

## Mass Media Coverage

### Professor J. Scott Armstrong

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### Psyched Up

by Peter A. Buxbaum

“Two heads are better than one.” That’s probably the simplest way to describe the advantages of collaborative supply chain forecasting.

Business processes, spurred on by Internet-based technologies, have been breaking down the barriers between enterprises for some years. Bringing divergent perspectives to the forecasting process from varying supply chain elements is designed to increase forecasting accuracy and to result in better planning and management of capacity and inventory.

Of course, it isn’t as simple as that. The very phrase “collaborative forecasting” itself suggests two serious problems: with collaboration and with forecasting. Collaborative relationships are not developed on the fly. Successful collaborations are most likely between supply partners that have already developed a long history of mutual trust. Forecasting, for its part, is a problematic science that is subject to inaccuracies and distortions. But for companies that have been able to craft the right relationships carefully and to implement useful technologies, collaboration in forecasting – often as part of a broader program that includes planning and replenishment – has yielded some interesting results.

**Forecasting Roadblocks.** Sears, Roebuck & Co. came to propose a collaborative relationship with long-time supplier Michelin North America Inc. as the two companies were mulling over a problem with Michelin’s fill rate for a Sears tire promotion. “We wanted to make sure that Michelin could deliver the tires we needed without our having to add personnel at distribution centers, says Rank Steermann, senior manager of supply chain at Sears in Hoffman Estates, IL. “Michelin wanted to make sure it could deliver product when and where it was needed without paying extra for premium freight.”

Sears suggested that the two companies explore collaborative planning, forecasting, and replenishment or CPFR, a voluntary industry program designed to align partner processes for more accurate forecasting and tighter management of manufacturing and retailing capacities and inventories. After some study of the proposal, the two companies decided to head down that road.

Not every supplier-retailer pair could successfully make that transition, however. “Many companies have to change their mindsets about sharing information with trading partners,” says Janet Suleski, a supply

chain analyst with AMR Research. But the Sears-Michelin relationship was already well developed before collaboration came into play. “Sears has always worked in partnership with its largest vendors to help meet customers’ needs,” says Steermann. “We make them aware of what we need and they let us know what trends they’ve noticed. We have worked closely with Michelin for 32 years.”

The problems associated with choosing the right collaboration partner are compounded by forecasting pitfalls. Accurate forecasting, dearly, could help companies streamline their supply chains and reduce their inventories by anticipating demand. But J. Scott Armstrong, a professor of business at the University of Pennsylvania’s Wharton School and an expert in the field, warns that not all forecasting techniques are created equal.

“Some don’t incorporate the findings of the latest research,” he says. That’s why Armstrong suggests relying on forecasting engines that incorporate cutting-edge features (see sidebar, next page).

The collaborative relationship itself, notes Armstrong, can help with forecasting accuracy. “Combining different sources of data is an important element in increasing the accuracy of forecasts,” he says.

**Twin Engines.** “The first step in any collaborative process is to get the buyer and seller to agree on a better interpretation of demand,” says Andrew White, a Gartner analyst. There are two basic approaches to forecasting, dual and reference. The former has each trading partner generating a forecast independently of the other. The forecasts are fed into a software engine that pinpoints where the forecasts differ. The trading partners then resolve those differences and come up with a single number.

With the reference forecast approach, one of the trading partners generates a singular forecast. Each trading partner has the right to apply independent knowledge to the forecast and to make updates.

“We prefer the dual approach because it allows each trading partner to contribute market intelligence the other lacks,” says Elaine Kennedy, senior director for supply chain management at Manugistics Group Inc., a supply chain technology company based in Rockville, MD. Manugistics provides collaborative software tools to GlobalNetExchange (GNX), an online venue that Sears uses to collaborate with Michelin.

