

Moderator's Note

Coordinating Demand and Supply Chain Management

by
David F. Pyke, Moderator
Professor, Tuck School of Business at Dartmouth*

Introduction and Context

Recent advances in information technology and the Internet have generated remarkable opportunities for both supply chain management and marketing. In the supply chain area, firms now can have visibility to costs and lead times – internally and throughout the supply chain. In the marketing area, firms are increasingly able to understand individual customer preferences and therefore to adjust prices and products accordingly. This greatly improves their ability to optimize revenue generation. We believe that the next major opportunity for competitive advantage is for firms to link the innovations in supply chain management with those in marketing, allowing them to refine pricing, capacity and inventory decisions. Supply chain personnel will understand pricing issues as they decide when to expand capacity and where to strategically locate inventories; and marketing personnel will have visibility to true costs and responsiveness as they make pricing and promotion decisions. The result: optimized profits across the entire supply chain.

Supply Chain Innovations

Supply chain management has generated substantial interest in recent years for a number of reasons. Managers in many industries now realize that actions taken by one member of the chain can influence the profitability of all others in the chain. Competition has moved beyond firm-to-firm rivalry to supply chain against supply chain. Also, as firms successfully squeeze inefficiency from their own operations, the next opportunity for improvement is through better coordination with suppliers and customers. During the 1970s and 1980s global competition forced many manufacturing companies to improve the quality of their products and reduce their manufacturing costs. With 20 years of progress, many of these manufacturers found that the biggest challenges they faced in the new millennium were outside of their immediate control and solutions required better coordination with their upstream and downstream partners.

Such inter-firm integration, long the dream of management theorists, finally began gaining momentum in the late 1990s. Some would argue that managers have always been interested in integration, but the lack of information technology made it impossible to implement a more “systems-oriented” approach. With the recent explosion of inexpensive information technology, it seems predictable that businesses would become more supply chain focused. However, while information technology is clearly an enabler of integration, it alone cannot explain the radical organizational changes in both individual firms and whole industries. A sea change in management theory was needed as well.

Two fundamental catalysts have conspired over the past decade to initiate the required change in

* with M. Eric Johnson, Praveen Kopalle and Scott Borg.

management theory. The first is the power shift from manufacturers to retailers. Wal-Mart, for instance, has forced many manufacturers to improve their inventory management, and even to manage inventories of their products in Wal-Mart stores and distribution centers. Following Wal-Mart's lead, most major retailers are asking suppliers to tighten up their inventory management and improve their order fulfillment capabilities. Second, the Internet and associated eBusiness initiatives have forced managers to rethink their supply chain strategies. eBusiness facilitates the virtual supply chain, and as companies manage these virtual networks, the importance of integration is magnified. Innovations such as eProcurement, vendor managed inventory (VMI), and collaborative planning, forecasting and replenishment (CPFR), are now supported by off-the-shelf software.

Marketing Innovations

The emergence of the Internet and advances in information technology are enabling the application of data-driven pricing strategies to many goods and services. In many cases, these pricing strategies themselves may not be new but their application to the specific product/service categories is new. Products that are usually sold in the bricks and mortar channels with periodic changes in prices (weekly or monthly) can now be sold over the Internet with posted prices changing much more dynamically (daily or even hourly). In fact, the technology is available to change prices on the shelves of bricks and mortar retailers just as frequently. The term "dynamic pricing" (which includes price promotions such as discounts, rebates, and coupons) really just refers to "tailored pricing" and encompasses the strategy where prices change over time, and the strategy where prices change across consumers. Dell Computer (who would be at this summit if not for a long-scheduled management meeting), for instance, lists different prices for the same computer depending on whether the customer is ordering for home, government or business.

As firms adjust prices over time, they can better understand customer reactions to these changes. In fact, there appears to be growing evidence, at least in consumer packaged goods, that the change in demand for a unit price decrease (relative to some reference price) is different from that of a unit price increase (relative to the same reference price). In addition, there is an increasing body of research and practical experience that helps firms understand frequency of store visits (both on-line and bricks & mortar) and probability of purchase once the customer is in the store.

Fundamental Issues

Although many firms are taking advantage of marketing and supply chain innovations, there is a huge opportunity to link the two. Supply chain personnel need to know when marketing will be adjusting prices and running promotions so they can have inventory and capacity available. And they need to have input to those decisions based on the load on the supply chain and on availability of products and key components. Marketing personnel need to know how responsive the supply chain can be when they adjust prices. Will a price cut generate so much demand that the supply chain will not be able to deliver on time? Information, in other words, needs to flow both ways.

