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Case Study: C&S Wholesale Adopts Collaborative Demand Forecasting

by **George Lawrie**

with Sharyn Leaver and Varun Sedov

EXECUTIVE SUMMARY

C&S Wholesale Grocers, the second-largest food wholesaler in North America, faced serious problems in servicing supermarket demand in more than 2 million item location combinations. Drowning in a rising tide of promotions and new product introductions, it embarked on radical reorganization. C&S pooled all of its demand management expertise and built state-of-the-art predictive models incorporating econometric insight to deliver superior availability to its customers even during peak periods of holiday demand.

SITUATION: C&S FACED FORECASTING CHALLENGES FROM RISING PROMOTION VOLUME

Privately held C&S Wholesale Grocers is the second-largest food wholesaler in North America, serving more than 5,000 stores in more than 70 locations across 12 US states. C&S has an extensive customer base, including A&P, BI-LO, Bruno's Supermarket, Giant of Carlisle, Safeway, Stop & Shop, and Target. With rapid growth over the past 10 years, C&S faced organization and technology challenges around providing consistently high service levels to its major North American customers. During the 2006 holiday season, C&S attributed the disappointing availability of items at its warehouse to the poor performance of its rudimentary baseline forecasting system. While forecasts based merely on historical averages had worked in the past, C&S forecasts for more than 2 million item location combinations simply failed to scientifically predict the uplift and substitution impact from an ever-increasing number of grocery promotions. The result? C&S customer stores ran out of stock in popular promoted items like turkey dressing, and they were overstocked in displaced merchandise like horseradish sauce.

BEST PRACTICE: C&S SUPPORTS COLLABORATIVE DEMAND PLANNING

To promote its value to grocers in managing merchandise availability, C&S embarked on an ambitious strategy to put demand planning at the center of business processes and in particular to develop forecasts at the SKU level. C&S chose to work with Oracle's Demantra Demand Management solution to automate and formalize the process. C&S selected Demantra for its configurability and ease of use. To drive value from this six-month implementation, C&S focused efforts on:

- **Developing a granular and robust predictive demand model.** As a wholesale grocer with numerous new product introductions every week across many locations, C&S could not rely on historical or time series forecasting. Therefore, C&S used predictive analytics to incorporate wider macroeconomic variables with shipment data. The forecast model for each item uses different

coefficients and variables to deliver the lowest possible level of forecast error. C&S uses five global causal variables, such as year-over-year trend, supplemented by eight promotional variables like the incidence of one or two week holiday periods. C&S also treats month as a forecast factor to deliver a more granular level of forecast. It tracks changes in demand level over rolling three-week periods but uses the preceding 12 weeks' data to adjust the forecast so as to respond to shifts in demand without overreacting to each spike.

- **Using automation to enable more detailed forecasts.** C&S deployed Demantra's sophisticated models to understand the relationship by item location and by day of the week between price, promotion, and quantity sold. The models recalibrate themselves continuously to compensate for any underlying drift in consumer market behavior. C&S capitalizes on Demantra's ability to automatically select different forecasting models tuned to the dynamics of each merchandise item's characteristics. For example, short history items trigger certain causal factors and forecasting models such as Holt's exponential smoothing or Monte Carlo regression, while items with little promotional history or items with intermittent demand, might suit different modeling techniques.
- **Reducing manual forecast adjustments.** C&S has one of the largest forecasting databases in the world, regularly forecasting 2 million or more item location combinations. Using month and length of holiday as causal factors helps C&S to eliminate tedious and error-prone manual adjustments that many other firms make to forecasts for holiday and season shift.
- **Separating the effect of promotions.** C&S forecasts total demand, including baseline and lift. It can explain changes in baseline based on factors like trend, month, and holidays. It can explain changes in lift using detailed promotional causal factors. C&S enjoys the advantage of a forecast that identifies season or monthly factors even when the history is complicated by promotions. The system can even explain the discrete impact of holiday and promotion in the same week.
- **Driving capacity planning from unconstrained demand modeling.** C&S used its forecasting model to predict demand spikes so that it could plan transportation and warehouse labor capacity, and make contingency plans to meet expected peaks in demand. This enables C&S to add real value to its retailer customers, relieving them of some category planning burden and releasing resources to focus on sell-through.
- **Building a demand-forecasting-centric organization.** C&S consolidated planners who formerly were scattered across functions into a single pool to share expertise and best practices and compete with each other to raise the customer-service-level bar. C&S has 10 FTE forecasters, with 30 planners focusing on organization plans and customer collaboration. C&S recognizes that demand management is a core competence for a grocery wholesaler and a critical competitive differentiator in its offering to a grocery retailer client base.

BEST PRACTICE RESULTS: IMPROVED CUSTOMER SERVICE AND INVENTORY VISIBILITY

Focusing on demand management as a core competence, C&S was able to:

- **Improve customer service and reduce working capital balances.** C&S measured a significant increase in “fill rate” — the ability to meet orders from stock on hand — while simultaneously improving service to customers and reducing inventory levels. Using improved forecasting, C&S improved its customer service and margins, while releasing working capital.
- **Smooth out holiday demand spikes.** Three years ago, C&S experienced disappointing order fill rates around the holiday period. C&S is now able to get through the holiday season without spiking inventory by targeting the right items — at the right time — to make sure products are in stock, but not overstocked. C&S now delivers an order fill rate of between 96% and 98% on almost all items through the holiday season.
- **Exploit unexpected relationships between product, location, and seasonal demand.** C&S is able to forecast and exploit unexpected seasonal variations in demand by location, discovering and exploiting, for example, an unexpected spike in pet food demand resulting from consumers stocking up on items like dog biscuits while shopping for holiday delicacies for human family members.

RECOMMENDATIONS

HOW TO APPLY C&S BEST PRACTICES

To learn from C&S demand management experience, retail process and application professionals should:

- **Assess the strategic importance of demand management.** C&S recognized that as a wholesaler servicing grocers, its value-add depends critically on demand management and forecasting competence. Business process and applications (BP&A) professionals should carefully document the strategic significance of demand management in their industry value chain to offer senior executive sponsors a convincing case for investment and change in organization and apps.
- **Consider the leap to predictive modeling.** BP&A professionals should re-evaluate the effectiveness of baseline forecasting based on time series methods. In light of the growing importance and sophistication of promotions and the increasing fragmentation of consumer markets, BP&A professionals need to consider the predictive power of variables beyond the item’s own sales history.
- **Aggregate forecasting and demand management expertise.** BP&A professionals should consider the benefits of pooling demand management and forecasting expertise and sharing best practices.

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