

Supply Chain Strategy: Real Options for Doing Business At Internet Speed

A fresh approach is urgently needed to deal with the changing realities of the global business environment. How can strategic thinking guide us to the approach we need to compete successfully? Why are portfolios of real options becoming a key component of supply chain strategy? And what previews of the future can we envision?

Facing Reality

The dynamic nature of the environment faced by business managers around the world has never been more evident than in the explosive growth of the Internet. This expanding universe of opportunity allows customers to be more demanding and forces reconsideration, if not modification, of traditional business models. Some new competencies required to deliver customer value – always the primary measure of success – are missing. For example, if we gather market information, examine trends, customize our supply chains, and deliver products efficiently, we may find that our responses to the changing situation are too slow and we are late to market.

Facing reality is not easy. The challenge for managers is so urgent, however, that they may require new approaches for survival. Even successful businesses should open themselves to strategic thinking in real time. And at the heart of this challenge, the supply chains on which our future success depends may undergo a significant transformation.

In this article, we argue that strategy development for the future depends on the ability to create portfolios of options to be exercised in real time, enabling fresh options as the supply chain becomes more effective. To meet the expectations of increasingly sophisticated customers, we need a dynamic supply chain strategy that responds to complex behaviors as it senses them. As in the symbiotic responses of natural populations, each option enables further options that can be exercised according to prevailing conditions.

Why emphasize options? The complex

interaction of uncertainties in a changing world makes adherence to a fixed strategy very risky. We must navigate through stormy weather. Everywhere we look, suppliers are changing their priorities and commitments, customers are acting upon regional and personal preferences, and competitors are increasing the turbulence. The expectation that we will deliver customized products and services compels us to figure out what's being demanded even as we attempt to satisfy that demand. In such fluid situations, any rigid approach is bound to fail. Optionality in the alternatives we choose is becoming an essential feature of successful approaches to the future.

Strategic Thinking

In general, supply chains are moving from vertical integration (within a single company) to multilateral integration (across many partners). The information, material, and financial flows within the network are continually redirected as demand fluctuates. Managing each of these flows has become more difficult as the situation becomes more complex, so organizations are learning a new competency – the ability to create and exercise options across the supply chain. How does this new competency work? How are options defined, evaluated, and exercised?

To begin, we can recognize optionality in business strategies that have become familiar in recent years. Here are examples of real options already in play:

Postponement

Delaying product differentiation until precise information about customer demand is known

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Electronics & High Tech

gives us optionality in the manufacturing of products. From the dyeing of fabrics in the clothing industry to customized configurations of network printers, companies use postponement to manage material flows to meet unpredictable demand. We hold an option to produce only the models we need when precise demand information is available.

Dual Response

As an approach for dealing with demand variability, this manufacturing strategy achieves efficiency and responsiveness in the same supply chain. Efficiency is achieved by satisfying most of the demand with stable production in highly cost-effective locations, while responsiveness results from variable – that is, optional – production (at higher cost) much closer to the market. We hold an option to produce and ship exactly the right amount very quickly.

Multiple Sourcing

This strategy achieves “assurance of supply” through (1) procurement policies drawing from multiple sources of components or (2) product designs that allow the use of components from different sources. Like postponement and dual response, multiple sourcing makes material flows through the supply chain more efficient, though more rapid and complex information flows are required in the process. We hold an option to procure and use the lowest priced component when manufacturing the product.

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Spot Markets

Matching demand with supply – a classic problem in information and financial flows – is handled by switchboards for linking buyers and sellers. Otherwise, unlikely transactions become possible in this dynamic market space where spontaneous relationships occur between interested parties. We hold an option to obtain parts (or eliminate excess) at uncertain market prices that may be strikingly advantageous.

Strategies like these have shown supply chain managers that optionality has a significant impact on business success. Strategic thinking extends the notion of optionality to material, information, and financial flows. Integration of these options will be the hallmark of strategies that transform business models – especially for doing business at Internet speed. Moreover, we are learning that an excellent approach to deployment is to use optionality as a way to distribute risk. Evaluation of strategies will focus on risk profiles that change not only if, but when, particular options are exercised. The best strategists will be those for whom timing is a paramount concern.

Real Options

Business managers know instinctively that strategies require conscious choices from sets of alternatives. Most of the time, however, these alternatives are based on simple themes that emphasize realistic objectives, completeness across the set, and an assessment of the probability of success. The idea that alternatives can be selected according to the value created by optionality has only recently emerged. We are learning how to develop business strategies in which value increases with the potential to exercise options.

