

# KnowledgeLine\*

June 2009 News and analysis for Pharmaceutical, Biotechnology,

Medical Device, and Diagnostic Companies



## Supply chain risk assessment

Uncertain economic times heighten the potential for the financial collapse of critical suppliers and require closer monitoring of their viability.

**How do companies assess and continuously monitor their suppliers' likelihood of financial failure?**

### **Identify critical suppliers**

Identify the supply chains and suppliers most critical to the business.

### **Review financial indicators**

Consider current and historical financial data. Reliance on Z and O scores and Dun & Bradstreet reports does not go far enough to predict financial instability.

### **Consider qualitative factors**

Analyze governance issues, leadership changes, litigation, and investigations.

### **Look at privately owned suppliers**

Take additional steps to obtain quantitative and qualitative data on private companies critical to your supply chains.

## Highlights

A shrinking global economy has multiplied supplier failures at home and abroad, threatening supply chain stability.

A supply chain breakdown can devastate a company financially and cause extensive reputational damage.

For pharmaceutical, life sciences, and medical device companies, supply chain breakdowns not only bring immediate damage to the affected company, but also can threaten human health and well-being by causing medical supply shortages.

A continuous supply chain monitoring process that begins with supplier selection and relies on key risk indicators and early intervention is essential to preventing and mitigating the impact of supply chain breakdowns.

## Background

### Supply chain disruptions are more likely in uncertain economic times

As the ripple effects of a shrinking global economy spread through the supply chains of pharmaceutical, life sciences, and medical device companies, the potential for cascading business failures threatens to disrupt product development and delivery.

In the United States and Europe, reports of an unprecedented number of job cuts across many industries grab headlines. Many small US biotechs are struggling to continue operations as they find it increasingly difficult to access venture capital and government funding.<sup>1</sup> Several industries, such as automotive parts, furniture, and toys, have already seen suppliers and vendors filing for bankruptcy and in danger of closing shop and leaving orders unfilled.<sup>2</sup> In China, which is the world's top producer of active pharmaceutical ingredients (APIs), factory cutbacks and closings in export-driven coastal regions are quickly spreading inland.<sup>3</sup> In India, the world's third-largest API source, many small- and medium-sized suppliers with shrinking orders from overseas buyers find themselves unexpectedly on the brink of failure.<sup>4</sup>

The impact of a supply chain breakdown can devastate any industry. A recent PricewaterhouseCoopers analysis of 600 companies' experiences with supply chain breakdowns showed an alarming trend: Average shareholder value consistently

fell following a supply chain disruption. The affected companies' stock prices experienced greater volatility, and return on sales and assets declined sharply. The damaging financial effects lingered a year later.<sup>5</sup>

As part of that study, PricewaterhouseCoopers compared the performance of more than 75 pharmaceutical companies that reported supply chain failures between 1998 and 2007 with an unaffected peer group. During the two days following a disruption announcement, such as a quality or production problem, share prices of the affected companies tumbled 7% below the comparison group. One year later the affected companies' stock prices were still underperforming their peers by about 4%. Even after accounting for normal industry and economic effects, the average return on assets for the disrupted companies was 5% lower, and sales were 3% lower.

No matter where the supply chain breaks down, when a disruption occurs, the public holds the company that owns the brand accountable. In the pharmaceutical, life sciences, and medical device industries, the importance of monitoring offshore suppliers became clearly apparent when contaminated batches of an injectible drug caused patient deaths and severe allergic reactions in at least 11 countries. The U.S. Food and Drug Administration traced the contamination to Asian factories that produced the API used in the drug. This incident led to a massive product recall and pointed to

The potential for cascading business failures threatens to disrupt product development and delivery.

1 Keith Winstein, "Cash Dries Up for Biotech Drug Firms," The Wall Street Journal, March 16, 2009, <http://online.wsj.com/article/SB123715982654235371.html> (accessed March 16, 2009).

2 "Manufacturer Uncertainty Threatens Even the Most Robust Supply Chains," Impact, March 2009, published by China Economic Review, [http://www.chinaeconomicreview.com/cer/2009\\_03/Impact\\_winter.html](http://www.chinaeconomicreview.com/cer/2009_03/Impact_winter.html) (accessed March 19, 2009).

3 Joe McDonald, "China's Economy Slowed Sharply in 4th Quarter," The Associated Press, January 22, 2009, ABCNews.com, <http://abcnews.go.com/Business/wireStory?id=6704954> (accessed January 26, 2009).

4 Neil Heathcote, "Cash Flow Drying Up for Indian Small Firms," BBC News, November 18, 2008, <http://news.bbc.co.uk/go/pr/fr/-/2/hi/business/7733056.stm> (accessed March 19, 2009).

5 PricewaterhouseCoopers, "From Vulnerable to Valuable: How Integrity Can Transform a Supply Chain," 2008, 3.

## Background

Today, given the tenuous nature of the global economy, companies realize the increased risk of having critical or sole-source suppliers fail financially.

weakness in supply chain monitoring by the industry and its regulators. The episode resulted in negative media attention, public outrage, and numerous lawsuits.

