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Pricing Principles from Psychology for Agricultural Organizations with Market Power

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Pricing Principles from Psychology for Agricultural Organizations with Market Power

In a recent paper, Li, Sexton, and Xia (2006) developed eight stylized facts that describe what is known about grocery retailer pricing and marketing behaviors. They concluded that economic models of competition and of market power were not consistent with most of these observations. It is likely that similar conclusions could be made after observing the pricing of other industries within the agribusiness sector. The selection of prices can have significant profit implications. For the average large U.S. corporation, price changes (on a percentage basis) have larger profit impacts than volume or cost changes (Docters, et. al., 2004). By better understanding the factors that influence the profitability of prices, principles can be developed that could help many firms enhance their pricing systems.

An explanation for the inconsistencies between observed prices and economic theory is that groups of companies in an industry may use different pricing systems. For example, many firms use cost-based pricing instead of demand-based methods. Cost-plus pricing was used for all products by 59.3 percent of British manufacturers and was used for some products by 32.8 percent. Marginal analysis was used for all products by only 2.7 percent of firms (Shipley 1983). A survey covering more types of British firms found that 20 percent used direct cost plus a variable markup and 17 percent used direct cost plus a fixed markup (Hall, Walsh and Yates 1997). A survey of U.S. manufacturers found that most employed more than one pricing technique. The most common method, cited by 56 percent of respondents, was cost-plus pricing (Noble and Gruca 1999). When

firms use cost-based pricing, they often consider both variable and fixed costs. One survey found 83 percent of U.S. firms used full costs, and another found that 69.5 percent used full costs (Govindarajan and Anthony 1983, Shim and Sudit 1995). Considering overhead or fixed costs in pricing decisions can lead to suboptimal choices (Cooper and Kaplan 1988). Because cost-based pricing ignores demand elasticities, it typically does not produce profit-maximizing outcomes (Lilien, Kotler and Moorthy 1992). Some authors criticize cost-based pricing for its "arbitrariness," or refer to it as "foolish," as a "delusion," or as "wishful thinking"(Morris and Morris 1990; Dolan and Simon 1996; Nagle and Hogan 2006; Baker 2006). Cost-based pricing is based on circular reasoning, where the number of products sold is first selected to determine unit costs and then price is set based on those costs, which affects the number of products sold. If the majority of firms in an industry use cost-based pricing or consider overhead or fixed costs when selecting prices, observed prices may not fit with traditional economic models.

Inconsistencies with economic theory could also arise if many firms follow marketing principles to develop prices. The marketing approach starts with economics and incorporates findings from psychology. Narasimhan and his colleagues believe that economic models have demonstrated their value, but point out that: "behavioral researchers have documented anomalies that point to systematic deviations from utility-maximizing behavior." (Narasimhan et al. 2005, p. 371). A comparison of the economics and marketing approaches toward pricing found important differences and concluded that marketing principles provide: "a richer and more empirically based treatment of the

pricing issue from the buyer's perspective . . . ." (Skouras, Avlonitis, and Indounas 2005, p. 362). Because the marketing approach incorporates principles from both economic and psychology, firms that use it may produce greater profits than firms who only use pricing principles from economics.

This paper reviews more than twenty pricing principles, developed by psychologists and consumer behaviorists, that may appear inconsistent with traditional economic theories. These principles, part of the marketing approach to pricing, have been developed by observing customer behavior in the market and many have been verified with laboratory or field studies. The principles will be grouped into four main categories: framing, congruency, context, and signaling. The paper concludes with a summary of how agribusinesses (who have enough market power to affect price) could use these pricing psychology principles to enhance their price selection and profitability.

Price Framing Principles

When product attributes are highlighted in ways perceived to be positive, customer preferences can change. One common framing example deals with hamburger. When the meat was described as "75 percent lean," consumers rated the product and its taste higher than when it was described as "25 percent fat" (Levin and Gaeth 1988; Donovan and Jalleh 1999). Price framing refers to how the price attributes are described. Seven price framing principles are described below.

