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PromoCast™: A New Forecasting Method for Promotion Planning

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Abstract

This article describes the implementation of a promotion-event forecasting system, PromoCast™, and its performance in several pilot applications and validity studies. Pilot studies involved retail grocery chains with 95 to 185 stores per trading area. The goal was to provide short-term, tactical forecasts useful for planning promotions from a retailer's perspective. Thus, the forecast system must be able to handle any of the over 150,000 UPCs in each store's item master file, and must be scalable to produce approximately 800,000,000 forecasts per year across all the retailers served by *efficient marketing services, inc.* (*ems, inc.*). This is a much different task than one that confronts a manufacturer, even one with a broad product line. Manufacturers can benefit from custom modeling in a product line or category. Retailers need a production system that generates forecasts that help promotion planning. Marketing scientists have typically approached promotion analysis from the manufacturer's perspective. One objective of this article is to encourage marketing scientists to rethink promotion analysis from a different perspective.

From the retailer's point of view the "planning unit" is the promotion event. Neither weekly store-tracking data nor shopping-trip data from consumer panels are easily aggregated to reflect total sales during a promotion event. We describe the promotion-event databases and the statistical model developed using these databases. The data are the strategic asset. Our goal is to help retailers use their data to increase the profitability of promotions. We have data on the performance of each UPC in each store under a variety of promotion conditions, on each store's adeptness at executing various styles of promotions, as well as on chain-wide historical performance for each UPC. We use many historical averages from these databases to build a 67-variable, regression-style model. The forecast incorporates a simple bias correction needed when using a log-transformed dependent variable (the natural log of total unit sales). We argue that the historical averages matching the planned ad and display conditions provide a benchmark superior to the widely used "base-times-lift" method. When aggregated into case units (the natural unit for product ordering), 69% of the forecasts in our first validation study were within ± one case compared to 39% within ± one case using the appropriate historical averages. We report the results of two over-time validity studies that reflect the value of our model for retailers. The limitations and implications of this planning tool for managerial decision making concerning stocking levels are discussed.

Whenever historical data are the strategic asset we face inherent limitations. Our model does not forecast new products. The forecast error increases when an existing product is promoted in a new way. Over 99.5% of the time, we have full data from which to create a forecast. However, with a database for a typical chain market containing over 20 million promotion events in the 30-month time frame we use, 100,000 events have less than ideal data. The breadth of the database (typically 150,000 UPS) makes it impractical to incorporate data on competitive offerings. We find that regression-style modeling is not adept at incorporating information on the 1,200 subcommodities managed in our pilot stores or the 1,000 manufacturers who supply those stores.

Despite these limitations we show the value of using promotion-event data, how tactical forecasts based on these data can directly impact the bottom line of grocery retailers, and how store-by-store forecasts can help retailers with problems of running out of stock or overstocking.
(*Retailing*; *Promotion Planning*; *Forecasting*; *Promotion Event Data*)