How can optionality become a distinguishing characteristic of future strategies? What makes an option an option? Here are some fundamentals:

Segmentation

Options are segmented so they can be exercised in parts. More value can be created when there is subtlety in the potential action.

Scalability

Options are scalable so the magnitude of their application or impact can be controlled. The action can be focused, shifted or zoomed as the opportunity changes.

Time-Sensitivity

Options are time-sensitive. They gain power from their potential to be exercised in the future, in part or all at once. The value created by an option is actually a profile of values distributed in time.

Creativity

Options can be designed to create new options. They have the “halo effect” of sources that propagate other sources as they move.

With this view, we can appreciate the instincts of the business strategist who observed, “When the future is highly unpredictable, it pays to keep lots of options open.”

Optionality in Supply Chains

How can we create optionality in supply chain strategies? To survive in the turbulence of the global business environment, we clearly need more robust supply chains. One way to achieve robustness is to develop options for real-time execution as we move products to customers. With the Internet, for example, we can get better prices through multiple bids; we can sample more suppliers; we can manage partnerships; we can change the order fulfillment process on the fly. As customers become better informed, more demanding and more fickle, we respond by becoming more responsive, customer-focused, and fashionable.

As an illustration, consider the flower business. What is the potential for real options as we make business decisions? How much leeway do we have in deciding when to harvest? Should we wait for better conditions? Are buds in short supply? Are full blossoms popular? If we get caught by an early winter, will we lose the whole crop? On the one hand, we must respond to weather, soil quality, pests, and other factors. On the other, we must ready

ourselves for seasonal peaks and valleys as well as for consumer preferences. Material flows – including when to harvest – are strongly influenced by information flows about supplier and consumer behavior.

In consumer electronics, the situation is similar.

Supply Side

We create structured contracts with suppliers and expect flexibility in dealing with uncertainty. We determine the range of expected demand, we order any amount within this range, and we hope not to be charged for costs that result from the uncertainty. Eventually, these costs begin to affect us, but that's acceptable within limits. Without this relationship, our supply might be disrupted.

Demand Side

We provide branded products with high service levels over a long horizon (six to 12 months) and optimize our supply chains using the best information we can get. This strategy works when uncertainty is limited (that is, we can forecast accurately). If there's a high brand premium and we get the right product, our profit opportunity may be substantial. This is especially true if customers perceive the product as desirable and are willing to wait for it; they behave like they have no other choice.

In general, people at Hewlett-Packard are good at making choices from the alternatives available. Teams responsible for purchasing or sales, for example, usually make the right decision. Unfortunately, most organizations are poor at designing situations that offer choices for selection. It's hard to envision options, particularly when we've been told to be as efficient as possible. Creating options can be both unfamiliar and expensive. In fact, many organizations aggressively limit options to ensure efficiency, striving for standardized processes even when the environment is highly uncertain.

Optionality on the Supply Side

How can we create optionality on the supply side? Instead of structured contracts

based on forecasts, suppose we have the ability to create spot markets for parts. At Hewlett-Packard, we use Trading Hubs.com, a business-to-business Web site that provides the capability needed to support a dynamic procurement strategy. For components needed for manufacturing, we have the following choices:

- Make a structured contract with the supplier (as in the past) that forces the supplier to manage the demand-supply risk.
- Make a fixed contract for less than the amount we need and go to the Web site (spot market) to purchase the remainder. We accept the risk of not finding sufficient supply.
- Make a fixed contract for more than the amount we need, and go to the Web site (spot market) to sell the excess. We accept the risk of not finding sufficient demand.

We now have three strategic choices. Moreover, the ability to time the purchase or sale on the spot market provides optionality. Structured contracts are still a possibility, but the ability to create a spot market gives organizations more flexibility. Suppliers and manufacturers should jointly determine who ought to be compensated for managing the demand-supply risk. We need both knowledge and tools to create and evaluate real options like these.

Optionality on the Demand Side

Strategies that provide optionality on the demand side are also possible. Here are some examples.

Alternate Labels

We can create a second label for the product. If we have too much product, what can we do with the excess? Dye them blue, affix the new label, and sell them at a discount. This approach allows us to assume risk from suppliers and vent it through the market by taking a lower premium on the second label. If the supplier's risk reduction is more valuable than our overall margin loss, the supply chain is more competitive. A fixed quantity would be available for an uncertain period, providing a material flow option.