The first price framing principle deals with the use of "free." Many retailers use "buy X, get one free" promotions because they can generate a larger response than equivalent price discounts (Diamond and Sanyal 1990; Munger and Grewal 2001). Sometimes price discounts can lead to questions about product quality. Equivalent "free" promotions do not seem to generate similar quality concerns (Chandran and Morwitz 2006). However, adding a free gift or premium with a high claimed value to an offer may lower the offer's total perceived value if the gift leads to doubt about the primary product's quality (Low and Lictenstein 1993). Another exception is with perishable products. People prefer "buy one, save 50%" over "buy one, get one free" if the product has a limited life (Sinha and Smith 2000).

Another common tactic used by retailers is multiple unit pricing (e.g., two for a dollar instead of 50-cents each). One study compared multiple unit pricing of 13 products with single unit pricing in a supermarket chain. The sales gain from price promotions expressed in multiple units (e.g., buy 2, 3, or 4 for a specific price) averaged 165 percent while the sales gain from equivalent promotions expressed in single units averaged 125 percent (Wansink, Kent, and Hoch 1998).

One suggestion why multiple unit pricing is effective is that it suggests to consumers the number of items to buy. When a sign suggested "Buy 18 for your freezer" without any price reduction, it significantly produced larger sales gains than a sign that said "Buy some for your freezer" (Wansink, Kent, and Hoch 1998). The suggested quantity or anchor becomes a starting point from which individuals modify their purchase

quantity. The same anchoring effect has been noted with buyer and seller prices. Both the willingness to pay and the willingness to accept were influenced by the presence of a number at the start of the decision process (Simonson and Drolet 2004).

Another application of anchoring is the use of limits. Posting a restriction on the number of items each individual can buy may increase both penetration (i.e., the percentage of customers who buy the product) and buying rate (i.e., the average number of items bought) (Wansink, Kent, and Hoch 1998). Limits on the purchase of promoted items in supermarkets increased sales an average of 544 percent, while the same price offers without limits increased sales by 202 percent (Inman, Peter, and Raghubir 1997). The limit should ideally be set slightly above the number of items most people purchase.

The next price framing principle involves varying the awareness or salience of the price. When people are reminded of the cost of an on-going service (e.g., a health club membership), it tends to temporarily stimulate consumption (Gourville and Soman 2002). When the payment is less transparent (e.g., prepaid accounts), people are more willing to buy (Soman 2003). Encouraging people to look at the credit card or think about paying with a credit card has been shown to raise their willingness to pay (Prelec and Simester 2001). Generally lower-priced products should have price discounts described in percentage terms while expensive items should have discounts described in absolute terms to emphasize the reduction (Lowry, Charles, and Lane 2005).

Another principle deals with how the price can be explained to customers. Three different options could be used to boost sales. The first might be called the “spare

change" effect. When a price can be described in portions of a whole currency (e.g., four quarters), people tend to be more willing to buy than when it is described in whole currency units (e.g., one dollar) (Raghubir and Srivastava 2002). The next option involves describing the cost on a per-day basis, sometimes called a pennies-a-day tactic. By changing the temporal frame of the price, demand for a good or service that is consumed over a length of time could be increased (Gourville 1998). Making explicit comparisons to other common purchases such as a cup of coffee or a can of soda per day can also boost sales. However, explicit comparisons do not help if the pennies-a-day tactic is already being used (Gourville 1999).

The last price framing principle is sometimes called multi-dimensional pricing. This is where two numbers are given, perhaps listing the size of a monthly payment and the number of months or specifying a payment in two currencies (e.g., dollars and frequent flyer miles). Because many buyers may not calculate the total cost, this tactic can also increase sales (Estelami 2003; Dreze and Nunes 2004). Some individuals are more likely to respond when shown a list price and a percentage discount instead of an absolute reduction or the net price because this tends to change the price salience (Kim and Kramer 2006). This framing principle, like the other six, could help a firm increase sales without changing price.

Price Congruency Principles

Marketers strive to make all their messages to prospective buyers consistent. Price congruency refers to making the information communicated by the price match the messages from other sources. Several price congruency principles are described below.

If the message communicated by an advertisement's typeface is not consistent with the messages from the text or the illustrations in an advertisement, message memorability tends to decrease (Childers and Jass 2002). Information communicated by price needs to mesh with other marketing communications. The use of larger or smaller fonts with higher prices and the use of terms (e.g., high versus low) that are congruent or incongruent with the price magnitude also can affect value perceptions and purchase likelihoods (Coulter and Coulter 2005).

