does everyone in the organization understand risk? What risk policies are already in place? Who is the risk champion? What tools are being used to measure risk? How is risk measured?"

SCOR

The Supply Chain Operations Reference model, or SCOR, uses standardized language, metrics and business practices to optimize the supply chain. SCOR identifies the key things to address to solve any problems that arise in the supply chain, says Caspar Hunsche, research director at Supply Chain Council, the Cypress, Texas, organization that developed SCOR in 1996.

The methodology first looks at the business's objectives, such as which markets it wants to serve, its products and the supply chain supporting those markets. Then it asks what are the metrics that apply for those products, and finally what are the realistic goals for those metrics—the levels a business needs to compete in the market.

"Rather than do end-to-end supply-chain analysis, which may span many countries and many suppliers, with SCOR a company can look at key areas to focus on," Mr. Hunsche explains. It uses a set of best practices to give

alternative ways to organize a process.

One key performance indicator looks at value at risk—that is, the chance of a disruptive event happening multiplied by the impact if that event occurs. "That way, companies can rank the relative importance of the risk aspect in the supply chain," he says.

ISO Standards

The International Organization for Standardization, or ISO, unveiled in 2005 the first of a series of standards called ISO 28000 aimed at security management in global supply chains. The standards at first focused on smuggling, theft, piracy and terrorism.

ISO 28001 was added in 2009 to address issues surrounding inputs, process and outputs. ISO 28002 was adopted last year to include the development of resilience in the supply chain.

Rather than a company doing due diligence on its suppliers, ISO 28002, like other ISO standards, allows a supplier to present itself as having necessary processes in place to reduce risk, says Taylor Wilkerson, research fellow at LMI, a government consulting firm in McLean, Va.

> "Where are the big risks you need to address vs. the small risks? We see companies get bogged down in trying to precisely calculate risk in the supply chain. But when you're dealing with that much uncertainty, it's hard to be precise. So you can spend a lot of time and money without getting a lot of value."

"Companies often build their risk-management programs based on the last risk event," Mr. Wilkerson says. After the September 2001 terrorist attacks, companies adopted programs to address terrorism risk and the risk of borders shutting down. But that didn't prepare them for the ▶

next disaster: Hurricane Katrina, which prompted companies to look at weather risks….which didn't help them when the next risk event occurred: the global financial crisis, he says.

"It helps not to get too dragged down in precision in risk," he says. "Where are the big risks you need to address vs. the small risks? We see companies get bogged down in trying to precisely calculate risk in the supply chain. But when you're dealing with that much uncertainty, it's hard to be precise. So you can spend a lot of time and money without getting a lot of value."

Supply Chain Risk Leadership Council

The Supply Chain Risk Leadership Council, a group of companies – including Zurich Financial Services – from a number of manufacturing and service industries, has been developing a new set of best practice guidance notes for broader supply-chain risk based around ISO 31000, and these will be issued shortly.

The wide array of economic, geopolitical, environmental, technological and other risks of the last decade have heightened the call for a more rigorous risk management approach by organizations.

ISO 31000 defines the application of a risk management framework as a "set of components that provide the foundations and organizational arrangement for designing, implementing, monitoring, reviewing and continually improving risk management throughout the organization."ISO 31000 promotes the adoption of consistent processes to help manage risk effectively, efficiently and coherently across organizations. It provides a common approach in support of standards (such as ISO 28000, etc.) dealing with specific risks and/or sectors.

Best Practices

- Some companies don't worry much about the probability of various risks and impact of risk events. Instead, they focus on the impact of a specific node of their supply chain being taken out of service, whatever the reason, says Mr. Wilkerson. "So it's not whether there's a tornado or a labor strike. You just ask yourself, what if this supplier is out of commission and what do we do to respond. It avoids having to do a lot of analysis."
- Collaboration between customer and supplier "never seems to lose," says Mr. Hunsche of Supply Chain Council. Degrees may vary but the key is having open channels of communication.
- Companies look for risk beyond first-tier suppliers. "There's a real understanding that risk could come from second-tier suppliers, or even further back," Mr. Wilkerson says.
- Parallel company risk evaluation is helpful in a just-in-time world, he adds. It involves looking at the risk of disruption from another of your cohorts, though not necessarily competitors, in the supply chain. For example, in an automotive supply chain, everything is just in time, and a failure at one key supplier can shut down the production line. "The risk is if you're making dashboards and a seat supplier has a problem that makes the car maker shut down production, it means you're shut down, too."
- An annual risk assessment ensures that a company at least has a process in place to review its exposure, Mr. Hunsche says.
- The companies at the top of the game in managing supply-chain risk are those that "ingrain it into day-to-day operations," he says. "All the way from design to how they manage their relationships with suppliers."