New Channels

HP Shopping Village, HP Kiosk, and HP Store are examples of new channels for reaching customers. We can create products from excess parts, assign special product numbers, and sell at special prices. When the supply is gone, the product disappears. This approach provides options in material flows at both ends of the supply chain, and the information flow to customers is used to exercise them. Channels like these provide options for quickly reducing inventory levels.

Auctions

On the demand side, auctions of products and office supplies allow us to reach customers in new ways. Information can be provided to attract customers who want the benefits of dynamic pricing. The more we learn, the more we can exercise options to everyone's advantage. Should we disposition more product? Should we introduce an advertising campaign? Are there ways to challenge the competition? Can we trigger additional options when conditions are favorable?

All these approaches thrive on excellent information. Resources required to gather data are well spent when we learn the value of alternatives across the supply chain. Consider, for example, the surveys by which we learn more about customer loyalty. The product and channel attributes that inspire customer loyalty are more valuable when options have been designed to reinforce them. In many situations, moreover, our attitudes toward information access are changing. Traditional strategies that keep information proprietary actually inhibit customer loyalty and limit our partnership options. Paradoxically, greater openness works to our advantage in engaging customers, managing risks, and sharing rewards across the supply chain.

Portfolio Management

In every strategic dimension, we need to consider how options fit together in a portfolio, so we can take advantage of the "portfolio effect" – the ways options create synergies and gain strength by their interaction within the portfolio. We need

portfolios of supplier options, partnership options, core competencies, metrics, and other sophisticated alternatives that give us greater flexibility in the ways we can run the business.

What's the reason for talking about portfolios? A strategy that features option-

the right alternatives from our portfolio of options.

Previews of the Future

As we look into the future, the need for risk management across the supply chain is clear – especially the need to diminish the

Recent decisions at General Motors to centralize their procurement of steel – purchasing surplus from a Web-based spot market and auctioning the excess to their suppliers, subcontractors, and partners – indicate that optionality on the supply side is for real. Toyota's participation in this network has changed the landscape for steel manufacturers, who are less likely to exact premiums from smaller customers (as these will be able to exercise options with the big guys). Instead of proprietary information and dedicated relationships, as in the past, supplier-manufacturer relationships have suddenly broken open.

Situations like these are appearing in the electronics industry. IBM will manage procurement of Cisco parts, leveraging its procurement power (here proprietary information still applies). With increased shortages of strategic parts like DRAM and ASICs, however, any reliance on proprietary information may be wishful thinking. By contrast, Hewlett-Packard has found that open relationships with suppliers are a key success factor in ensuring supplier loyalty. On the supply side, optionality must be available from manufacturers without driving their suppliers out of business or endangering their assurance of supply. On the demand side, customers must be given a wide range of options. Just as consumers can buy airline tickets at flexible prices, combine orders to achieve volume discounts, and pursue comparison shopping online, supply chain partners will expect the same dynamics from their counterparts, looking for demand side optionality between business partners.

Little has been done in the last 20 years to more accurately project the "true" asset base of the corporation in the global marketplace. And, assets that are not measured are likely to be under-funded. Thus, a failure to understand the contribution of marketing activities to shareholder value continues to diminish the role of marketing thought in corporate strategy.

ality in the selected alternatives offers many opportunities to manage risk. The whole purpose of portfolio management is to reduce risk where possible and manage the remaining risk. We need to find the best solution for the changing business situation – taking advantage of the options immediately available – not necessarily the optimal solution for a particular scenario.

Managers should avoid forcing efficiency through controls or standard procedures when the future is highly unpredictable. The challenge is to create options and allow people to exercise them as the world changes. Since precise planning is impossible and we have cheap, ubiquitous information, we must learn to transform information into knowledge for exercising

overall risk by shifting specific risk to the partner in the best position to manage it effectively. This requires that we reach agreement on the points in the supply chain where risks can be mitigated. (This is similar to deciding where to hold inventory.) In the future, we will need portfolios of real options – on the demand as well as the supply side – for taking advantage of risk and redistributing the costs and benefits among participants. The result will be more efficient, effective, and responsive supply chain networks. A cornerstone of this approach will be mutual trust and openness, built on open agreements on which options are available, who will manage them, and how the costs and benefits will be shared among the supply chain partners.