A recent high-profile supply chain breakdown involved salmonella contamination of peanut butter and paste used to manufacture many brand-name cookies, crackers, energy bars, cereals, ice creams, and candies. The contamination occurred even though state authorities had inspected the US peanut processing plant that was the source of the contamination 12 times during the preceding two years. Deaths and illness resulted. Sales declines affected not only the brands that contracted with the supplier, but also those with no relationship with the contaminated peanut plant.<sup>6</sup>

Although these cases stemmed from quality problems rather than financial failure, the ramifications of a supplier's financial collapse could be equally damaging to an industry that provides medicine and devices critical to sustaining and improving life and promoting health. Shortages of certain vaccines during global epidemics could mean loss of life for thousands of people. Even with the best of contingency plans, replacing a bankrupt critical supplier, bringing production up to speed, and rerouting distribution translates into lost time and money for a pharmaceutical, life sciences, or medical device company and could result in supply shortages for patients.

Historically the industry has directed much of its ongoing supplier risk focus to managing quality and cost, with analysis of the financial stability of suppliers receiving less scrutiny. Today, given the tenuous nature of the global economy, companies realize the increased risk of having critical or sole-source suppliers fail financially. Although pharmaceutical, life sciences, and medical device companies are doing more to apply new and better tools to monitor the financial performance of public companies, many are unable to gather similar information for private suppliers. Limited or no direct access to accurate, timely financial and other performance data for private companies makes monitoring their viability difficult.

Traditionally, companies rely on publicly available information, such as Dun & Bradstreet public company reports and Z and O scores, two common measures of bankruptcy probability. The Altman Z-Score (1968) weighs five combinations of seven variables: sales, earnings before taxes, total assets, market value of equity, total liabilities, retained earnings, and working capital. The Ohlson O-Score (1980) uses four additional parameters from the financial statements: gross margin, cash flow from operations, current liabilities, and net income. Both methods rely on data that is a minimum of 30 days old. Such information is not available or more difficult to come by for private companies.

---

<sup>6</sup> "Peanut Processor Knowingly Sold Tainted Products," The Washington Post, January 28, 2009.

## Analysis

### Supply chain assessment should analyze financial and operational risks

Leading companies take a more robust, rigorous, and forward-looking approach to risk-based supply chain management, which calls for assessment of the financial stability of public and private suppliers. This type of assessment combines a broad mix of past financial results, current operational events, and economic and market trends to produce a more robust picture of supplier relationship risks. This broad financial assessment helps establish risk tolerances by type of risk, supplier, or commodity. It also provides a clearer understanding of direct and indirect costs of supply chain breakdowns.

The first step in the financial risk assessment is to identify the supply chains most critical to the business and weigh their value to the enterprise. Which suppliers might cause unacceptable loss in the event of default? Which suppliers are single sources of vital components or services?

An assessment should consider not only the variables that factor into Z and O scores, but also additional current and historical financial performance indicators. Are suppliers' cash flows sufficient to repay or meet current commitments? Are suppliers refinancing simply to meet financial obligations? Are their stock prices falling? Have the companies filed late financial reports? Did their auditors file qualifications?

A qualitative analysis should accompany the quantitative analysis. The qualitative analysis should cover governance issues,

such as fraud allegations; problems with Securities and Exchange Commission filings; changes in a company's auditor or senior management; and pending litigation, claims, and investigations. The business environment, ranging from the availability and price of raw materials to impending sales of key operations, should figure into the qualitative analysis.

Treasury review should flag missed interest or bond payments, debt refinancing, increase in high-yield debt, credit rating downgrades, exceeded line-of-credit limit, and suspended or reduced dividend payouts. A thorough assessment should also look at suppliers' customers, industry-specific sales, commodity input, and contract compliance. To measure relative performance and risk, an assessment should compare suppliers to peer companies.

This more robust approach obviously requires working closely with privately held suppliers to obtain information that is not publicly available but is needed for the risk analysis. Going directly to private companies is the most effective way to obtain the necessary information. Because of confidentiality concerns, use of an independent, objective third party may provide the best solution for gathering and analyzing the information of private suppliers in order to perform assessments consistent with those of public companies.

The combined quantitative and qualitative analyses provide a more comprehensive insight into the financial viability of public and private companies, which enables more effective, risk-based monitoring of critical suppliers.

**Leading companies take a more robust, rigorous, and forward-looking approach to risk-based supply chain management, which calls for assessment of the financial stability of public and private suppliers.**

Response planning begins with selection of suppliers and continues throughout the supply chain life cycle.

### Early intervention can help prevent or lessen damage

This insight should fold into a continuous supply chain monitoring process, in which leading risk indicators, such as falling stock prices or ratings downgrades, warn of impending supplier problems before they appear in reported financial data. Early warning of financial breakdowns in supply chains allows companies to anticipate and manage risk more efficiently. Quick intervention more effectively addresses cost, schedule, and performance concerns related to supply chain disruptions and reduces reputational damage.