Due Diligence: It's no longer enough to say it's not my fault

In an earlier epoch, the vertically integrated company ruled the planet, making its own parts and components, and sometimes even owning the mines or plantations that supplied its raw materials. ►

Then came the other extreme.

"Companies went from the lowest-risk supply chain at any cost to the lowest cost at any risk," says Paul Hopkin, technical director of risk management association Airmic, based in London. "Arguably that trend had gone too far. Now people are taking a more balanced view that it's not just about costs—it's about reliability, ethics, quality and contractual conditions."

When costs were the main concern, suppliers were considered an asset, not a risk, says Colin Maund, chairman of Achilles Group Ltd., an Oxford, U.K., firm that offers supplier information management to companies. "The attitude was that you use suppliers, and if they don't satisfy you, you switch."

Today, suppliers are often integrated and mission critical. Hence, the solution is rarely as easy as switching suppliers, especially when the problems are legal or regulatory. "This is particularly challenging when the supplier is providing a service rather than a physical good, because you do not have the management option of ensuring spare capacity or stockpiling inventory of a real-time service vendor to keep your business resilient in the event of a supplier disruption," explains Linda Conrad, Director of Strategic Business Risk for Zurich Insurance.

Take information technology, an activity many companies outsource, often to a single supplier.

"If your supplier is faced with a claim of intellectual property infringement, in the worst case a court can make the supplier stop using the core piece of IP that is used for your process," says Andre Duminy, a partner and head of the global outsourcing practice at the London headquarters of Clifford Chance, an international law firm. "If that were to happen, the supplier may no longer be able to meet its commitments toward you and while you might have a claim against the supplier, most contracts exclude lost business or profits from the supplier's liability."

IP violations, data privacy violations and bribery are hot topics right now, says Richard J. Cellini, chief executive of Briefcase Analytics Inc., a Cambridge, Massachusetts, consultancy that creates a global vendor risk score based on searches of lawsuits filed against companies in more than 50 countries around the world. "It can be extremely difficult to detect them. You can't see them by doing factory inspections. By nature, they're intangible. Really, the only effective way to learn about that is by searching litigation records around the world."

In 2003, a big semiconductor supplier used stolen IP for its chips; the transgression blew up on the customer, a major computer company. A year later, the same supplier had the identical problem with another major computer maker. A year after that, the same thing happened to two other computer companies, with the same supplier. "It shouldn't have come as a surprise to these guys that the supplier was selling products based on stolen IP. They just didn't bother to check," Mr. Cellini says.

Law-enforcement authorities realize that offenses are rarely one-off events. If they find a company that engaged, for example, in bribery on the part of a big customer, they will investigate that supplier's entire roster of customers, Mr. Cellini says.

"Bribery is the original supply-chain crime," he says. "Nobody uses their own people to do it. Everybody uses a vendor. And sometimes the vendor thinks they're doing you a favor," by paying bribes even without being asked.

Guilt by association can also arise in regulated industries such as financial services. If a supplier faces regulatory scrutiny or is fined, "it calls into question whether what the supplier is doing or failing to do is leaking to the customer and in some cases the supplier's breach could also cause its customers to be in breach of regulation," says Mr. Duminy of Clifford Chance.

In product safety, as well, the errors of the supplier are visited upon the customer. Product liability is strict liability in Europe and some other jurisdictions, says Mr. Hopkin of Airmic. "It's not enough to say 'it's not my fault.'"

Recourse against suppliers often is limited. Some countries place caps on suppliers' liability, usually the amount of revenue paid to the supplier, "but the loss to the customer may be enormous compared to the amount paid to the supplier," says Dessislava Savova, Paris-based partner and head of the commercial contracts group at Clifford Chance.

