

Forecasting Tool Solution Case Study

Customer Profile

Anheuser-Busch (A-B) is the world's largest brewer of beer with 14 breweries - 12 in the U.S. and two overseas - and sells beer in more than 80 countries. A-B's operations and resources are focused on adding to life's enjoyment not only through beer, but also through theme park entertainment and packaging. A-B's subsidiaries include one of the largest U.S. manufacturers of aluminum beverage containers and one of the largest theme park operators in the U.S.

Business Problem: In-Stock conditions not maximized and inventories at retail too large

A-B's distributors ship beer directly to the selling outlets. The wholesaler's sales rep is responsible for determining the quantity of beer shipped to each retail location. A-B wanted a system that would enable them to more accurately determine the "order quantity" for each outlet that would minimize inventory while maintaining in-stock conditions at retail. This accurate order would increase sales and customer satisfaction through increased in-stock conditions. Additionally, retail customers would benefit from decreases in inventory.

The heart of the solution to improving in-stock conditions and minimizing inventories lies in the ability to accurately forecast demand for A-B products at retail. A-B is able to obtain point-of-sale cash register scan data from leading retailers across the United States. From this information, it has been able to accumulate several years of historical consumer purchasing data. In addition, A-B has been aware of consumer purchasing causal factors that can be applied to historical purchasing behaviors to predict future purchasing behavior.

While A-B had this valuable historical information, it could not be used effectively to forecasting demand. The impacts of this inability to forecast created higher cost in inventory on retailer premises as well as generating out-of-stock conditions at retailer.

Solution

A-B wished to take advantage of state-of-the-art computer and communications technology by modeling retail outlet specific buying patterns for the next 14-28 days. This model would use information such as sales history, causal data history (e.g. price-to-consumer, holidays, special events, daily temperature) and forecasted causal data values (e.g. anticipated temperature, holidays, etc.) to create forecasting coefficients by store and by product. This model is key for A-B and serves as a building block for the generation of accurate store orders. Other components of the solution include the calculation of Safety Stock, Inventory Tracking, Data Collection, and the ability to react to field sales input on all parameters.

The modeling and forecasting solution chosen was Autobox.

Autobox was chosen because it customizes the forecasting equation to the data exploiting day-of-the-week profiles and evidenced dependence on price and weather 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.

A system was built around Autobox to make it fully automated and capable of scaling to tens and possibly hundred of thousands of retail outlets. This system utilizes a very efficient distributed processing model to minimize overall computing costs. This approach also allows A-B to scale the system in a cost effective manner as the system rolls-out to additional outlets.

Actual Benefits of Solution implemented

- Increased revenue significantly (above expectations) by reducing out-of-stock conditions at product retailers across the United States by 51%.
- Improved product freshness by more than ½ -a key marketing goal of A-B.
- Reduced cost and increased customer satisfaction by reducing excess inventory on retailer premises by .1 % .
- Increased sales by a whopping 5.8% while deliveries remained unchanged.