If packaging interacts with price, messages from both should be similar to those from other marketing tools. Wansink (1996) found that larger food packages can increase the amount individuals consume per occasion. He speculated that this may occur because consumers believe larger packages have lower unit costs. Other research has found that the shape of a glass can influence how much of a liquid is poured into it. People tend to pour more into short, wide glasses than into tall, slender glasses (Wansink and Van Ittersum 2003). Changes in package height can also affect value perceptions (Yang and Rahubir 2005). Small variations in package layout and in how a package and its contents are shown to buyers can change the perceived volume (Krider, Raghubir, and Krishna 2001). Therefore, the confluence of perceived package volume, perceived value, and

other messages from packages may work with price to raise consumption rates and demand.

Price Context Principles

Information that people see around an item and the sequence they see this information can affect buyer willingness to pay. By changing the context of the price, prospect reactions may change. Six price context principles are described below.

When firms include their regular price in an advertisement or on a sign promoting a sale, this external reference price appears to influence what customers expect to pay in the future (Krishna et al. 2002; Chandrashekaran and Grewal 2006). Researchers have found that listing a competitor's price can have similar effects (Krishnan, Biswas, and Netemeyer 2006). When a competitor's price in shown in a print advertisement, it may influence store choices because it is viewed in the prospect's home (Grewal, Marmorstein, and Sharma 1996).

Price thresholds exist when price movements above or below a specific level result in particularly large volume changes. Although many assume thresholds exist at whole numbers, variations in the location of the thresholds across different buyer segments have made it difficult to identify these points with aggregate data. If customers plan to spend a specific amount on a purchase, a threshold can be created. In a toy store experiment, when the price of one product was just below $20, sales were high. Raising the price above $20 or lowering it significantly below $20 significantly reduced sales

(Gaur and Fisher 2005). Perhaps many customers intended to buy a gift for $20, creating a threshold at this price. Thresholds may also occur when shoppers have become accustomed to a particular price or when they may make comparisons with the prices of competitors. A recent study allowed kinks to form in demand functions and found that 76 percent of the brands studied had kinks or thresholds at either historical prices, competitor prices, or both (Pauwels, Srinivasan, and Franses 2007). This suggests that marketers need to be aware of when price changes may cross key price points.

In psychology, primacy and recency are principles that suggest people tend to remember their first and last impressions. Some retailers may try to build their desired image with customers by sending messages to shoppers at the beginning and at the end of shopping trips. Marketers may use a similar tactic when they show prospects the most expensive option first so that price becomes a reference for other lower-priced options.

Customers also evaluate a price using information provided by surrounding products. In laboratory experiments, Adaval and Monroe (2002) exposed individuals to lower or higher price information before or while they were reviewing different household products. When they saw the products in higher-priced contexts, they believed the products were less expensive. When they saw the products in lower-priced contexts, they believed they were more expensive.

If a firm provides shipping and handling or other services to customers, it may be unprofitable to keep charges for these services separate from the price. Offering free shipping can be a good temporary promotion, but the partitioned pricing principle

suggests that sales generally will be higher when these charges are listed separately (Morwitz, Greenleaf, and Johnson 1998). If customers usually decide to buy based on product price, they are still likely to complete the intended transaction after they observe the extra charges (e.g., port charges, mandatory gratuities, surcharges etc.). Including these fees in the product price would raise prices and could discourage some consumers from making purchases.

One benefit of being perceived as having high quality relative to others in the category is that asymmetries may exist in the cross price elasticities. When premium tier products are promoted, they can attract many buyers away from lower tier products. However, when lower tier products are promoted, they attract few buyers from the top tier (Blattberg and Wisniewski 1989; Sivakuma and Raj 1997). This price context effect, often referred to as asymmetric competition, implies that higher tier products should use deep, infrequent price promotions while lower tier brands should use shallow, frequent price promotions (Sivakumar 2000).

Price Signaling Principles

The last group of principles deals with messages people may receive from prices. Small changes in the price can influence the perceptions of the price and the perceptions of the product. Seven price signaling principles are described below.