Take the example of a logistics company that outsources its IT services, says Mr. Duminy. The IT system fails because of the supplier's error, and the logistics company has a ship that can't leave the port because of the failure. The logistics company faces significant increased costs, lost business and profit, but under typical contracts, the IT supplier will disclaim responsibility for all that, he says.

"Suppliers will take responsibility for direct losses but not consequential losses," like lost profit, lost data or lost opportunities, he says. "Those clauses are so standard, it is hard to move suppliers away from them."

Force majeure clauses also can backfire. Force majeure refers to unforeseeable extreme events, such as earthquakes, volcanoes, or even war. Contracts usually specify what happens if force majeure affects either of the parties, but companies "often don't deal with it in detail in the contract," Ms. Savova says. It's good to define what exactly qualifies as a force majeure event.

For example, if a supplier's work force strikes, and the contract's force majeure clause doesn't exclude strikes, the supplier would be off the hook for any losses, says Mr. Duminy.

Don't assume that force majeure or typical insurance policies will cover supply disruption from things such as strikes, says Ms. Conrad of Zurich. If the fault is with the supplier, it's the supplier's insurance that should compensate. However, the supplier might be under-insured or not insured at all, and you might end up paying for claims that should have been covered by your vendor unless your own insurance covers all risks of non-delivery.

"Companies really need to do due diligence on the insurance they require of their suppliers so there are no gaps that leave you exposed," Ms. Conrad says.

In addition, "if you're in a single-source relationship and this supplier is affected by force majeure, these clauses don't allow you as a customer to seek alternative suppliers quickly," Ms. Savova warns.

Problems may creep in even if a supplier hasn't done anything wrong but is just facing claims, says Mr. Maund of Achilles. "It may become financially unstable or distracted from the core business."

A supplier may shift emphasis away from the product line it's selling you and stop investing in upgrades or research and development, he says. Or it may decide to divest the business line. Or it may merge with another company.

"Anything that distracts management from delivery," says Mr. Maund, "is bad news for buyers."

The dos and don'ts of due diligence

DO a full risk assessment of your suppliers including their business continuity plans and geopolitical exposures

DO site visits, making sure your supplier has the capacity and skills to fulfil your order

DO talk to the supplier's staff and check their training records

DO check the supplier's financial records

DO search on the Internet for any past violations or disruptions

DO check the supplier's critical relationships and business continuity arrangements

DO review adequacy of insurance coverage on suppliers, to ensure all risks of disruption (beyond physical damage) are covered

DON'T accept boilerplate contracts that limit the supplier's liability if the supplier is at fault

DON'T turn over your intellectual property to a supplier without verifying procedures for safeguarding it

DON'T sign long-term contracts with little-known suppliers or new players—instead start out with a short-term contract that can be extended.

Effective risk assessment can bolster your bottom line

Here's a good reason for dealing with supply-chain risk: doing so can help your bottom line.

A disruption in the supply chain can shut down production, and a faulty piece from a supplier can prompt a recall and lawsuits. Short supply can challenge the ability to meet demand and maintain your valuable reputation. As more and more companies are recognizing these potentially damaging impacts from supplier disruptions, they are beginning to appreciate—and engineer—reliability as much as low cost from suppliers.

But other aspects of supply-chain risk present less obvious ways to bolster the bottom line. For example, volatility in foreign exchange rates or commodity prices can be a big financial risk, and managing that can be a big benefit.

At the same time, hidden inefficiencies in the supply chain may come to light when a company analyzes the supply chain for risk.

"Risk assessment and a review of supply-chain efficiency go hand in hand," says Andrew Leahy, vice president of product development for DHL Supply Chain, a unit of DHL, the global logistics and transport giant, in Oxford, U.K. "A thorough risk assessment might see the need for improved visibility through new IT systems. Or it might show a way to avoid high-cost emergency air freight. A company can take actions that might involve investment at the outset but reduce total costs."

The risks vary, of course. Service companies tend to have labor-oriented suppliers and, hence, labor-oriented risk, says John Mardle, working capital practice director at Develin & Partners Ltd. in Staines, U.K. That means they need the right skill sets and the right number of people.

