



JOURNAL OF THE INSTITUTE FOR OPERATIONS RESEARCH AND THE MANAGEMENT SCIENCES

MARKETING SCIENCE

Volume:

Number:

Year:

Title:

Author:

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Marketing Science Homepage

<http://bear.cba.ufl.edu/centers/MKS>

The Dynamic Effect of Discounting on Sales: Empirical Analysis and Normative Pricing Implications

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Abstract

Baseline sales measure what retail sales would be in the absence of a promotion (Abraham and Lodish 1993), and models that measure baseline sales are widely used by managers to assess the profitability of promotions (Bucklin and Gupta 1999–this issue). Estimates of baseline sales and promotional response are typically independent of past promotional activity, even though there is evidence to suggest that increased discounting reduces off-promotion sales and increases the percentage of purchases made on deal (e.g., Krishna 1994). As a result, models that do not consider dynamic promotional effects can mislead managers to overpromote. Given the widespread use of “static” models to evaluate the efficacy of promotions, it is particularly desirable to calibrate a dynamic brand sales model and use it to establish an optimal course of action.

Accordingly, we develop a descriptive dynamic brand sales model and use it to determine normative price promotion strategies. Our descriptive approach consists of estimating a varying-parameter sales response model. Letting model parameters vary with past discounting activity accommodates the possibility that market response changes

with firms’ discounting policies. In the normative model, we use the estimates obtained in the descriptive model to determine optimal retailer and manufacturer prices over time.

The results of the descriptive model indicate that promotions have positive contemporaneous effects on sales accompanied by negative future effects on baseline sales. The results of the normative model suggest that the higher-share brands in our data tend to overpromote while the lower-share brands do not promote frequently enough. We project that the use of our model could improve manufacturers’ profits by as much as 7% to 31%.

More generally, the normative results indicate that i) if deals become more effective in the current period, i.e., if consumers are more price sensitive, promotions should be used more frequently; and ii) as the negative dynamic effect of discounts on sales increases, the optimal level of discounting should go down. Without our approach, it would be difficult to make this trade-off exact. Finally, we demonstrate that these dynamic effects provide another perspective to the marketing literature regarding the existence of promotions. (*Price Promotions; Baseline Sales; Price Sensitivity; Scanner Data; Channel Dynamics*)