



Forecasting Tool Solution Case Study

Customer Profile

Today, The Goodyear Tire & Rubber Company measures sales in excess of \$13 billion. From the very beginning, more than 100 years ago, Goodyear Engineered Products (EPD) has grown in concert with its parent company, The Goodyear Tire & Rubber Co. EPD sales reached \$1.13 billion in 2002. Anticipating and exceeding customer expectations are the cornerstones on which EPD's Replacement Products business is built. Excellent durability and performance, provides increased value to EPD's line of transportation replacement belts and hoses. Facilities in the United States, Canada, Latin America, Europe and Asia - many of which are ISO certified - cover the globe with quality belts, hoses and air springs. EPD remains committed to being a leader in each of its various core businesses by focusing its growth through customer-driven teams.

Business Problems

EPD, through its distributors, ships directly to selling outlets. EPD is responsible for planning for the more than 288,000 materials that are maintained around the world. EPD wanted a system that would enable them to automate the inclusion of inputs to accurately determine the "safety stock" for each product to minimize inventory while maintaining promised customer service levels. In-stock conditions are not maximized and inventor levels are too high. An accurate safety stock would support sales and customer satisfaction through optimal in-stock conditions. Goodyear would benefit from decreases in carrying cost of inventory.

Effort to compile the forecast is onerous and inefficient. Manually combining historical data, and marketing forecasts for the large number of SKUs is expensive and impractical. Due to the volume of information that needs to be included, the planning cycle grows in complexity as the business grows. While EPD has valuable historical information, it has not been used effectively to forecast demand. Limitations to the forecast process makes planning difficult creating sub-optimal inventory and customer service levels.

Solution

The heart of the solution lies in the ability to accurately forecast demand for products. EPD wished to take advantage of state-of-the-art computer technology by modeling buying patterns on a rolling 30 – 90 day basis. The model uses information such as sales history, causal data history (e.g. price-to-consumer, holidays, special events, forecasted causal data values, promotions etc.) to create forecasting coefficients by distribution point and by product. This model is key for EPD and serves as a building block for accurate production scheduling.

Autobox modeling and forecasting was chosen because it provides for the customization of the forecasting equation to the data, exploiting profiles and models dependent on a number of variables. Furthermore it captures the lead, contemporaneous and lag structures for events and holiday variables while incorporating level shifts, local time trends and eliminating spurious impacts assignable to outliers/inliers.

The forecasting system was built around Autobox using an excel interface capable of scaling to over 1000 SKUs. This system yields better forecasts of demand per lead-time during the period that it takes the replenishment order to arrive at the distribution center. Better forecasts of demand in a sluggish economy translated into savings for working capital committed to the business and associated carrying costs. Improvements in cash flow and EBIT occurred while maintaining outstanding service levels.



Expected Benefits of solution implemented

- Increase revenue by reducing out-of-stock conditions
- Decreased costs of planning - A key goal
- Decreased costs for set up time, by forecasting with more certainty longer horizons
- Increased customer satisfaction by maintaining service level agreements

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