

Maximize Profits with the Optimal Price Point

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Determining the optimal retail price for an item can be a challenging task. Many factors must be considered: manufacturing and distribution costs, competitor's prices and, of course, the negotiations that take place between manufacturers, distributors and retailers. This article attempts to provide an approach that brings some objectivity to some elements of this process.

For purposes of this article, "optimal price" will be considered to be the price that results in maximum profits. Total profit is a function of market share, volume, costs and retail price. To simplify the discussion, we'll assume that cost is fixed and that volume (for all brands combined) is stable. In this situation, profit becomes a function of market share and retail price.

The market share of an item can be a function of the difference between an item's price and the price of similar, competing items. The difference in price between two similar items is referred to as the "price gap."

Generally, if the price of an item is increased, it's to be expected that some sales will be lost as price-sensitive shoppers buy lower-priced alternatives. It's possible to determine the price of an item that will result in maximum profits. Depending on the circumstances and the degree to which price differences affect shoppers' choices, the optimal price for an item may be higher or lower than that of a competing item.

With the appropriate data, this "price elasticity" can be measured. The resulting analysis can lead to better decisions on setting an optimal price in order to maximize overall profits.

REQUIREMENTS

A number of elements are required to proceed with a price gap study.

1. Point of sale (POS) data. Some manufacturers may have access to data from the chain home centers. However, the price variability in the large chains is limited, as most stores within a chain adhere to the same price structure. Therefore, there's limited information to test how shoppers respond to price differences. The independent channel, on the other hand, is composed of a diverse set of independent retailers and a wider variety of prices. This situation provides a laboratory to measure the effect of price differences. Vista is in the unique position of having current POS data available from the independent home improvement channel (independent home centers and hardware stores). Many of these stores are associated with the co-ops: Ace, True Value, Do it Best and other buying groups. Any reporting or analysis of the data must preserve the confidentiality of individual stores.

2. Comparable, competing items available in many stores. For this analysis to work, many stores must show positive sales of your item as well as at least one competing item.

3. A variety of price gaps. Variability in pricing provides the context in which to create a statistical model and estimate the change in share due to change in prices.

4. Ability to measure price and share of each item within each store and the analytic capabilities to analyze the data and determine the optimal price.

METHOD

The steps in this project are as follows:

1. Identify competing items (e.g. your brand and a competing private label).

2. Measure share within each store.

3. Plot data (share vs. price gap).

4. Develop a statistical regression model of the data (share as a function of price gap).

5. Determine the optimal price point.

There are two key equations. The first is for share as a function of the price gap. The second is for profit as a function of share. The first equation fits inside the second.

The volume of your item is the category volume times your brand share. This brand share is a function of the price gap (selling price minus competitor price). In this example, the function is a simple linear model. For each dollar increase in price, a constant number of share points are lost. Brand Share = base share - share loss per dollar increase x price gap. Share = $a - (b * \text{price gap})$ where **a** and **b** are the coefficients from the regression model. "a" represents the share the item attains when the price gap is zero. "b" represents the loss in share for each dollar increase in the price gap.

The second equation estimates profits. A few steps are necessary to arrive at the equation for profits. Overall profit equals unit volume multiplied by the profit on each unit.

$$\begin{aligned} \text{Profit} &= \text{Unit volume} \times (\text{selling price} - \text{cost}) \\ &= (\text{category volume} \times \text{brand share}) \times (\text{selling price} - \text{cost}) \\ &= (\text{category volume} \times f(\text{price gap})) \times (\text{selling price} - \text{cost}) \\ &= (\text{category volume} \times f(\text{selling price} - \text{competitor price})) \times (\text{selling price} - \text{cost}) \\ &= (\text{category volume} \times (a - b \times (\text{selling price} - \text{competitor price}))) \times (\text{selling price} - \text{cost}) \end{aligned}$$

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your 2005 company tax return.) What I thought was interesting is that an ally of ours, the Chief Counsel for Advocacy for Small Business, Tom Sullivan, thought the rules were so good, he wrote a letter commending the Department of Treasury and the IRS for their development.

Said Sullivan, "We are writing to commend the U.S. Department of the Treasury and Internal Revenue Service's (IRS) recent rule under section 199 of the Internal

Revenue Code. The proposed rule provided for a simplified deduction method calculation for employers that generated \$25 million or less in annual gross receipts. Under the final rule the accessibility of the simplified deduction method calculation is expanded to include employers that generate annual gross receipts of \$100 million or less. The expansion in the final rule allows approximately 2.2 million employer firms engaged in the

permitted production activity to use a far less complicated method to determine their deduction. The exact amount of regulatory savings this provides is not known at this time, but increasing the simplified deduction method availability to 99.5 percent of the employer firms engaged in the permitted activities should amount to a great savings to those firms."

It is nice to look at the glass as half full once in a while!

VISTA

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EXAMPLE

In this example, in stores where there was no price difference between the branded item and the comparable private-label item, the brand share was 20 percent. The regression model estimates that for each one dollar increase in price, the branded item loses 5 share points.

For instance, in stores where the price difference was \$3, the share of the branded item lost 15 share points (5 x 3) and dropped to 5 percent. The equation for this example is: Brand share = 20 - (5 x price gap). Brand share is an element of the profit equation. So, this brand share estimate will sit inside the profit equation.

The next step is to determine the optimal price in order to maximize profits. To

simplify the example, let's assume that there is a constant demand of 1,000 units. In this example, cost is fixed at \$7 per unit. Furthermore, this example will leave the competitor's price fixed at \$10 per unit. The price gap is: selling price - 10. Then the profit equation becomes:

Profit = (category volume x (a - b x (selling price - competitor price))) x (selling price - cost).

Profit = (1,000 x (20 - 5 ((selling price - 10))) x (selling price - 7)

With a fixed cost of \$7 per unit, any selling price below \$7 naturally leads to negative profit. The regression model for brand share estimates that with a selling price of \$14 (a price gap of \$4 = \$14 - \$10), the share, and therefore profit, goes to zero.

The equation for brand share is placed appropriately into the profit equation. By making a graph of this result, one can

easily see the retail selling price where profits are maximized. In this example, total profits are highest when the retail price is set to \$10.50.

POS data from the independent channel provide a meaningful laboratory for examining the effect of prices on market share. Continuing with the proper analysis, one can determine the optimal price point at which profits are maximized. In the example, a price slightly above the competitor resulted in a small loss in share, but produced the largest overall profit. In other circumstances, the optimal price might be higher or lower than the competitor price.

To learn more about Vista Information Services and hear how Vista can assist you with market information, contact us at (847) 253-6063 or visit our Web site at www.activant.com.

