Pricing for Researchers:
Regression Analysis and Pricing Research

Background

• Regression analysis employing the use of historical data is widely used to estimate the effect of changes in price on sales.

• Historical data can provide insight as to how sales volume will be affected by changes in price and market variables such as; seasonality, advertising, promotions, competitive product prices and other variables deemed appropriate.

• Regression analysis produces a price elasticity measurement that quantifies the price sensitivity of consumers with respect to the observed product (Mulhern & Leone).

• This review focuses on regression analysis using historical market data. Please note that data from other sources (i.e. consumer data) can also be used.

Description Of How It Works

• The historical time period for observation and the appropriate independent variables (i.e. prices, advertising, promotions, etc) must be defined.

• The appropriate level of data aggregation is determined. Data aggregation is done by time (weekly, monthly, quarterly) and geography (store level, regionally).

• The market data is collected from the available sources.

• The appropriate functional form is determined. Most regression analysis methods use linear models. Non-linear models can also be defined.

• A statistical analysis of the estimated regression model is conducted to determine the 'goodness of fit' between the data and the model.

Strengths

• Generally accepted and understood research methodology within most fields of business. Produces information that can be used to create forecasting and planning models.

• Modern POS data management systems provide real time data that can be used to refresh the parameters of the regression model.

• Relatively inexpensive research process if a firm has high quality data.

Weaknesses

• If prices in the category do not vary often or if competitive products follow each other's price changes very little information will be produced from a regression analysis.

• Sales can be affected by many factors other than price, so there can be a great deal of variation that cannot be attributed to changes in price.

• Price parameters in regression models have a single coefficient; suggesting that the impact of a price increase is equal to that of an equivalent price decrease. This is not the case for every product in every situation.

• Using historical data to develop forecasts or future pricing strategies relies on the assumption that the past will be repeated and market variables will remain constant over time.

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Our Assessment

• In the initial stages of the project often the time required to collect the appropriate data is underestimated and the availability of quality data is overestimated. These circumstances can jeopardize the successful completion of the project.

• In our experience we have found that regression analysis is worth exploring as a pricing research methodology under the following conditions;

- • Data rich industry.

- • Stable category.

- • Mature market.

- • Competitive product insight and data.

• We have found that this pricing research methodology is not effective when;

- • Disruptive changes occur (e.g. new competitive entrant, new technology).

- • Lack of competitive sales or market share data.

- • Data only accessible at a highly aggregated level.

Source:

Mulhern, F.J. and R.P. Leone, Measuring Market Response to Price Changes: A Classification Approach. Journal of Business Research, Vol. 33, pp. 197-205.

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