## Forecast: Damp

J. Scott Armstrong, a professor at the University of Pennsylvania's Wharton School and an expert in forecasting, says that most forecasting techniques are less than all-inclusive and that managers should not expect the implementation of such a technology to solve all of their problems in one fell swoop to aid with improve forecasting. Armstrong has developed a series of 139 principles, which can be found at [www.forecastingprinciples.com](http://www.forecastingprinciples.com).

What are some of the latest techniques to look for in a forecasting package? One is called "trend dampening," a technique that moderates fluctuating trends. When you are faced with uncertainty, Armstrong explains, "you do not extend the trend but dampen it a bit and become more conservative."

Another is called "contrary series." This method "involves a procedure for comparing managers' expectations against historical trends generated by statistical extrapolation," says Armstrong. "When both agree, follow the statistical extrapolation. When they disagree, have the option to override the program and set the trend to zero." According to Armstrong, one study of more than 1,000 forecasts found that one-sixth of the predictions contradicted management expectations.

A third powerful technique is to combine forecasts. This may involve averaging different forecasts or comparing forecasts calculated in slightly different ways or drawing on somewhat different data. "We found this technique to reduce error by roughly 12%," says Armstrong. Collaborative forecasting essentially incorporates this last technique.

Kennedy acknowledges, however, that the dual forecasting technique has yet to catch on in a big way. In the case of Sears, the retailer generates a forecast with its own, home-grown engine and uses the Manugistics tools on GNX to isolate areas that it needs to focus on with Michelin.

More often than not, according to Kennedy, retailers will rely on their suppliers' forecasts as the basis for collaboration. Such is the case with TruServ Corporation a buying cooperative for 6,500 independently-owned True Value hardware stores around North America. True Value began collaborating with suppliers four years ago and now has recruited 23 of its largest to the program.

"The suppliers have the majority of the responsibility for forecasting," says Greg Linder, True-Value's supply chain director. True Value uses technology from JDA Software Group Inc., which allows suppliers to post forecasts on a Web portal. "True Value can view these and post orders against them, as well as

inform its suppliers of events, most notably promotions.

**Rolling Out the Program.** Most collaborative projects - start out as small pilots and are later rolled out on a broader basis once the concept has been proven. Sears started with one supplier, Michelin, with which it has been working for over a year, and is now in the process of implementing collaborative programs with a handful of others. True Value started with 23 of its 1,200 suppliers, with plans to recruit more.

At Londis Holdings PLC, a London-based chain of 2,200 convenience stores, the rollout strategy is focused on capturing the highest-volume suppliers and then recruiting suppliers based on product line. The company started out collaborating with eight suppliers three years ago, using JDA's e3 software. It has since initiated collaboration with 22 of its 350 suppliers, representing 40% of its total volume.

"Once we get our 40 biggest suppliers on board, we will have 80% of our volume in the program, says Martyn Harvey, Londis' supply chain development director. Right now our key development areas are in soft drinks, snacks, chilled food, and pet supplies. Wines and spirits remains a growth opportunity for us."

Harvey believes it is not suitable to work collaboratively with every supplier. "It depends on how much value it brings to our business and theirs," he says. "In my view we need the key players which provide reasonable volumes of promotional activity."

As Gartner's Andrew White puts it, "Collaboration is not for the benefit of mankind but to leverage partner assets for mutual benefit."

**Seeing the Bus.** Companies that have embarked on collaborative forecasting programs have seen dramatic and measurable results. For True Value, service levels to stores have improved by between 10% and 40%, while inventory levels have decreased 10%-15%, according to Greg Linder. Eighty to 90% of True Value's vendors now have fill rates of 95% or better, versus 20% exhibiting similar service levels four years ago.

Londis has also experienced dramatic operational improvements. These include a 60% reduction in order lead time and service level improvements that have increased from 97% to over 99%.

But Martyn Harvey also emphasizes some of the softer benefits. "Collaboration is the next step in supply chain logistics," he says. "One of our trading partners told me that the real benefit is that now he can see the bus coming. He can see the order building before it actually hits his desk. Suppliers can view and better manage demand instead of coming into the office every morning not knowing what to expect