FORECASTING WITH CONJOINT ANALYSIS

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ABSTRACT

Conjoint analysis is a survey-based method managers often use to obtain consumer input to guide their new-product decisions. The commercial popularity of the method suggests that conjoint results improve the quality of those decisions. We discuss the basic elements of conjoint analysis, describe conditions under which the method should work well, and identify difficulties with forecasting marketplace behavior. We introduce one forecasting principle that establishes the forecast accuracy of new-product performance in the marketplace. However, practical complexities make it very difficult for researchers to obtain incontrovertible evidence about the external validity of conjoint results. Since published studies typically rely on holdout tasks to compare the predictive validities of alternative conjoint procedures, we describe the characteristics of such tasks, and discuss the linkages to conjoint data and marketplace choices. We then introduce five other principles that can guide conjoint studies to enhance forecast accuracy.

Keywords: Conjoint analysis, validation measures, forecasts at aggregate and individual levels.

Conjoint analysis is used in marketing and other fields to quantify how individuals confront trade-offs when they choose between multidimensional alternatives. Researchers ask members of a target market to indicate their preferences (or choices) for objects under a range of hypothetical situations described in terms of product or service features, including features not available in existing products or services. They use these judgments to estimate preference functions, often a unique one for each respondent participating in a conjoint study. Conceptually, the researcher decomposes a respondent's overall preference judgments for objects defined on two or more attributes into part worths (partial utility values) for distinct attribute levels. With the resulting preference functions, managers can
predict the share of preference for any product under consideration, relative to other products. By modifying the characteristics of a given product, the analyst can simulate a variety of plausible market situations. When used in this manner, conjoint analysis provides forecasts of market (preference) share that allow managers to explore the market potential for new products, given the characteristics of other products. These forecasts, however, depend upon other factors, such as the availability of the products included in a market scenario to each customer and the customers’ awareness of these products.

Users of the method tend to find the results very plausible (face valid). Studies of the commercial use of the method indicate that its use has been steadily increasing (Cattin and Wittink 1982; Wittink and Cattin 1989; Wittink, Vriens and Burhenne 1994). Its growing popularity is partly due to the availability of easy-to-use software (Sawtooth 1997a). The method, in one form or another, has been applied in virtually every conceivable product category, including consumer durables (e.g., automobiles), nondurables (e.g., soft drinks), industrial products (e.g., copiers), financial services (e.g., checking accounts), and other services (e.g., hotel accommodations).

We discuss a prototypical application of the method, provide a brief summary of the major elements of a conjoint study, and identify conditions under which the method should work well. We then argue that the natural manner to determine the method’s success—the extent to which conjoint results forecast future marketplace behavior—is subject to severe difficulties. Consequently, studies to compare the performances of alternative study designs, data collection methods, data analysis techniques, and so forth, tend to focus on the predictive validity with holdout data. Researchers gather holdout data by confronting respondents with choices from alternatives described in terms of characteristics that resemble (future) marketplace conditions. The implicit assumption is that conclusions based on holdout results generalize to marketplace conditions. That is, the methods that best predict choices among holdout alternatives should best predict marketplace choices.

A PROTOTYPICAL APPLICATION

Over the years, manufacturers have made several changes in disposable diapers that were informed by conjoint analysis. For example, Procter and Gamble (P&G) was the first to introduce a patented elastic waistband, a product enhancement for which consumer preference was not difficult to predict. However, the firm used conjoint analysis to quantify the trade-off between this feature and price, among other attributes. Thus, conjoint analysis provided an indirect estimate of consumers’ willingness to pay for this product improvement. This value is inferred from consumers’ preferences for, say, the object without the feature at the current price and the same object enhanced by the feature but offered at a higher price. One reason why conjoint is used is that in the marketplace consumers do not normally have to state the monetary value of product improvements.

To understand how conjoint analysis works, imagine that the current product P&G offers does not have an elastic waistband and costs the consumer $5 per dozen. Suppose further that the company is contemplating $6 and $7 as possible prices for the product with the waistband. Ignoring other attributes, we consider the following characteristics: