Strategies for Uncertain Times

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The horrendous attacks of Sept. 11 on the World Trade Center and the Pentagon have profound implications for supply chain and manufacturing strategies. The near-term impacts—missed shipments, border-crossing delays, and communications problems—are easily understood. Less clear is the longer-term effect of increased uncertainty on leadtimes and demand and what that means for supply chain strategy.

One thing seems evident: The new uncertainty will require companies to rethink their supply chain strategy. For many, that effort begins with a reassessment of their demand-based strategy, which in recent years has been touted as the preferred approach to supply chain management. In such a strategy, production and distribution decisions are driven by true customer demand rather than by forecasts. That is, in a pure demand-based supply chain strategy, the company does not hold any inventory and only produces to order. This approach is intuitively attractive because it allows the company to eliminate inventory, reduce the "bullwhip effect," and increase service levels.

To succeed in today's environment, you need a set of robust strategies that can respond to any scenario that unfolds.

Unfortunately, a demand-based supply chain strategy is difficult to implement when increasing leadtimes make it impractical to react to demand information. Similarly, it is not practical to implement such a strategy when supply uncertainty rises and service levels decline. Indeed, a demand-based supply chain strategy breaks down in times of unexpected changes in supply and highly variable leadtimes—two factors that are fully in play today.

To illustrate, consider an automotive manufacturer whose parts suppliers are in Canada and Mexico. With little uncertainty in transportation and a stable supply schedule, parts can be delivered to assembly plants "just-in-time" based on fixed production schedules. However, in the event of an unforeseen disaster, adherence to this type of strategy could result in a shutdown of the production lines because of lack of parts inventory. Indeed, this actually happened to some auto manufacturers in the wake of Sept. 11. Thus, the question is, What is the right trade-off between holding parts inventory, risking a shutdown, and inviting lower service levels?

More specifically, if the company needs inventory in the event of a major supply disruption, how much does it need—and more importantly, where should the inventory be stored in the supply chain? Should the company hold inventory of both finished goods and raw materials? Should it build centralized manufacturing or distribution systems that may be cost-effective but highly vulnerable to unexpected events? This is where the concept of supply chain robustness

can help—that is, a supply chain strategy that can respond to unexpected events.

How can you create a robust supply chain to cope with the new economic uncertainties and still remain competitive? We offer four strategic approaches:

Hedge Strategies. Using hedge strategies, a company designs the supply chain in such a way that losses in one part of the supply chain will be offset by gains in another. Specifically, at the design stage, the company builds in redundancy so that an unexpected disruption in supply or production in parts of the supply chain can be compensated for by increased supply or production from other sources. For example, Volkswagen operates plants in the United States, Brazil, Mexico, and Germany—all of which are important markets for Volkswagen products. As macroeconomic conditions change, Volkswagen shifts production to plants with greater labor availability, more favorable exchange rates, lower insurance costs, and so on. Excess capacity—until recently thought to be a needless liability—has become a key asset in today's rapidly changing global economy.

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Flexible Strategies. Flexible strategies, properly employed, enable a company to take advantage of different scenarios. Typically, flexible supply chains are designed with multiple suppliers in different countries and with excess manufacturing capacity in factories and buffer inventory. Factories are designed to be flexible, so that production can be moved at minimal cost from region to region as conditions demand. Transportation availability is part of this strategy so that when one mode (for example, air) is disrupted, another (for example, land) may be substituted.

When considering a flexible strategy, managers need to address several questions:

- Is there enough risk in the system to justify the use of flexible strategies? Clearly, the higher the risk, the more a company can benefit from this approach.
- Do the benefits of spreading production over various facilities justify the costs, which may include loss of economies of scale in manufacturing, transportation, and supply?
- What is the right trade-off between holding parts inventory, risking a shutdown in production, and risking lower service levels?
- Does the company have the appropriate coordination and management mechanisms in place to rapidly take advantage of flexible strategies?

Collaboration and Outsourcing. In times of greater uncertainty, a company may wish to share the risks with others. What made sense to perform internally in a rapidly expanding economy may now make more sense to outsource and share in a downturn. Over the past few years, a number of forward-looking companies have entered into sophisticated contracts that not only help share the risk but also increase the effectiveness of the entire supply chain.

Collaboration and outsourcing are especially important for companies that have global supply chains. They become absolutely critical if U.S.-owned assets overseas become the target of terrorists attacks.

"What If" Analysis. Our final proposal is to engage in an extensive what-if analysis to help develop robust strategies. Since no one can predict with any certainty what will happen over the next few months or quarters, the strategy developed should be effective under a number of different "realities."

A key challenge in developing the different realities is to identify important demand scenarios. The recent downturn in the technology sector revealed that demand forecasts and backlogged orders were not being scrutinized as carefully as they should have been. The problem was that many companies were not looking at the demand pattern of the end users. In a complex supply chain, the end-user demand will eventually drive demand far up in the supply chain. You cannot look simply at your direct customers for demand information.

Thus, a company should create several demand scenarios based on careful analysis of end-consumer demand and then develop a supply chain plan that can support each of those scenarios. Note that the objective is not to develop a plan that is optimal for one scenario but unworkable for another. Rather, it is to develop a plan that is "effective enough" under a range of scenarios.

Specifically, planners should address the following questions:

- How should we use our assets?
- Do we need increased or decreased capacity in any parts of our supply chain?
- What is the impact of longer leadtimes on inventory levels?
- Do we have enough redundancy in the supply chain to overcome local disruptions?
- How much buffer inventory does the supply chain need to alleviate supply or production disruptions?

Difficult times call for creative responses. While no one can completely insulate themselves from major supply chain disruptions—let alone a tragic event like the Sept. 11 attacks—they can take steps to manage the longer-term impacts of those events. The four strategic approaches outlined here are starting points.