When disruptions occur, responses should incorporate general crisis management principles, such as quick and honest communication with employees, suppliers, news media, and government authorities. Backup operational plans that identify alternate suppliers or processes will help prevent prolonged business interruption. Early intervention might also enable companies to assist their suppliers in securing credit or financial backing to continue operations.

Response planning begins with selection of suppliers and continues throughout the supply chain life cycle. Supplier contract negotiations that include incentives to prevent supply chain disruptions, set financial performance standards, and encourage open communication will provide some assurance of stability. When evaluating new suppliers, the lowest-price bidder might not be the lowest-cost choice once key risk indicators developed as part of the risk assessment process are applied.

In periods of economic change, financial stability becomes more critical to the integrity of the supply chain and the foundation for growth. A holistic risk management program continually identifies and assesses risks. This approach provides management with more robust and higher-quality data, which enables smarter business decisions and creates sustained competitive advantage.

PricewaterhouseCoopers offers supply chain risk assessment and mitigation services for pharmaceutical, life sciences, and medical device companies. We can help you:

- Focus on early intervention rather than crisis management so that you can proactively manage supply chain interruptions with lower total cost
- Develop a comprehensive supply chain risk profile that stratifies public and private suppliers according to their risks and identifies areas of concern
- Establish risk tolerances by type of risk, supplier, or commodity
- Gain a clear understanding of direct and indirect costs of supply chain risk breakdowns
- Develop key risk indicators, along with risk-scoring models that provide early warning of potential trouble
- Predefine risk management responses
- Develop risk-based pricing and performance analysis to support improved risk response
- Align individual supplier incentives to risk-based decisions

## Questions and answers

### **Q. Should my company assess financial risk for every supplier?**

A. No; this could prove expensive and time-consuming. Companies should prioritize this effort from a risk-based approach and focus on their most critical supply chains, requiring assessment of their suppliers' value contribution.

### **Q. How does PwC assess the financial stability of private suppliers?**

A. PwC interviews private suppliers to assess financial variables, including operating variables and standard qualitative considerations covering treasury, governance, and business issues.

### **Q. My company already uses Z scores, O scores, and Dun & Bradstreet stress scores to evaluate suppliers. Why is that not enough?**

A. Z and O scores and Dun & Bradstreet rely on data that is at least 30 days old. They are limited to quantitative data selected from public company financial reports. These methods don't consider qualitative operational information that affects financial performance. Additionally, such scores do not provide information on privately held suppliers.

### **Q. What is the return on investment from supply chain risk assessment?**

A. Supply chain risk assessment pays off in reduced damage to finances and reputation by enabling companies to manage potential supply chain disruptions proactively before they grow into full-blown crises. Advance planning can open lines of communication, shorten downtime, and speed remediation. Additional benefit may accrue as assessment uncovers inefficiencies in the supply chain, such as lack of standardization and duplication of services, and helps identify companies' most valuable resources.

### **Q. After conducting a risk assessment, how can I continue to monitor the financial stability of my suppliers?**

A. Companies should develop a reporting dashboard of quantitative and qualitative key risk indicators customized for their business. These key risk indicators will give early warning of potential disruptions.

### **Q. My company already monitors suppliers for quality. Other than the risk of financial failure, what are the most important risks in the supplier relationship?**

A. Companies should monitor a broad range of operational, environmental, ethical, social, and labor-related risks in their supplier relationships.

### **Q. What are the characteristics of a robust and rigorous supply chain risk management program?**

A. Characteristics include:

- Focus on early intervention
- Clear understanding of the direct and indirect costs of supply chain disruptions
- Comprehensive supply chain risk profile
- Risk tolerances defined by type of risk, supplier, and commodity
- Key risk indicators and risk-scoring models that give early warning of potential trouble
- Predefined management responses
- Risk-based pricing and performance analysis to support improved risk response development
- Alignment of individual incentives to risk-based decisions

## Contacts:

**Jonathon L. Kellerman, Principal**

+1 (973) 236-7880

jonathon.l.kellerman@us.pwc.com

**Michael Keech, Director**

+1 (617) 530-4314

michael.l.keech@us.pwc.com

**Joseph Braido, Director**

+1 (973) 236-4050

joseph.braido@us.pwc.com

**Art Karacsony, Director**

+1 (973) 236-5640

attila.karacsony@us.pwc.com

## About PricewaterhouseCoopers' Pharmaceutical and Life Sciences Industry Group

PricewaterhouseCoopers' global Pharmaceutical and Life Sciences Industry Group ([www.pwc.com/pharma](http://www.pwc.com/pharma)) is dedicated to delivering effective solutions to the complex strategic, operational, and financial challenges facing pharmaceutical and life sciences companies. We provide industry-focused assurance, tax, and advisory services to build public trust and enhance value for our clients and their stakeholders. We draw on the knowledge and skills of more than 155,000 people in 153 countries from across our network to share their thinking, experience, and solutions to develop fresh perspectives and practical advice.

The information contained in this document is provided 'as is', for general guidance on matters of interest only. PricewaterhouseCoopers is not herein engaged in rendering legal, accounting, tax, or other professional advice and services. Before making any decision or taking any action, you should consult a competent professional adviser.