DEMAND MANAGEMENT REVISITED

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(This is an ongoing column in The Journal, which is intended to give a brief view on a potential topic of interest to practitioners of business forecasting. Suggestions on topics that you would like to see covered should be sent via email to llapide@mit.edu).

For many years I have felt that the Demand Management (DM) area was not being properly addressed by the business research community, that the DM label was being bandied around too loosely, and that there was confusion about it in industry. People often used the DM label when they talked about demand forecasting. Others used it to signify all the activities involved in generating and shaping customer demand; basically the activities of marketing, merchandizing, and sales managers. In a related way, there appears to be confusion about the difference between demand forecasting and demand planning.

Almost six years ago I attempted to add a little clarity to the DM term by writing a column titled “Demand Management Versus Forecasting” in the Winter 2000-2001 issue of The Journal of Business Forecasting. The article described the differences among demand forecasting, planning, and management. In that article, I defined DM as “making decisions and acting in real time to track, assess, and handle real demand and supply in the context of plans and forecasts.” I went further to state that “DM is a process that involves balancing demand and supply between forecasting/planning cycles.” I now feel that this is no longer the way to describe this increasingly important set of business processes.

As a member of an academic institution for the past 2-plus years, I’ve had the luxury of viewing supply chain management without being directly engaged in it—a perspective that offers me the opportunity to “see the forest for the trees” as the saying goes. I recently launched some research initiatives at MIT in DM and started to think once again about defining the term to assess the full scope of the business processes and practices we would need to research. I decided to keep it simple, yet broad, and defined DM to be the “matching of supply and demand over time.” Under this definition, the phrase “over time” is important because it not only means at every instance of time (i.e., continuously in real time), it also means while making decisions about future supply and demand during planning cycles. This means DM processes are involved in long-term, medium-term, and short-term (including real time) planning processes. Under this broader definition, it is extended beyond just “balancing demand and supply between planning cycles.”

IMPORTANCE OF DEMAND MANAGEMENT

Demand management processes are becoming important as part of the evolving breadth of Supply Chain Management (SCM). No longer viewed as just another set of disconnected back-office functions, integrated SCM is now being recognized as a potent weapon in the arsenal of a company with which to gain competitive advantage. Some leading supply chain companies are integrating elements of it with customer-facing capabilities within their DM processes to optimally shape and create customer demand—such as Dell does on a daily basis.
DM requires coordinated decision making among supply-side and demand-side managers. In order to sustain optimal profits, DM decisions need to be made jointly across these management functions. This helps to prevent the promotional activities of Marketing, Merchandizing, and Sales from disrupting supply operations at the expense of overall profitability, and supply chain operations from hampering the ability to capture all the profitable demand that can be generated by customer-facing activities.

Additionally, true optimization needs to proactively manage demand, not just react to it. This involves recognizing that customer demand is variable and somewhat controllable, so that it can be optimally generated and shaped in conjunction with supply. This is in contrast to providing low-cost and low-inventory supply designed to match the demand generated by customer-facing activities that are independently planned in order to maximize revenues, rather than profits.

For example, rather than moving from a "push" manufacturing paradigm to a strictly consumer “pull,” P&G espouses what it terms the Consumer-Driven Supply Network (CDSN) and what AMR Research terms the Demand-Driven Supply Network (DDS). Under both these paradigms, supply does not just meet demand reactively. Instead demand is affected through revenue-generating programs, such as new product introductions, promotional campaigns, and other revenue generating and shaping programs. These, in turn, are designed so that supply capabilities are both considered and jointly optimized with the demand-generating activities.

**SUPPLY-DEMAND MATCHING PROCESSES**

Under this new definition, a variety of business processes are included in DM including those in the long term, medium term, and short term, as described below.

**Setting Customer Service in the Long Term:** Customer-facing managers typically work with customers to set the various terms and conditions (T&Cs) for servicing them. While pricing is certainly a big part of these, some elements directly impact the demand placed upon supply chain organizations—including T&Cs dealing with delivery cycle times, special delivery requirements, co-managed inventory programs, and the sharing of downstream information (such as POS data and, in the future, RFID-related data). In addition, these managers might segment and prioritize the customer base in order to provide different levels of service to each segment.

The setting of various T&Cs and different service programs represent long-term aspects of supply-demand matching, since they greatly impact how demand takes place and the costs to service customers. Therefore, these customer-service setting processes offer opportunities to optimize supply and demand together.