Manufacturers tend to have the most complex supply chain. Risks from the supply side include logistics, volatile raw material costs and unexpected delivery costs. There may be additional issues such as geo-political exposure, regulatory challenges and even supplier insolvency risk. They also face volatility of demand from the customer side, Mr. Mardle says.

Project-type companies are, for example, construction companies, but could also be service or ▶

"The recent volatility in exchange rates has meant that companies have started to understand that foreign exchange is an important aspect of how to manage their supply chain."

▼ manufacturing companies, he says. Their supply chains are unique to a short, intense project. For them, the risks are about getting what they need—people or inputs—in a measured, managed way. Failure to manage projects or other customer contracts efficiently often results in daily penalties or liquidated damages which can quickly erode profit margins.

Increasing globalization means more supplies are bought and products sold in other currencies than the one used at a company's headquarters. Yet, "lots of firms have no formal foreign-exchange management policy," says Tom Lawton, partner and national head of manufacturing at BDO LLP, chartered accountants and business advisers based in Birmingham, U.K. "However, things are improving," he adds. "The recent volatility in exchange rates has meant that companies have started to understand that foreign exchange is an important aspect of how to manage their supply chain."

Volatility isn't limited to exchange rates. The likely continuation of "volatility in commodity prices and oil prices means their impact and sensitivity on the supply chain is another critical area," says Mr. Leahy of DHL.

The problem, says Mr. Lawton, is that companies are squeezed by price increases or exchange rate movements that they can't pass on to the customer.

One way to help ease the pain is to make contracts for six to 12 months at a set price and exchange rate. Companies then "accept that exchange rates can move for or against them in that period, but they know that in that period they will have a margin of X based on the set price," ▶

he says. "This requires that they can recharge to or contract with customers based on this price. They might win or lose, but at least they can calculate their end price."

The emphasis on just-in-time deliveries has left some companies caught out when shortages of key supplies suddenly arise. "Companies which operate just-in-time might also consider planning strategies for 'just-in-case,' so they are more prepared for the risk of possible interruptions and market fluctuations," says Linda Conrad, director of strategic business risk at Zurich North America in New York. "Such proactive supplier and business resilience planning proved beneficial during the Icelandic volcano crisis, when certain companies were able to react swiftly and capture more of the market following the crisis."

Often the remedy is as simple as identifying and holding buffer stocks of that critical supply, in order to build in some redundancy and flexibility. However, some companies face a risk from holding too much inventory, says Mr. Leahy of DHL. Besides the fact that stocking supplies entails a cost of its own, those supplies might go out of date, and "that can be as big a risk as not having enough," he says.

Premium shipping is another inefficiency cost that tends to get swept under the rug in companies. One area of a company may realize it needs a supply urgently, and the supplier sends it by air freight or other expedited means. That cost is often paid at the receiving end, Mr. Leahy says. It sometimes can be avoided by reorganizing regular transport. "Managers need to take a holistic view of the supply chain and not just their little bit of it," he says.

Inefficiency also creeps in through the number of suppliers companies have. Manufacturers tend to deal with the largest number of suppliers, but the problem can affect companies in any sector. Multiple suppliers for a given input means orders have been split up, so the customer company loses the heft of a large-volume order when it is negotiating price, says Mr. Lawton of BDO. It also can mean increased costs for logistics and stock-holding.

In addition, products from different suppliers might not be absolutely identical, with slight variances in quality or standards even if they all met the customer's specifications, says Mr. Mardle of Develin.

That's not to say that single sourcing is the answer, Mr. Lawton notes. Some companies run a risk of disrupting operations by having too few suppliers.

Wanting to hedge their risks of having fewer suppliers, some companies opt for near-sourcing, Mr. Mardle says. They can cut transport costs and emissions, avoid foreign-exchange fluctuations and, most importantly, easily visit the supplier. That puts the company in a better position to manage and control the quality and timing of supplies and to nip any problems in the bud.

The reverse supply chain is another technique to help cut costs and drive out inefficiency, Mr. Mardle says. A customer company requires its supplier to take back any unsold products, to refurbish or repair faulty items, or to disassemble products to recycle parts. "The customer is saying, 'We will not hold stock,'" he says.

To make a reverse supply chain successful, a company needs sophisticated technology to track every item, at every point along the supply chain, Mr. Mardle says. Examples include bar codes on every single part; radio-frequency identification, or RFID; or near-field communication, or NFC.

