



# GLOBAL LOGISTICS & SUPPLY CHAIN STRATEGIES

DECEMBER 2008

[www.SupplyChainBrain.com](http://www.SupplyChainBrain.com)

## Forecasting, Demand Planning in a Difficult Economy

BY THOMAS FOSTER

---

*With an economy that is clearly headed south, forecasting and demand planning will require new thinking, processes and technologies to keep supply chains running smoothly and efficiently.*

---

**F**or more than two decades of reasonably favorable economic times, business leaders from Wall Street to Main Street have been fond of mocking all types of forecasters by pointing out that they have successfully predicted 10 of the last three recessions. This time the doomsayers may have it right, and the empty feeling is nowhere more apparent than among supply chain planners and forecasters. How can they forecast demand and develop supply plans when sales to customers do not remotely follow historical trends? Do customers even know how much they should buy, given worsening credit problems and scarce working capital? And how much more will retailers and manufacturers have to cut their inventories to avoid further risk?

These are painful questions to ask, but business must go on. Supply chain professionals are taking a surprisingly varied approach to dealing with their forecasting and demand planning challenges. Some are

calling for radical change in the processes and technologies used to drive supply chains. Others only see a need to temper traditional forecasting with a healthy dose of skepticism.

For example, Dr. Larry Lapide of the Massachusetts Institute of Technology's Center for Transportation and Logistics, sees no need to make major changes in forecasting techniques. The big difference he sees is the weighting of current economic factors that might influence demand.

"All statistical forecasts start out by taking historical data and projecting it forward," says Lapide. "Until recently, companies would adjust this forecast by factoring in promotions, seasonality, pricing, competition and so on. The state of the economy never really mattered much. Now the impact of a bad economy has to be factored in, but it is just another variable. The techniques remain the same."

On the other hand, Randy Fields, CEO of Park City Group and Prescient Applied

Intelligence, providers of demand planning, inventory and supply chain solutions for retailers and CPG companies, says that business can no longer depend on the simplistic forecasting techniques that have been used for years. Today's volatile economy requires retailers and CPG companies to use sophisticated forecasting tools that begin at the store shelves and take into account every factor from unfavorable news stories, to weather, to macro-economic data.

"There is no silver bullet that can plan or forecast across all products and all stores," says Fields. "There are at least 20 very good bullets, and each applies to certain situations that must be factored in. Our technology uses many different algorithms to provide this range of demand planning solutions."

While these and most other contemporary views on forecasting and planning may seem at direct odds, there is a common theme: Every forecast needs a statistical baseline that must be adjusted—either through manual processes or a black-box solution to use mar-

ket intelligence to arrive at a demand plan.

“Even for those companies that are building to order or trying to drive their planning by capturing immediate demand signals, a baseline forecast is necessary,” says Charles Smart, CEO of Smart Software. “A manufacturer needs a reliable flow of materials and components, so it must be able to provide suppliers with forecast information to keep production on schedule. Forecasting has not been eliminated in any industry. It just may have been shifted to a different place.”

In fact, forecasting is gaining more and more attention in the boardroom, according to Anish Jain, executive director of the Institute of Business Forecasting and Planning (IBF).

“Only about 50 percent of companies had top management support for improving forecasting and demand planning five years ago,” says Jain. “That number is now 65 percent, and it’s climbing given the uncertain times businesses face.”

Thus, forecasting is becoming a more important aspect of supply chain management just when economic turmoil is making the task much harder. What follows are 10 insights from several supply chain leaders

that should prove helpful in developing a forecasting and demand planning strategy.

The return of the economist: In the last decade or two, few companies factored economic trends into their forecasting, mainly because little changed from year to year other than normal cycles.

“Every company had someone charged with looking at the economic impact on their business, but nobody ever paid much attention to this person,” says MIT’s Lapede. “Now they have to. The effects of the economy in consumer behavior, pricing and other classic factors are again relevant.”

For example, the food industry is under pressure to raise prices because of several years of rising commodity costs. Unfortunately, these food companies are raising prices just when consumers are less willing to pay for higher-priced goods.

“Not many companies have experienced this phenomenon before, so it’s hard to build these variables into a forecast,” says Lapede. “People may buy basic products like cereal, but not the higher-priced products. These impacts have to be brought into the forecast.”

It’s not all negative: The knee-jerk reaction to an economic slowdown for many

companies has been to apply a very negative trend across an entire brand or category.

**According to Fred Bauman, vice president of collaborative solutions for JDA Software,** such an approach is counter productive.

“Many categories are experiencing a stronger than average trend because of the economy,” says Bauman. “If a product comes in multiple sizes, demand for large sizes may go down, but demand for the smaller ones may increase. We are telling our customers to look at demand at a granular level and at the point closest to consumption.”

Forecast defensively: According to Anish Jain of the IBF, today’s economic concerns have made forecasting much more about minimizing risk than maximizing sales and profits. The focus is on preserving cash by reducing inventory and safety stock and staying lean.

