

**DEMAND PLANNING:
OPTIMIZING OPERATIONS ACROSS THE SUPPLY CHAIN**
DEMAND PLANNING TECHNOLOGIES REDUCE INVENTORIES, SPUR COLLABORATION

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Demand planning software packages can help manufacturers to:

- Establish baseline sales forecasts, incorporating multiple inputs;
- Perform sophisticated analysis that improves their use of human and capital resources;
- Optimize pricing capabilities; and
- Better understand their markets and customers.

Yet to get the most out of these function-rich tools, manufacturers must be willing to reorganize their planning processes—and to share the resulting insights with supply-chain partners and customers.

PREDICTING THE FUTURE

How does BMW know how many Mini Coopers it will sell in North America? How many Priuses should Toyota build to meet demand in the U.S. this year? Worldwide? When is it time to tweak production—upward or downward—to reflect a change in the market?

The short answer to all these questions is: No one knows for sure. The long answer is: Everyone needs and wants to know.

That's why demand planning exists.

Demand planning hasn't gotten the attention that enterprise resource planning systems (ERP) or customer relationship management (CRM) have received in recent years. But that's not to say it isn't a sore spot for many in the manufacturing and distribution communities. "When I speak in front of industry groups and ask how many people are happy with their sales forecasts, I don't see any hands at all," says John Pavain, president of Norwalk, Connecticut-based MaxQ Technology, a developer of demand management systems and a Microsoft® partner. "Demand planning is an area that most companies need help in."

POOR FORECASTING = POOR PROFITS

Whether it's for consumer packaged goods, industrial manufacturing, high tech and electronics, or automotive demand, sales forecasts often lack the sophistication needed to optimize both operations and profits. "We've been pretty wrong on forecasting—in both

directions—for our suppliers and for our customers," says the CEO of a multibillion-dollar high tech manufacturer. "In fact, we've been wrong pretty massively. With sales forecasting, it's sort of, why bother? The people who do the forecast don't know because the customers don't know."

Manufacturers and distributors routinely accept the idea that sales forecasts will err by as much as 10%, and often 20% or more. In some cases, companies have not only accepted the fact that forecasts are "soft," they've begun using software tools to enable them to track the level of variance over time, adjusting their materials procurement, operations, and distribution plans accordingly. "We track our forecast accuracy, so that we can see a forecast wandering out of the norm," says the director of production planning and forecasting at a large packaged foods manufacturer. "We want to know exactly the number of weeks we are above or below a certain accuracy level in our forecast. That way, we build up a consistent trend of error."

Granted, this food manufacturer has a special business need—to minimize the amount of product lost due to expiration at different warehouses. Adds this executive, "The software we are using gives us the ability to look at the freshness level and inventory for each product at different warehouse locations."

His company is able to adjust product levels at its warehouses as needed, while avoiding losses due to product expiration. This feedback capability allows the business to tweak both production and inventories for maximum profitability.

These problems are similar to those experienced in other industries, including high tech and electronics, where chips, subassemblies, and even finished products such as computers have limited effective shelf lives. Here, too, inventories must be managed in such a way as to maximize sales and minimize "spoilage" as products become obsolete or unwanted.

In industries such as steel, excess finished-goods inventory ends up as expensive scrap later melted down to fill new orders. Meanwhile, steel producers lose production time and waste labor producing and storing the unwanted inventory, some of which was rejected because its production was too late for customer demand. Indeed, an entire industry—the steel service center—has arisen to cater to the needs of steel customers who couldn't wait for their orders to

be coated, slit, shipped, and delivered. The automotive industry faces an even more complex problem. General Motors, for instance, began trimming production this year at certain plants in late summer and early fall to bring inventories more closely in line with slowing sales figures. Yet even as dealers around the country found themselves burdened with unusually high inventories on their lots, GM kept shipping vehicles—because the company books revenue and profit at the time it builds and ships vehicles, not when they are purchased by consumers.