One of the more controversial principles involves the use of odd numbers, especially nines, in prices. Much of this research has focused on the digit on the far right

of the price, the price ending. The typical finding is that, in many cases, prices that end in nines and fives produce higher sales than prices that are slightly higher or slightly lower (Schindler and Kibarian 1996; Coulter 2001; Bizer and Schindler 2005). This research suggests that demand function have segments with a positive slope. Other digits in the price also seem to be important (Aalto-Setala and Halonen 2004; Thomas and Morwitz 2005). These effects have been found in the laboratory, in purchase data (Kalyanam and Shively 1998), and in restaurant menus (Schindler and Warren 1988; Naipaul and Parsa 2001). These findings suggest that demand functions may have segments with positive slopes. Some evidence suggests that the use of odd numbers like nines and fives tends to reduce buyer recall and consumers may be less likely to notice price increases (Schindler and Wiman 1989; Schindler and Chandrashekaran 2004). Other research focuses on the symbolism of prices ending with nine and five and suggests that the product or service using these price digits could be perceived as having lower quality (Schindler and Kibarian 2001). Sales can be further enhanced if prices ending in nine are shown to the left of the text describing a product in an advertisement (Coulter 2002). As long as a message of lower quality is not a concern to firms, using nines and fives at the end of prices appears to provide several benefits.

Customers often note the typical frequency and depth of price promotions for brands. Deals may be more effective if they are less consistent or predictable (Alba et al. 1999; Krishna et al. 2002). In many circumstances, brands that are discounted frequently but at shallow levels will be perceived to have a lower average price than brands that are

discounted infrequently but have deeper levels. However, variations in the salience of the discount frequency in change the average price perceptions (Lalwani and Monroe 2005).

Many consumers do not remember prices after they make a purchase decision (Dickson and Sawyer 1990). Some firms may want increase the likelihood that customers to forget what they paid on the prior purchase occasion so that it does not become a reference point. One way to do this is to use prices that contain more syllables. Each extra syllable in a price tends to decrease the chance of it being recalled by 20 percent (Vanhuele, Laurent, and Dreze 2006).

Prestige pricing refers to how higher prices can suggest higher quality or a more distinctive product. Many case studies exist where marketers raised price and experienced sales increases. Other examples show that when prices are reduced, customers may have concerns about product quality. Some products can benefit by the quality signals communicated by higher prices and others do not (Verma and Gupta 2004). One key factor to strengthen the message price sends about quality is to make sure that other cues (e.g., warranty, brand name etc.) also send the same signals (Miyazaki, Grewal, and Goodstein 2005).

The final pricing psychology principle is called the price placebo effect. Shiv, Camron, and Ariely (2005) found that consumers who purchased energy drinks (thought to increase mental acuity) at a discount were able to solve fewer puzzles than those who purchased the drinks at full price. This suggests that higher prices, besides being

associated with higher product quality, can also be linked with differences in perceived product performance.

Conclusion

The principles reviewed in this paper may help agribusinesses develop more profitable prices for the products and services. One of the first issues discussed was the problem of cost-based pricing. Although moving away from cost-based pricing may improve pricing decisions, some companies may resist the change. There appears to be a bias or "cost-plus trap" that may encourage firms who have started collecting demand information to continue using cost-based pricing (Hanson and Kalyanam 1994).

Once firms have started using demand-based pricing, incorporating some of the findings from psychology and consumer behavior research can further enhance their profitability. Although using the pricing psychology principles, described in the four main categories of this paper, may not yield behaviors that are consistent with economic theory, these new pricing tactics are likely to help improve the firm's performance.

Although every marketer may not be able to use all the pricing psychology principles described in this paper, most should be able to find several that are particularly beneficial. They could employ price framing principles by using "free" in promotions, by quoting prices with multiple units, by providing anchors and limits on signage, by encouraging people to pay with credit cards, by describing price with portions of whole currency, on a per-day basis, or by making explicit comparisons, and by quoting prices

using two numbers. Agribusiness could use price congruency principles by making sure all messages communicated to consumers (including messages from the price and how it is shown) are consistent and could use price context principles by showing external reference prices, by watching for price thresholds, by sending important messages using primacy and recency, by varying the context where products are shown, by separating service charges from price, and by striving to be perceived as having the best quality in a category. Applications of price signaling principles could include using odd numbers, especially nines and fives, in prices, making deals less predictable and prices less memorable, and raising prices if this would enhance quality ratings or boost the perceived performance of the product.

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