“We are recommending to our members to create a range forecast, rather than point forecast for products because of the volatility in demand,” says Jain. “Along with this advice, we are suggesting that forecasts and planning production be much more short-term.”

Focus on the process, not just the tools: There are many software tools and solutions



that can provide much needed demand information up and down the supply chain, but Jain cautions that his organization regularly hears disaster stories about companies making big software investments without having the right processes in place.

“The classic example occurred at Nike in 2004 when its supply chain planning undermined its sales,” says Jain. “Nike blamed the problem on its i2 system, but it became clear that Nike’s processes failed. There was no monitoring process against the forecast. There were few processes of any type in place. There is a very large human element that always has to lead any technology implementation.”

Jain says that his organization is helping its members to take a more process-oriented approach to forecasting and demand

questions that companies are now facing are likely to be quite different.”

Consensus forecasts get more sophisticated: A formal consensus gathering process within a company can capture vital input from all disciplines that can adjust a statistical forecast to arrive at a better demand plan. Such an approach is especially important for high-cost products found in the capital goods industries. According to Trevor Miles, a vice president with the demand planning solution provider Kinaxis, every company needs a statistical forecast, especially manufacturers of low-volume, high-mix product. These markets are more subject to business cycles than consumer products where buying patterns are more stable.

“Our customers have been using our consensus forecasting solutions for some time

of where they are.

“A planning group can put out an aggregate demand forecast for hundreds of items, but true demand by location can be influenced by factors that no central department can know about,” says CEO Smart. “Our Collaborator tool allows regional sales managers scattered across the country to provide their informed input on the item forecast. Their feedback will provide a much better consensus forecast.”

CPFR is again gaining traction: External consensus on demand plans has been pursued for at least a decade with initiatives such as collaborative forecasting, planning and replenishment (CPFR). The success that it has had in the CPG and retail sectors is likely to spread.

“CPFR has definitely gained traction among our members, who are mainly in the CPG industries,” says Jain. “Their stories of success have convinced many companies that held back because of a concern about revealing proprietary or competitive information. There is far more reward than risk in collaboration, especially in the type of economy we are facing today.”

CPFR processes provide a structure where shared market information lets all trading partners become agile. Retailers can adjust the pace of purchasing on promotions, and manufacturers can make the right amount of a product to meet demand.

Many software companies provide tools that allow retailers and vendors, manufacturers and suppliers, or even a supplier and its suppliers to share information critical to good demand planning.

For example, JDA which has become a dominant player in the supply and demand chain software market with its acquisition of Manugistics, has one of the widest range of tools in the industry. CPFR capabilities are among the sought-after tools retailers and suppliers request, according to Bauman.

“Suppliers need to know what inventory is building in [the] channels and the rate of sale for each product,” says Bauman. “CPFR is a great way to have your downstream partners give that inventory information. If I am not getting that market information, a supplier can make bad assumptions because they only have the most historical periods to look at. The retailer can provide those insights to the manufacturer.”

For example, he points out that two of JDA’s clients—Rite Aid and CVS—both have more than 70 percent of their front

---

*“We want our members to understand best practices, and then what to do with the forecast information they gather.”*

— Anish Jain of Institute of Business Forecasting and Planning

---

planning, and not just learn about new software tools and forecasting models.

“Planning is a process,” says Jain. “Forecasting and number crunching is just one part of the process. We want our members to understand best practices, and then what to do with the forecast information they gather.”

S&OP—good, but not good enough: Sales and operations planning has been used for years by many companies as a way to coordinate planning among many internal departments. Without S&OP, each function will use its own forecasts and make its own decisions. Production would run on its number, sales would set its quota, and so on. With S&OP, one number can drive companies by getting a pulse from all disciplines on what is impacting demand. But there are limitations.

“S&OP is balancing supply with demand, not the other way around,” says Jain. “The focus of S&OP meetings is to figure out what to do if demand is likely to exceed supply. Can we just use more overtime in production? Do we need to outsource or subcontract? Should we allocate orders? The types of

because inputs from many people, both inside the organization and out, can be compared at many aggregation levels,” says Miles.

Kinaxis’s RapidResponse line of on-demand software captures forecast feedback from all parties simultaneously, so the internal users—and external ones if included—can compare forecast information side by side in a structured approach. A “versioning” function allows each person to create his own scenario, and then share it with all other parties.

“The consensus forecast outweighs the statistical one,” says Miles. “Our users are increasingly confident that their managers and their customers are better able to tell them where demand is going than any statistical forecast.”

Even in industries where statistical forecasts are the rule, there is a growing trend toward using tools that provide more collaboration. Smart Forecasts, which has long been used in many industries, offers a web-based tool called Smart Collaborator that allows planners to post statistical forecasts to users throughout a company regardless

store volume in a collaborative environment now.

“Their trading partners have visibility to real-time demand, inventory positions and timely views on how things are changing in a volatile economy,” he says.

Shelf-level forecasting is best: According to Park City Group's Fields, the only way to intelligently forecast is from the bottom up, and capturing such hard data requires knowing what customers are doing today.