This system has predictable and painful results: As of July, the average time it took to sell a new GM vehicle was up to a record 91 days, forcing the company to offer sales incentives of up to \$4,500 in rebates per vehicle. If, however, an effective demand planning process had been in place, timely analysis of key factors—including sharply rising gasoline prices and negative consumer attitudes toward the safety and environmental friendliness of SUVs—would have prompted GM to scale back production of Hummers and other large SUVs, whose sales were hit the hardest in the first half of the year.

Now, however, with the 2005 models ready to hit showroom floors, inventory-swamped dealers were understandably reluctant to accept additional inventories. In turn, the reduction in dealer orders finally curtailed production. Yet existing inventories remain high, costly to both carry and unload at discounted prices. Says one securities analyst regarding the situation's impact on GM's earnings: "It's the company's choice whether they pay it back now or pay it back later."

Poor demand management is costly for manufacturers and distributors in other ways as well. One large maker of data storage products that distributes via consumer electronics retailers found it was constantly playing catch-up with its dealers, routinely missing shipments and order dates. "Although we were spending more than a week each month planning and forecasting, we were still facing fines by our retailers for missing shipment dates," reports the director of sales planning.

To help solve the problem, the company purchased a demand forecasting software package. The software takes into account each product's demand pattern, while allowing decision makers to adjust forecasts and inventories to meet the company's goals.

Other downsides to inadequate demand planning include poor customer satisfaction, out-of-stock items, and high inventories—all of which drain the bottom line. Any time a customer finds an item out of stock and goes to another store and buys a competitor's product, both the manufacturer and retailer have lost sales.

Even with demand planning, forecasting remains difficult; variables ranging from promotions to store openings to retail channel shifts must be included in estimating demand. "When Dell mails out catalogs and sends out e-mail blasts," says MaxQ's Pavain, "they must use past history as a guide to plan how much of a sales increase is expected."

Still more difficult to assess is the demand for a new product. "You can do market research and look at similar products, but for products that are instant hits or fads, it's very much like trying to predict the future," says Pavain. "Who knew Apple's iPod was going to take off, whereas the Newton [an early handheld PDA] was a dud."

DEMAND PLANNING TECHNOLOGY

Where just five years ago only large enterprise clients could afford sophisticated demand planning systems, new software packages are well within the budgets of most companies. Yet despite the availability of new technology, many small and midsize manufacturers and distributors continue to forecast using simple spreadsheets. Says one technology analyst, "[Microsoft] Excel is the most widely deployed demand planning tool."

Unfortunately, spreadsheets typically lack sophisticated forecasting algorithms, aren't built to track multiple inputs, and fall short in performing sophisticated analysis for various user groups within a business. Companies interested in more effective management of their supply chains have found that function-rich demand planning software can be a powerful tool to help managers take guesswork out of the planning process.

Why? Because demand planning software recognizes a wide array of variables that influence sales projections. For example, while sales representatives typically view demand in a particular region based on the total

revenue it produced, operations planners in the same firm view demand by quantities of each product sold. Demand planning software accounts for both variables.

Demand planning systems typically produce a baseline forecast based on shipment or order history. Once established, users can change the baseline to account for other data, including promotions, advertising inserts, seasonality, new sales outlets, and other factors.

At the same time, demand planning software factors in potential constraints such as materials availability and plant capacity. You can set up the system to switch from a “make” to a “buy” approach for a certain part or component any time insufficient in-house capacity exists.

These systems typically yield four or five data streams, with varying forecasts. At this point, management plays a role in the planning process, overlaying broader strategic goals, such as reducing inventory and improving customer service. In addition, these systems usually offer notification functions, providing planners with automatic updates when certain events occur, such as a change of more than 30% from the previous month’s forecast. Most demand planning packages also offer simulation capabilities to compare multiple forecasts and their impacts on both revenue and profitability.