These technologies "give not just a part number, but also which supplier and when," he says. "The beauty of it is that at any given point in time, you can identify a point of breakdown." The technologies also can allow for automatic re-ordering of supplies when a finished product is sold, he adds.

The opportunity to drive out inefficiencies and boost the bottom line make it worthwhile to undertake a supply chain risk assessment. "A company has its supply chain intact for years; it seems OK," BDO's Mr. Lawton says. "It's hard to change the process and make business continuity plans for something that has never happened and might never happen… The biggest risk is that people aren't making the assessment."

Care and Protection of Supply-Chain Cargo at Sea

Marine pitfalls can pose surprising risks to the bottom line

With more than 80% of world trade moving by sea, even companies operating domestically in landlocked countries have some part of their supply chains traveling by ship.

The good thing about marine transport is that it's far cheaper and more environmentally friendly than other means, according to reports from the OECD (Organisation for Economic Co-operation and Development) and the US Department of Transportation. However, it is slower, and that means mistakes and problems take longer to correct, which could result in disruption for your company.

"The supply chain, at the end of the day, attracts a lot of money, just in terms of inventory," says Ulrike Rowbottom, director of Agnus Consultancy Ltd., an Abingdon, U.K., firm specializing in logistics and supply-chain management. If a container is on the water for 25 or 26 days traveling from China, those assets are dead

on the water. If a company has "to add on another week for a delay, they have to factor in another week of inventory. That can be costly in terms of delays or lost sales," she adds. If the product is time sensitive, a company might have to put in extra recovery measures, such as using expensive air transport for all or part of the voyage.

Here are some of the common pitfalls in marine transport—and how to avoid them.

1. Documentation

As of Dec. 31, 2010, the new European Union customs advance manifest rule requires all shipments to the EU to have an entry summary declaration submitted to the first EU port of call at least 48 hours before the cargo is loaded onto the ship.

Previously, companies could ship the goods and declare them after the vessel had departed, Ms. Rowbottom says. The change builds as much as a two-day delay into the supply chain, and "two days in terms of inventory cost can be quite substantial."

Documentation usually is sent separately from the cargo itself, by courier. Despite goods being at sea for four weeks from China to Europe, they sometimes arrive before the documentation does, Ms. Rowbottom says. Or the documentation is sent to the wrong department and is lost. Or it contains discrepancies with the invoice that have to be patched before the shipment is allowed through customs.

Solutions

- Think now about how the new EU rule will affect your supply-chain timing.

- Prepare a detailed risk assessment along the lines of "cause, effect and consequence," taking into account end-to-end cost, including inventory carrying and capital cost. "When performing risk assessments for our clients, quite a few are surprised about the potential detrimental impact to bottom line and it's from there that we start to build realistic contingency plans," Ms. Rowbottom says.

2. Packing

The shipment needs to be packed and prepared for the normal rigors of transport, to protect against, amongst other things, breakage, rain, humidity changes, temperature extremes or contamination, says Lee Meyrick, Global Marine chief underwriting officer at Zurich Financial Services in London. "If steel is not prepared correctly, it may rust," he says. Food may spoil. If a ship moves from a warm, humid area to a cold one, condensation could form inside the containers.

Zurich has a global network of 800 risk engineers who visit ports to ensure clients' packing is adequate for the voyage.

Oliver Lopez, Zurich senior risk engineer, based in Zurich, says cargo isn't packed properly because of cost-cutting measures. Or, he says, the cargo isn't handled correctly, whether too roughly or whether put in the wrong type of container, because personnel aren't well trained.

Solutions

- Don't scrimp. The savings from cheap packing might not be worth the potential damage, not just to the goods being shipped but also the time lost if damaged goods need to be replaced.

- Look at the shipping routes to see what kinds of conditions, such as humidity or cold, might affect the cargo.

- Get risk engineers involved early. They can verify packing as well as unloading equipment, checking whether the vessel's lifting gear is in order.

- Train your employees, sharing the industry's best practice knowledge.