“We start with scanned data, store by store, item by item,” says Fields. “We use that data as our guide and then throw in historical information—not the other way around. No matter what we imagine may be happening at a macro level, that may or may not have any impact on any particular store or any particular item.”

Fields points out that forecasting at the distribution center level is ineffective because consumer behavior varies widely from store to store. Measuring what goes through the DC does not reveal what is sold at each store, so there is no good way to replenish to meet the demand of specific consumers.

“You have to have a way to pick up trends at the stores, so you can react quickly to them,” he says. “Our series of demand planning algorithms can take scanned data and alert the right people to changes in demand, so that real-time information can ripple up and down the supply chain.”

Park City Group, whose customers have primarily been retail grocers, recently merged with Prescient Applied Intelligence, which provides supply chain software to CPG companies. The combined companies now provide a full set of forecasting and planning tools for the CPG industry and its retailers.

“The trigger for the supply chains we serve is real consumer demand, and Park City's algorithms capture and process this data,” says Jane Hoffer, president of the Prescient side of the business.

These demand signals allow retailers to reorder the right items from a DC back through to the supplier, who in turn orders raw materials from its suppliers. Layered into this information flow is a strong set of analytics that allows Prescient to pull the data in a demand signal repository. Prescient has 44 different retailers providing demand data to the repository that it can mine for the retail and supplier customers.

“For a supply chain to work properly everybody has to have confidence in the numbers that they are presented with,” says

Hoffer. “Only if that confidence is there will buffer stock ever go down and the efficiency level of supply chains reach the levels that all companies need. Our solutions can provide that credibility.”

Don't forget intermittent demand: Forecasting demand for a company's main products is hard enough, but forecasting for spare parts, aftermarket supplies and other products with intermittent demand dramatically increases the difficulty. Many companies don't even try, but simply increase safety stock to cover the worst case. The cost is millions of dollars in excess inventory. With companies holding back on replacement of capital equipment, replacement parts and aftermarket supplies are going to be a large part of many manufacturers' businesses.

“Forecasting intermittent demand can be accomplished with much greater accuracy,” says Smart, who claims that his SmartForecasts solution can typically reduce standing inventory of parts and aftermarket product by 15 to 20 percent in the first year, and increase parts availability 10 to 20 percent.

“By accurately forecasting demand for these items, companies can reduce the need for and associated costs of emergency shipments to close gaps in their supply chain,” says Smart. “Repair and service parts inventories are truly optimized, leading to more efficient operations, improvements in customer relations, and significantly less cash tied up in inventory.”

SmartForecasts uses a “bootstrapping” technology that generates tens of thousands of possible scenarios of future demand sequences and cumulative demand values over an item's lead time. These scenarios are statistically similar to the item's observed data, and they capture the relevant details of intermittent demand without relying on the naïve assumptions commonly made about the nature of demand distributions by traditional forecasting methods. The result is a highly accurate forecast of the entire distribution of cumulative demand over an item's full lead time.

Beyond forecasting to optimization: No forecast is ever perfect, so companies also need systems to optimize the inventory that is being planned or produced. In today's risk-averse, cash-strapped environment, companies with complex distribution networks are especially concerned about their inventory investment, according to Bauman of JDA, which provides a number of optimization tools in addition to demand

planning solutions.

For example, companies that have a multi-echelon supply chain can supply destination nodes from multiple locations. There are any number of strategies that can be implemented to optimize inventories. Companies can pool an entire category of products. They can rationalize source points. They can optimize service level across the entire supply chain, or they can provide different service levels to different groups of customers based on margins or volumes.

“Any optimization of inventory and safety stock requires advanced algorithms, and they are increasingly important given the agility that companies need in this economy for inventories and entire distribution networks,” says Bauman.

Many companies make families of products, but only some will appeal to budget-focused consumers. Demand is likely to increase for these in the near future, so to optimize inventory, service levels have to be set high for these items and lower for the premium brands that are likely not to sell as well. Networks of DCs then have to be optimized to meet these service levels.

“We have companies that used to optimize their networks every year or two,” says Bauman. “Now they are doing quarterly flow optimization to fine-tune source and destination relationships.”

Whether the question a company is trying to answer is about forecasting, demand planning, inventory strategies or network optimization, the answers are all interlinked, according to Bauman.

“Companies need to step back and think about demand management across their network and supply chain, and that requires a variety of solutions that work together.”

## Resource Links

**Kinaxis**, [www.kinaxis.com](http://www.kinaxis.com)

**MIT Center for Transportation & Logistics**,  
[www.ctl.mit.edu](http://www.ctl.mit.edu)

**Institute of Business Forecasting & Planning**, [www.ibf.org](http://www.ibf.org)

**JDA Software**, [www.jda.com](http://www.jda.com)

**Smart Software**, [www.smartcorp.com](http://www.smartcorp.com)

**Park City Group**, [www.parkcitygroup.com](http://www.parkcitygroup.com)

**Prescient Applied Intelligence**,  
[www.prescient.com](http://www.prescient.com)

