An Analytical Approach to Supply Chain Management and Risk Assessment

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Brief Description: Forecasting how supply chain environments will change in the future is increasingly difficult due to the unpredictability of economic, social, political and other world events. To overcome the risk obstacles inherent in international business and truly support the best operational decisions to improve performance, corporations should undertake systematic supply chain risk reviews. This paper explores recent events and their impacts on supply chain risk management and offers concrete approaches to ensure a firm’s supply chain strategies are optimized to meet the demands of an increasingly challenged global marketplace.
Introduction

Supply chain risk issues are nothing new and exist in both boom and bust economies. Recently, weather, customer demand shortfalls, competitive pressures, IT disruptions, and interruption events involving key suppliers are just some of the risks that have significantly impacted supply chain management effectiveness and/or eroded shareholder value in the last 24 months. In addition, supply chains are increasingly encompassing distant locations, some in less-than-politically stable regions, which is introducing new risks. Examples include political instability, regulatory action, embargo, import or export license cancellation, third-party blockade, governmental interference with a supplier, and forced abandonment. Risks can even include political actions of individuals, such as riots, strikes, sabotage, and terrorism.

As companies across the globe continue to seek new markets and opportunities, corporate leadership needs to pursue more sophisticated approaches to supply chain risk management to ensure that critical assets and shareholder value are protected. To overcome risk obstacles inherent in international business, corporations should undertake systematic reviews of political and economic risks in the countries in which they seek to conduct business.

Prior to the recession in 2007, “The Supply Risk Management Benchmark Report,” a study by the Aberdeen Group, reported that 180 companies surveyed experienced supply disruptions within a 24 month period previous to the study. More than 75% of the participants expected supply risk to increase over the next three years due to “supply market instability, new regulatory requirements, natural disasters, and terrorism attacks.” In addition, companies themselves are introducing risk into their supply chain. In an attempt to remain competitive in the global economy, they continue to reduce supply chain redundancy by increasing their single/sole source position.

Surprisingly, the potential impact of disruption events such as these is not fully understood by large, global organizations. According to a 2007 McKinsey Quarterly study, more than 50% of nearly 3,000 companies expressed that quantitative measures were not used to assess supply chain risk. Additionally, the survey uncovered that 45% of companies do not have corporate standards in place for managing these risks.

The global economy is steadfastly, if slowly, moving along, placing enormous cost pressures on global supply chains. As a result, many organizations have undertaken drastic steps, such as closing facilities, reducing inventories and other changes relating to supply management. In fact, inventory to sales ratios for manufacturers, as reported by the U.S. Census Bureau, are significantly reduced from 2009 levels meaning companies have adjusted inventories to reach pre-recession ratios. Meanwhile, results of a Business Continuity Institute survey in 2010 (sponsored by Zurich) reveal that the respondents averaged five supply chain disruptions over a twelve month period, with 72% of respondents experiencing a disruption at least once.

Adding to this risk equation are the increasing number of food-related supply chain issues that have occurred in the last 24 months – such as salmonella outbreaks in peanut and egg products – global events like the H1N1 pandemic and continued technology innovation and dependence.
On the management side, recent surveys conducted by Aon in conjunction with State of Flux Limited found that many organizations manage risk at the functional or business division level rather than from a holistic, organization-wide view. The study also revealed that the majority of organizations surveyed have only limited visibility of their suppliers’ supply chains—both operational and financial.

Additionally, Supply Chain Digest survey results in March of 2010 indicate that 35% of CEOs are worried about supply chain security, with the same percentage concerned about commodity availability. In addition, 41% of the respondents believed major changes were coming in the approach to managing risk. The same respondents also stated that initiatives to realize cost efficiencies were extremely important. Interestingly, though, risk management and cost efficiencies are generally opposing forces.

**What does all of this mean?** Risk, as it relates to supply chain issues, has been increasing during the economic downturn. Business leaders are left with more volatility and less capital with which to manage it.

**How can risk and supply chain leaders effectively manage this volatility?** According to Aon survey results, supply chain risk management leaders suggest adopting an integrated approach that encompasses not only the portfolio of internal business functions, but also customers and suppliers.

### Aon’s Approach to Managing Supply Chain Risk

To assist global corporations with complex supply chain exposures, Aon has developed a unique approach which formalizes the assessment, quantification, and management of supply chain risk. This approach can be customized to meet the unique risk assessment needs of global organizations. Our strategy includes several key components and considers the balance of efficiency (supply chain performance) and exposure to crippling disruption events.
Assessing Supply Chain Risk

Aon’s experts work with our clients to identify the most critical supply chain risks based on several aspects including:

– single and sole source suppliers,
– supply chain relationships,
– geography,
– political risk aspects,
– business continuity planning,
– current manufacturing,
– vulnerability
– distribution, and logistics operations, and
– existing mitigation and transfer strategies.

Quantifying Supply Chain Risk

Using our assessment results and direct input from our clients regarding key supply chain issues, Aon focuses on the most critical risks for further evaluation.

Through risk quantification, a deeper understanding of the true exposure of specific supply chain risks can be gained (e.g., sole source suppliers, closing distribution centers, natural disasters). Aon will focus on the key operational areas directly related to the risk and map them along with key interdependencies and current mitigation strategies. From this data-driven mapping, models are constructed to simulate supply chain processes and potential disruption events.