Customer Service Segmentation is an important long-term process in matching supply and demand. It divides up the customer base to offer various ways to service customers with the intent of optimizing the long-term profitability of each segment. As an illustration, Gillette's customer-facing Global Value Chain Group (now part of P&G) segments its customer base into “tactical” partners that require just basic support in the form of standard supply chain services, and “strategic” partners that need more advanced support, entailing the offering of differentiated services and integrated process-driven relationships with Gillette. “Strategic” customers are engaged in co-managed inventory replenishment programs, such as Collaborative Planning, Forecasting, and Replenishment (CPFR) and Vendor Managed Inventory (VMI).

**Medium-Term Supply-Demand Planning:**

The Sales and Operations Planning (S&OP) process represents a medium-term DM process that is followed by the majority of larger manufacturing companies. For retail companies, the equivalent DM process is Merchandize Planning and Allocation (MP&A). Both these types of medium-term planning processes involve balancing current and future supply and demand. They are cross-functional and involve the development of consensus-based supply and demand plans. The demand plans, to be executed by Sales, Marketing, Merchandizing, and Customer Service, are developed with the intent of meeting corporate goals. So too are the supply plans that are to be executed by various personnel in the supply chain-related organizations, such as Manufacturing, Logistics, Merchandize Planning, Store Operations, Supply Chain, and Procurement.

Two other important processes in which future supply and demand need to be matched on a medium-term basis involve new product launch and promotional campaign planning. Plans developed during these processes are incorporated with the others needed in support of the S&OP and MP&A processes.

**Short-Term Supply-Demand Matching:**

One of the functions of customer service departments is matching supply and demand in real time. As orders are quoted and taken, reps routinely inform customers by which date their orders might be filled. An accurate promise date is needed to set a customer’s expectation to a promise that can be kept.

Estimating a promise date represents an opportunity to optimally match supply and demand in the short term. Accuracy insures efficient and profitable order fulfillment by minimizing exception management and expediting. Accurately estimating a date requires planning out each order’s fulfillment process by assessing what supply is available now and in the future to meet the demand in the context of expected future demand. An Available-To-Promise (ATP) function assesses what current inventories and/or products that are scheduled for receipt/production might be available to fill a customer’s order. If none are, then a Capable-To-Promise (CTP) function assesses when internal and/or suppliers’ resources might be made available to manufacture the products placed on the order.
Both types of order promising functions—which involve matching order demand with current and future supply—are extremely important to companies. For example, in the Semi-Conductor industry, the manufacturing of a chip takes months, thus orders need to be booked against work-in-process inventories and the future production output from internal or external fabrication plants. In this industry, On Semiconductor and Fairchild Semiconductor are two companies that have initiatives in ATP and CTP.

The “moments of truth” for a supply chain occur when demand is recognized in the form of actual or quoted customer orders. It is then that supply needs to be deployed in order to fill the order, hence justifying and putting to the test all the planning that took place in anticipation of actual demand. Achievement of perfect customer order fulfillment and sustained profitability is the direct result of all the DM processes described above. In this context the processes needed to be coordinated and integrated so that long-term customer expectations are profitably aligned with efficient supply chain capabilities. Figure 1 depicts how the various DM processes need to interact.

THE ROLE OF DEMAND FORECASTING IN DM

While I believe it is important to recognize that DM is not synonymous with Demand Forecasting, I do not want to diminish the importance of it in enabling all of the DM processes. Forecasting has an important role to play because it is used to gauge or estimate the demand that might be generated under a variety of demand plans and customer service activities.

In establishing customer segments and matching service programs to them, demand forecasting is needed to quantitatively assess the impact of a service program on the long-term revenues generated by the customers within each segment. Thus, forecasting supports the cost-benefit and profitability analyses needed to make optimized customer-service setting decisions.

In addition, demand forecasting is widely recognized as critical for medium-term planning DM processes, such as S&OP and MP&A. In these processes there is a need to quantitatively estimate the impact of demand from various marketing, merchandizing, and sales plans. For example, forecasting is important when assessing the impacts of promotions, pricing actions, and new product introductions, once again supporting optimal decision-making.

Lastly, during Order Promising, decisions need to be made in the context of future demand. For example, order promising might mean giving some customers priority over others (versus the use of a first-come-first-served order fulfillment policy). This would entail delaying the deliveries of low-priority customer orders based on the demand forecast of high-priority customers. Thus, Order Promising often requires a view of customer-level demand forecasts, which means that forecasting is also important to supporting these types of short-term processes.

In summary, while demand forecasters may not be responsible for DM processes, nevertheless, they are important to these increasingly important redefined DM processes.