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Just-in-Time to Just-in-Case
Managing a supply chain in uncertain times

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Application: In the current uncertain political and economic environment, companies need to adapt their supply chain to deal with uncertainty.

Developing better ways of dealing with supply chain disruptions is particularly important since sustainable competitive advantage is often driven by speed, delivery and cost-reduction. Whether intentional or due to natural catastrophe, these disruptions for businesses usually go straight to the bottom line.

What makes disasters and the resulting business disruptions particularly significant today is the emphasis on speed and efficiency. This is generally epitomized in the Just-in-Time system of delivery of materials and components that was pioneered by Japanese manufacturing firms. This technique requires inventory to arrive at the production lines precisely when it is needed. In the 1980s, a few U.S. manufacturing firms took their cue from their Japanese competitors and began to cut the slack and related waste out of their own supply-chain networks. As a result, Just-in-Time concepts have now been widely adopted across both traditional and high-tech industries in the United States and Europe. The inventories of both raw materials and finished goods have been dramatically reduced for these organizations, thus making capital available for more profitable uses.[1]

However, shortages caused by natural, political or technological disruptions can erode productivity and even bring business to a halt, thereby causing customers to defect, never to return. The potential for supply-chain disruptions means business operations are less predictable than most managers believe. In the current uncertain political and economic environment, companies need to adapt their supply chain to deal with uncertainty.

The Evolution of Supply Chain Design

Existing supply chain technologies were primarily designed to reduce the friction in the flow of materials, components, and finished goods across the enterprise and its global supply chain. When these systems were introduced, the level of global uncertainty both politically and economically was not the consideration it is today.[2] However, recent corporate experience with some natural disasters and other disruptions has made it clear that there could be significant risks in this regard. Beyond these experiences, the catastrophe of September 11, 2001, and the continuing threat of deliberate disruption have also changed the environment.

Where Do U.S. Firms Stand Now?

According to recent research, firms are not prepared to manage the risks that could hit their supply chain in the event of a local, national or global crisis. A forthcoming study by the Council of Logistics Management notes that approximately 60% of the firms queried acknowledged that they had formal continuity planning programs in place prior to 9/11 and that this number did not change significantly after this event. Though 9/11 is statistically an outlier in terms of probability of disruption, events of this magnitude should serve as a wake-up call.[4] Preliminary findings from the study suggest the even the existing formal continuity plans do not cover the full supply chain or even enterprise supply chain resources. Additional surveys by the Chartered Management Institute[5] and the Business Continuity Institute show that there is evidence of significant disruption to organizations from a number of crises in the late 1990s through 2002. Furthermore, according to this survey data, there seems to be an escalation in the number of disruptions, but little change in contingency planning.

Lessons from the Previous Disruptions

How can business practitioners effectively deal with these risks and capitalize on the opportunities? One way is to learn from

company responses to previous catastrophic events. A brief comparison of different firms' successful and unsuccessful responses to supply chain disruptions points to some effective lessons for business practitioners. Table 2 outlines a brief comparison of some significant events from the late 1990s to the present.

Disasters Resulting in Significant Supply Chain Disruption and Firm Responses

Transportation: Examination of this comparison shows the importance of lining up alternative transportation. While such a strategy may seem obvious, the examples of Diamler Chrysler versus Ford indicate that unfortunately, even large, profitable companies may not have alternative transportation strategies.

The attacks of September 11 immediately prompted tighter security at all U.S. customs checkpoints, thereby causing significant delays at border crossings for several weeks and disrupting critical shipments of parts and components. Ford suffered from not being prepared with alternate transportation for critical components.[6] Consequently, Ford had to shut down five of its U.S. plants because the company could not get enough engines and drivetrain parts from Canada. Ford's production for the fourth quarter was 13% fewer vehicles than planned as a result of these problems.

In contrast, Chrysler responded quickly to the restrictions on air travel after September 11. Chrysler's logistics staff in Michigan had analyzed its production flow by September 12 and realized they were likely to run out of an updated steering gear unit for the redesigned Ram pickup truck. The part was usually sent by air from a TRW plant in Virginia to the Chrysler assembly plant in Mexico. Chrysler turned to a truck service to minimize the delay in delivering the component.

Continental Teves, a large supplier to the auto industry, similarly demonstrated agile supply chain management. Their crisis team, composed of purchasing and logistics managers, immediately put together a list of all customers, parts, and suppliers outstanding. They identified where the parts came from and assessed which were considered critical and vulnerable to delay. By the afternoon of September 11, they knew which North American shipments required immediate action and expedited many of these by land. Continental Teves used existing contingency relationships with transport firms such as Emery to supplement air cargo delivery. Toyota, among other customers, benefited from Continental Teves' ability to deliver with little disruption in the week that followed.

As these events make clear, manufacturers and suppliers must have the flexibility to expand their contingent shipping arrangements. In this regard, logistics software can help by tracking goods globally and providing guidance when disruptions occur. Those that ship via one mode of transportation should consider backup routes by another mode. These steps may raise costs and affect production lead time, but determining the balance between flexibility and extra cost is part of the new "just-in-case" equation.