3. Contracts

Your first line of defense is a solid contract, so you need to think carefully about terms it should cover, some of which might not be obvious. Vessel age and the use of old tonnage is one of the big problems in marine insurance, says Mr. Meyrick, and it can affect all interests in the voyage due to the rule of "general average." If a vessel unexpectedly encounters trouble, such as engine fire, and there's a potential danger to the ship, cargo and other interests in the voyage, any expenses or losses incurred to get the ship to safety are shared proportionally by everyone with a interest in the "adventure" – not just the shipping company but also the cargo owners and other interests.

"General average is a main driver of marine insurance claims," he says.

Another common problem is finding out goods don't meet quality standards, says Ms. Rowbottom. Discovering a quality problem after delivery can mean a significant disruption to the supply chain as the problem is fixed at destination, often at a higher cost, or is rejected and replacement goods have to be shipped.

Solutions

- Use only reputable shippers. "There are still a lot of cowboys in the business," Ms. Rowbottom says. Freight forwarders should be authorized economic operators, or AEOs.

- Check quality at origin, not only at destination. If you use a consolidation center that fills your container with goods from other suppliers, or goods from other companies, you can have them perform spot checks for quality.

- Negotiate a priority freight clause if you are a big company, so that, no matter what happens (storms, strikes, etc.) your container will move first, Ms. Rowbottom suggests.

4. Weather

Transport times are up because of an increase in heavy storms on the high seas, Ms. Rowbottom says. If bad weather delays a delivery, a company "could miss promotional sales or have to halt production if it's a just-in-time operation." Irrespective of weather, transit times have increased because of slow-steaming vessels, she notes.

A ship might have smooth sailing only to encounter a storm upon arrival at port, delaying docking, says Mr. Lopez. Sometimes ships reroute to avoid big storms, such as hurricanes, which adds time and costs for getting the goods to the final destination.

Solutions

- Beware of seasonal heavy weather, such as hurricanes in the Gulf of Mexico or typhoons in the Pacific. If your cargo has to pass through these areas, calculate the cost of holding inventory to get you through delays versus the cost of a disruption.

5. Security

Theft and pilferage is another threat to cargo, especially for high-value goods such as high-tech articles and electronics. It's possible to have a complete record of what's happening to your cargo throughout its journey, from the time the container is sealed until it's delivered, notes Ms. Rowbottom. However, "it's more the exception than the norm, usually used for high-value goods or medical or pharmaceutical products."

Once the container is on the ship, the risk of theft is minimal, says Mr. Lopez. The risk is greater when the cargo is sitting around before loading and after arrival.

Sometimes other cargo poses a threat. People may mis-declare cargo to avoid import duties, says Mr. Meyrick. He cites an instance of a mislabeled shipment of direct reduced iron, also called sponge iron, which can react when in contact with oxygen (it burns), or with moisture (it produces hydrogen and can explode). In this case, "Due to the fact that the Master was not aware of its contents and therefore the requisite handling requirements, the container was placed near a heat source on the vessel and exploded. The risk isn't just your shipment but other people's cargo," he says.

Solutions

- Use secured warehouses – those constructed from concrete, not wood – with controlled access and closed-circuit television monitoring that delivers good-quality images, even at night, and at least 30 days of recording time, Mr. Lopez advises.

- Use theft-detection technology for goods that have high value or that need a guarantee against tampering.

How companies can best cope with the costly effects of port closures

More than 80% of world trade travels over the seas. What would happen if a major port were completely shut down?

"It could really damage the global economy if one of those ports shut down," says Maria Rastalsky, head of Latin America Recovery Services at Zurich Latin America, based in Buenos Aires.

Just look at what happened in the strike that shut ports on the west coast of the U.S.—including the country's biggest port, Los Angeles, and the No. 3 port, nearby Long Beach—for 11 days in October 2002. Costs from that episode were estimated at $65 million for each day of the shutdown. Some companies, seeing the dispute between unions and management building, arranged for backup supplies or alternative delivery routes. But others waited, counting on a last-minute settlement. In the end, almost all ships that had been blocked by the strike landed within the next month.

Can your company deal with that kind of delay?

"Looking at global supply chains and deliveries, global companies are targeting dates and product launches that in a downturn are no longer just missed sales opportunities but can be hits to balance sheets," says Patrick Hickey, vice president and cargo leader, North America, for Zurich Marine, speaking from San Francisco.

