

Optimal Crisis Management

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Abstract

Although companies face a realistic chance of encountering product-harm crises (e.g., contamination of Tylenol with cyanide, defective Pentium processor), the extant marketing literature contains sparse insights on managing this phenomenon. Consequently, a recent study investigates empirically the effects of a crisis on the effectiveness of marketing instruments (e.g. price and advertising) and finds that it leads to a loss of baseline sales, a reduced own effectiveness of marketing instruments, increased vulnerability, and decreased clout (van Heerde, Helsen and Dekimpe 2007). Because crisis can occur despite good management, managers need to anticipate this possibility and incorporate its risk in determining the marketing budget and allocating the resources to marketing activities. However, there is no study that examines how forward-looking managers should optimally allocate resources to corporate and brand advertising, taking into account the probability of a crisis event. Moreover, corporate and brand advertising elasticity in the presence of a rare but catastrophic event are not known.

To address these issues, we formulate a dynamic model of corporate and brand advertising for a firm anticipating a product-harm crisis in the future. The firm invests in corporate advertising to build corporate goodwill, which exhibits positive spillovers on sales growth with diminishing marginal returns. Simultaneously, the firm invests in brand advertising to increase a brand's sales growth. The resulting dynamic system consists of two state variables (corporate goodwill and sales level), two control variables (corporate ad spending and brand ad spending), and it may "jump" at any instant due to loss in brand sales or corporate goodwill. At each instant of time, there exists a non-zero probability that the firm encounters such a jump due to the crisis event. Furthermore, we incorporate the empirical findings that the effectiveness of corporate and brand advertising can diminish in the post-crisis period. Then, applying stochastic

optimal control theory, we derive the optimal Markovian advertising strategies. Comparative static analysis with respect to the crisis probability reveals new insights into the optimal allocation of resources to corporate and brand advertising. Moreover, we find that post-crisis brand advertising is *inversely* related to the post-crisis brand sales level, a result that is contrary to the proportional-to-sales budgeting heuristic. In contrast, post-crisis corporate advertising can be less than, equal to, or greater than pre-crisis spending level, depending on the effects of corporate goodwill on brand sales.

Empirically, we investigate the crisis event of Ford Explorer sports utility vehicle by utilizing the weekly automobile sales data from J.D. Power & Associates and advertising expenditures data from TNS Media Intelligence. Specifically, we estimate the proposed model to furnish empirical support and to assess whether managers over- or under-spend in corporate and brand advertising before and after the crisis. Finally, we conclude by discussing managerial implications and identifying avenues for further research.

Reference

Van Heerde, H.J.; Helsen, K.; Dekimpe, M. (2007), « The Impact of a Product-Harm Crisis on Marketing Effectiveness », forthcoming in *Marketing Science*