Price is not the only interface between marketing and supply chain, however. We see two other critical areas where there are significant opportunities from interaction – *forecasting* and *product configuration*.

Digital technologies are able to provide more insight into forecasts than ever before. These same technologies, along with POS data, can provide so much data that it can effectively be useless. At the same time, some firms have almost no data on which to base forecasts, either because of their position in the supply chain or because they are forecasting new products. Marketing and supply chain managers both need to be involved in the forecasting process, although marketing clearly takes the lead. Nevertheless, supply chain managers must be informed of the forecasts so that they can communicate with supply chain partners. In addition, evidence suggests that firms that have tightened up their supply chains can discover economic trends faster, making the forecasting problem more manageable. That said, the recent downturn caught most firms by surprise, even those with closely linked supply chains.

Digital technologies have also had an impact on the product itself. Customers are now gaining the ability to describe exactly what they want, and producers are gaining the ability to deliver the desired product without compromise or delay. The catalyst for this shift is what is sometimes called a choiceboard: an interactive, online system that allows individual customers to design their own products by choosing from a dynamic menu of attributes, components, prices, and delivery options. Here once again, the marketing decisions are closely intertwined with supply chain issues. And with the downturn, companies have been left with excess inventory that they may be able to reconfigure, and therefore move out the door.

We look forward to a dynamic discussion on these issues. Below is a list of questions that our discussions at this summit will address. Attached to this packet are two articles, one still in draft form, which will give you an interesting overview of the subject at hand.

Discussion Guide

Topic 1: Market Pricing and Its Effect on the Supply Chain

1. How do firms use decisions about pricing strategy and tactics in production planning, capacity or inventory management decisions?
2. How should they?
3. Under what conditions should firms implement a tailored pricing strategy? What may be the longer-term effects of such a strategy? What is the effect of price changes on the factory, logistics system, or the supply chain? We know, for instance, that a lower price normally leads to higher sales, higher factory utilization, and better economies of scale, but also longer lead times (in a nonlinear way) for this and perhaps other products.
4. Who has responsibility to share price changes with supply chain managers? What incentives are in place to encourage such information sharing? What performance measures are used internally and across the supply chain to track and encourage such sharing?
5. How do the strategy and tactics of pricing in the digital channel compare with those in the conventional (bricks and mortar) channels?
6. Recall the comment above that the change in demand for a unit price decrease is different from that of a unit price increase. How should firms make use of this effect in developing the pricing strategy for a product?

Topic 2: Supply Chain Information and Its Effect on Pricing

1. When firms have excess inventory, should prices change? What effect will this have on future sales?
2. How can firms use excess inventory information to adjust prices – specifically for different customer segments?
3. Who is responsible to communicate about the excess inventory?
4. How should firms use supply chain load information (how busy the factory and supply chain are) to adjust prices?

Topic 3: Forecasting: Using Supply Chain and Market Information in Forecasting

1. Digital technologies are able to provide more insight into forecasts than ever before. How can firms use that information to forecast more accurately?
2. These same technologies, along with POS data, can provide so much data that it can effectively be useless. How can firms choose the appropriate data and use it to generate information for forecasting purposes?
3. How can firms' forecasting procedures extend beyond the four walls of their own enterprises? How can firms coordinate forecasting with supply chain partners so that all players work toward achieving the same goals and work in the same direction?

4. When one changes the price of an item, the forecast should also change. How does the forecast change? How can firms use pricing information to improve forecasts?
5. How is the pricing/forecast information communicated internally and to the supply chain? What incentives and performance measures are in place to encourage this communication? How can firms use capacity and inventory information to more accurately forecast demand?
6. Should firms have been better able to use economic forecasts to predict the recent downturn? How can firms use broader economic forecasts to improve internal forecasts?
7. How can firms blend economic forecasts with supply chain information to improve internal forecasts?
8. How can firms utilize information from coordinated supply chains to more accurately forecast demand and trends?

Topic 4: Product and Service Configuration: Using Supply Chain and Market Information in Configuration Decisions

1. How can firms use excess inventory to suggest new product configurations or bundles?
2. How should this information be communicated to marketing and sales?
3. How can firms use pricing information to change product/service bundlings that can meet customer needs more effectively?
4. How can firms use current capabilities to practice versioning, i.e., using the same platform (product derivatives), offer a product line and let users choose the version of the product that is most appropriate for them.
5. What level of collaboration with suppliers is required to support rapid product configuration?
6. Are the current information systems capable of providing the visibility between supply chain partners required to support rapid configuration? What is needed?