In the past decade, supply chains have gotten longer and more complex, and companies have more finely tuned lean, just-in-time processes. In other words, there's even less cushion today, so it is important to consider your contingency plans in advance.

In the case of strikes and big storms, companies can see that trouble might hit and can start to arrange alternative supplies and to talk to forwarders about how their shipment will be handled. Other problems, however, can occur with no warning: look at the earthquake in Japan earlier this year, or even at the crane accident at the U.K.'s No. 2 port, Southampton, that shut the port for weeks in 2008.

If your ship is coming into Long Beach as a strike erupts, ▶

it might sit outside the port and wait a while, since rerouting even to Oakland, an eight-hour drive from Long Beach, would take a ship a couple of days, Mr. Hickey continues. Plus, you wouldn't be alone: more than 4,000 ships call at Los Angeles and Long Beach in a year, and the twin ports handle triple the volume of Oakland, Seattle, Portland and Vancouver combined. In other words, the other West Coast ports would be swamped by the displaced ships.

Even when your ship eventually finds a berth and unloads, you have to arrange transport—but your truck is probably stuck in a major traffic jam back in the Los Angeles area. In 2010, the two ports handled around 14 million 20-foot-equivalent units, or TEUs, which are the standard-size shipping containers, and were responsible for tens of thousands of truck trips a day.

Zurich Marine's Mr. Hickey points out that a port like Los Angeles-Long Beach could be physically untouched by something like an earthquake, but effectively shut down if truck traffic is cut off because of damaged highways.

Also, not every port can handle every kind of cargo. Shanghai, for example, has different docks to handle different kinds of shipments, notes Ms. Rastalsky of Zurich Latin America. Imported cars and oil are some of the kinds of cargo that require special equipment for unloading.

However, the biggest impact of a delay is on anything that is perishable, such as foods or pharmaceuticals, says Mr. Hickey. In that case, companies would turn to the more expensive option of air freight to transport goods, though the cargo on a ship stuck outside a port might be a total loss.

Some alternative ports might not have adequate storage facilities for the sudden increase in volume, or they might not be big enough to accommodate really large vessels, says Amos Ang, risk engineering manager, marine—Asia-Pacific, for Zurich, based in Singapore. The MV Emma Maersk, one of the biggest container vessels in the world today, has a capacity of 15,000 TEUs, compared with a world average of 4,000 TEUs.

Singapore was the world's largest container port by TEU volume until 2010, when it was overtaken by Shanghai. About 19,000 container ships passed through Singapore in 2010, or about 1,600 a month.

Singapore, however, exports very little; its traffic consists mostly of trans-shipments, Mr. Ang says. Extremely large ships bring goods from manufacturers in Asia, which are offloaded to feeder vessels for the trip to other countries where such large ships won't call. "Not many vessels are doing around-the-world liner trade," he says.

Asia accounts for the eight biggest ports in the world and 13 of the top 20. Many are in China, which continues to expand existing facilities and add new ones along its long coastline. That means that if a port in China is shut down, goods can get trucked to another port for shipment.

Most ports are independent entities; even those that are in the same country operate separately from each other. There's no equivalent of air traffic control that reroutes planes to other airports during disasters, though that doesn't mean they wouldn't cooperate in an emergency

In the end, it's the job of forwarders to reroute containers to another port, Mr. Ang says. If a disaster shuts down a port, "people need time to adjust. They need a day or two—in the worst case a week—to get the rerouting done. There is bound to be congestion."

To protect your company, make sure your business partners are global, Mr. Hickey of Zurich Marine says. That includes everybody who has an impact on your supply chain, from your third-party manufacturer to your logistics providers to your insurance carriers. "Because you never know when you're going to need to call on the expertise of any one of those parties to get your products to market."

If your company is domiciled in, say, the U.S., and a port shutdown means your cargo is diverted to a port in, say, Mexico, you might not be able to get your goods out of the Mexican port if your logistics provider doesn't have expertise for dealing with Mexican authorities, he says.

"A manufacturer is not in the business of shipping. It's in the business of selling goods and solving problems for its customer base," he says. "Its business partners need to have the muscle, the knowledge, the local presence and the ability to take the burden of shipping off the shoulders of the manufacturer and let them get back to business as quickly as possible."

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