Sourcing Alternatives: An examination of these comparisons reveals the importance of cultivating alternate sourcing arrangements. Relying heavily on a single source for products or critical components leaves a firm highly vulnerable to prolonged and expensive supply gaps. Again, this may seem like common sense, but many firms have not considered enough alternative sourcing scenarios. The Hurricane Mitch crisis is a good illustration.

Dole lost 70% of its 40,000 acres in Honduras, Guatemala, and Nicaragua – roughly one-quarter of its worldwide production. The company had no strategy in place for alternative sources of supply in the region, and therefore suffered an interruption in supply from Central America that lasted more than a year. As a result, Dole suffered a 4% decline in revenue for the fourth quarter of 1998 and lost over $100 million dollars.

Chiquita Brands was able to maintain a steady supply of bananas even though it lost production from its own Central America plantations. It met volume requirements through increased productivity in other locations, such as Panama, and purchases of fruit from associate producers in the region that were undamaged. Chiquita's revenues actually grew 4% in the fourth quarter of 1998.

Leveraging Technology: The evolution of the supply chain in recent years is characterized by a move toward modularization and customer relationship management (CRM) integrated application suites. Technology vendors were moving from tightly integrated inter-enterprise suites to modular applications with a narrower focus. Modular applications with a narrower focus reduced implementation risks and costs significantly. However, they also increased the potential customer pool for software companies by bringing in small and medium-sized enterprises that were previously excluded due to the price of the software.

The evolution of technology and customer relationship capabilities provides an opportunity for managers to mitigate risks even

in the worst of circumstances when supplies are just not available, provided the supply chain system is contemporary and not too thin.

This new conceptual strategy for mitigating supply chain disruption is to influence customer choice. Traditionally companies have created product lines that represent their best guesses about what buyers will want. There were generally some alterations possible at the purchase point, but choices were largely fixed. Customers were not used to variety or "mass customization," and companies could not produce a high level of variety. Traditional vertically integrated operations, using a standard supply chain, couldn't deliver custom products reliably or quickly. However, since the mid-1990s, more and more companies have developed the ability to tailor in real time the options presented to the buyer and to promote certain features over others through their digital networks.

This ability to dynamically influence customer choices is particularly powerful in times of crisis, as is seen in the way Apple and Dell dealt with the Taiwan earthquake in 1999. This earthquake cut power, damaged factory equipment and halted the supply of critical PC and laptop components for two weeks. In this case, the problem could not be resolved with alternative forms of transportation or different sources of supplies.

Apple faced shortages of semiconductors and other components that delayed production of its iBook and Power Macintosh G4 desktop computers during a period of growing demand. The company was unable to alter product configurations, but it decided to ship slower G4 computers than the customers had ordered and received a barrage of complaints.

Dell on the other hand fared much better. Even though Dell's direct sales model meant that it held only five days of inventory, Dell was able to continue selling and delivering product. Dell used price incentives and promotions, adjusted in real time on Dell's online choiceboard, to influence customer choice. Dell's third quarter 1999 earnings actually improved 41% over the previous year, despite the supply-chain disruption.

Conclusion

Resilience in responding to customer demand is critical for surviving in a risky economy that demands speed and flexibility. Many companies have spent decades trying to get their supply chains to flow smoothly through just-in-time concepts. However, these ultra-lean strategies have significant risks in a turbulent economic and political system. Each component in the supply chain, from sourcing to inventory to transportation and demand management, must be reassessed based on the current situation and careful consideration of risks. Furthermore, since these situations change so quickly, the supply-chain system needs to be rebalanced periodically as new information and new risks are identified. New ways of leveraging the information networks to mitigate risk represent a critical and new component of business continuity planning. This means paying as much attention to demand management and information sharing with internal and external customers as it does to logistics.

Building a flexible and responsive supply-chain service is a solid defense against inevitable catastrophe and is critical amid the growing uncertainties in today's business environment. However, the benefits are not just in risk-mitigation. This strategic approach incorporates competitive goals such as anticipating and even influencing shifts in customer priorities and creating advantages over rivals that are rigid in procurement, transportation and operations.

Large-scale disasters remind us that the frictionless economy is a just a dream, not a reality. No one can predict where the inevitable next disaster will occur or what will happen. Mitigating risk entails a high cost and sometimes constrains performance, so these things must be balanced. However, businesses can succeed with agile supply chain management, particularly by leveraging customer relationship management and other related technologies to influence customer choice.

Endnotes

1_Joseph Martha and Eric Vratimos, "Creating a Just-in-Case Supply Chain for the Inevitable Disaster," http://www.mmc.com/frameset.php?embed=views2/index.php; D. Stauffer, "Supply Chain Risk: Deal with it," Harvard Business School Working Knowledge, April 28, 2003.

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4_Stauffer, April 28, 2003.

5_http://ocula.managers.org.uk/institute/news_1.asp?category=1&news=1022&id=183&id=9

6_Martha and Vratimos, @ mcc.com.

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