Using the framework, quantitative results can support decisions for capital expenditures (e.g., supply chain redundancies), plant closures, additional safety stock, training protocols, risk transfer and other mitigation strategies. Potential options for managing specific risks or making operational decisions can be compared against one another to evaluate what is most suitable course of action from a cost vs. benefit standpoint.

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Business Continuity Management (BCM)

Individually or as part of a broader evaluation, business continuity management plans are analyzed for gaps and potential improvement for the purpose of mitigating the impact of disruption events. Aon focuses on three key areas:

– Emergency Management
– Crisis Management & Communications
– Business Restoration & Operations

Our business continuity management team leverages an innovative and proprietary process – the Continuity Blueprint™ – that focuses on reducing deployment and activation time, establishing predetermined timelines to quickly implement response and recovery procedures. The result of best practices BCM is a program that complies with regulatory and internal audit standards, effectively addresses the following areas:

– Program Management
– Business Impact Analysis
– Risk Evaluation, Control and Remediation
– Business Continuity Strategies
  • Emergency management & response
  • Crisis management & communications
  • Business restoration and operational recovery
– Plan audits, awareness and training, maintenance and testing
Concluding Comments

Forecasting how supply chain environments will change in the future is difficult because of the unpredictability of economic and other world events. To overcome the risk obstacles inherent in international business and truly support the best operational decisions to improve performance, corporations should undertake systematic supply chain risk reviews.

By leveraging Aon’s risk assessment, quantification, and continuity expertise within a formalized framework, companies can use supply chain capital more efficiently and balance process optimization with risk management – leading to better overall stability and performance.

For More Information

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About Aon

Aon Corporation (NYSE: AON) is the leading global provider of risk management services, insurance and reinsurance brokerage, and human capital consulting. Through its more than 36,000 colleagues worldwide, Aon delivers distinctive client value via innovative and effective risk management and workforce productivity solutions. Aon’s industry-leading global resources and technical expertise are delivered locally through more than 500 offices in more than 120 countries. Named the world’s best broker by Euromoney magazine’s 2008, 2009 and 2010 Insurance Survey, Aon also ranked highest on Business Insurance’s listing of the world’s largest insurance brokers based on commercial retail, wholesale, reinsurance and personal lines brokerage revenues in 2008 and 2009. A.M. Best deemed Aon the number one insurance broker based on brokerage revenues in 2007, 2008 and 2009 and Aon was voted best insurance intermediary, best reinsurance intermediary and best employee benefits consulting firm in 2007, 2008 and 2009 by the readers of Business Insurance. For more information, visit aon.com.
Appendix: Case Studies

Case Study I

**Situation:**
A biotech company was seeking assistance in identifying and quantifying areas of significant disruption risk in its supply chain.

**Approach:**
To accomplish its objectives, the company first set out to identify its most critical supply chain risks through a formal enterprise risk management process. Following this process, the following key supply chain risks were considered priorities to quantify:

- Sole source suppliers
- Single source suppliers
- Catastrophic risk – e.g., hurricanes, earthquakes, etc.
- Breakdowns at critical steps in the manufacturing process
- Compliance risks

To quantify the above risks, Aon constructed a model that mapped out the major components of their supply chain and simulated the major risk elements that were identified. The model made it possible to simulate various disruption events and determine the overall financial impact on the organization. Once this “as is” risk profile was established, the company compared various mitigation and transfer strategies through a cost/benefit framework, helping it determine the most efficient use of capital to manage risk.

**Outcome/Benefit:**
Ultimately, information generated from the assessment and modeling process helped support investment in a large supply chain asset that (1) dampened disruption event exposure and (2) helped the company manage potential performance volatility.
Case Study II

Situation:

A manufacturer of integrated circuits was seeking assistance in mitigating areas of significant disruption risk in its supply chain.

Approach:

To accomplish its objectives, the company first set out to identify the financial impact of a product flow disruption for both imports and exports to/from their facility in an emerging market. Following this review, the following key supply chain risks were considered priorities to insure:

- Political Risks
- Catastrophic risk – e.g., hurricanes, earthquakes, etc.

Outcome/Benefit:

To mitigate the financial impact of the above risks, the company put in place a $100 million insurance policy to cover defined risks in its supply chain. This insurance program will address losses resulting from political events and/or natural disasters that prevent the delivery of key equipment or supplies.
Case Study III

Situation:

A multi-national packaging company was concerned about the loss of a flagship location. This location manufactured a product that represented about 80% of the product capacity and was the division's core revenue driver. The company was seeking assistance in identifying and quantifying areas of significant disruption risk in its supply chain and developing a business continuity plan that provided mitigation and recovery strategies to address these risks.

Approach:

To accomplish its objectives, the company conducted a Risk & Business Impact Analysis in order to identify operational risk. Following this process, the following key supply chain risks were considered priorities to quantify:

- Sole source equipment suppliers
- Catastrophic risk – e.g., hurricanes, tornadoes, etc.
- Single points of failure in production

To quantify the above risks, the company conducted a process flow analysis to identify single points of failure in order assess critical equipment, replacement lead times and alternative suppliers.

Outcome/Benefit:

Ultimately, information generated from the assessment supported the following actions:

- Investment in a new transformer
- Manufacture several key equipment spare parts
- Develop on-going tracking system to locate spare parts within their company
- Identify alternate equipment vendors with the ability to supply key equipment
- Develop customer prioritization to retool and reallocate production manufacturing strategies in the form of a Business Continuity Plan