Automotive manufacturer and distributor Hyundai Motor America uses point-of-sale data to build a demand forecast for its service parts. The company uses a demand management system to digest more than three years of parts sales data to calculate demand forecasts by part number for four warehouses, leading to an order plan for some 50,000 parts. The order is then sent to Korea, where the company is headquartered and where many of its parts suppliers are located. As a result, the company has reduced inventory and boosted its fill rate.

SUPPLY-CHAIN COLLABORATION

Manufacturers and distributors seeking to optimize their forecasts try to include their supply-chain partners in the planning process. Yet according to one estimate, only 10% of manufacturers and distributors are using collaborative supply-chain planning systems. The reality is that while many suppliers work with key customers to build forecasts, few perform this exercise

online. Why? Two reasons: First, many companies are reluctant to share data, and second, even when willing, few firms are able to commit the managerial and technological resources necessary to make this kind of collaborative planning work. Says one manufacturer, “You’re relying on your customer to have the same expertise that you do, and that’s not always the case.”

Another obstacle to collaboration is technological integration (or its lack) among various players in the supply chain. Sooner or later, companies large and small—manufacturers, distributors, and retailers alike—will connect using true application-to-application integration technologies such as XML and Microsoft’s .NET initiative. In the meantime, companies looking to collaborate regarding supply-chain needs and demand forecasts generally do so on a customized, one-on-one basis.

One technology that is proving a boon to demand planning is the Web portal. Many progressive manufacturers and distributors are using portals to link their dealer and retailer networks for both product ordering and sales forecasting. For example, Fleetwood Enterprises, a leading maker of recreational vehicles and manufactured housing, is using a Web portal to upload dealer sales data to improve forecasting.

For Fleetwood and others, the payoffs derived from a more effective demand planning system ripple through the supply chain. But for the individual manufacturer or distributor, they tend to center around key financial benefits:

- Reduction of inventories,
- Reduced warehouse space, and
- Improved customer satisfaction, resulting in increased sales.

For instance, by simply using a demand planning package, one manufacturer of tire products was able to cut supply orders by half and reduce peak inventories by 25% in the first year.

These benefits can be so significant, in fact, that some manufacturers and distributors are going the extra mile for customers, providing vendor-managed inventories. “You do the replenishment for the customers and manage their inventory of your products for them,” explains MaxQ’s Pavain. Distributors offer the same service when they stock retailers’ shelves. Customers appreciate the extra attention, while manufacturers and distributors get direct demand signals from the

market—removing much of the uncertainty from the planning process.

One company using vendor-managed inventory is GM Brazil. Using customer demand data provided through its dealer network, the company's vendor-managed inventory system drives sales forecasts for more than 20,000 parts. With the new system, initial forecast accuracy was more than 90%.

THE PAYOFF

Effective demand planning can provide significant benefits, including:

- More profitable linking of pricing, promotions, and other sales incentives;
- Better informed supply-chain decisions as a result of more accurate data regarding customer demand;
- More efficient and predictable use of plant capacity, equipment, and labor; and
- Better understanding of customer needs so that manufacturers and distributors can improve products, deliveries, and satisfaction.

Manufacturers and distributors who have invested in new demand planning systems have benefitted not only through improvements in internal operations, but also from the greater collaboration fostered by these technologies. The end results are tighter, more

efficient, and more responsive supply chains—and happier customers. "Collaborative forecasting gives the supplier more information," says Pavain, "and the more information [a supplier] has, the better the supplier can serve [customers]. The benefits are significant reductions in inventory and warehouse space, an improved ability to supply the customer, and increased sales."

SUMMARY

Manufacturers in diverse industries have dramatically improved their forecasting accuracy with demand planning software packages. But to turn their crystal balls into improved bottom lines, organizations must:

- Develop the products and services based on customer demand, not guesswork;
- Establish pricing based on dynamic market feedback;
- Manage effectively to forecasts, thereby optimizing the performance of facilities, people, inventories, and suppliers; and
- Extend their forecasting capabilities across the entire supply chain with collaborative planning.

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