

## ORGANIZATIONAL, INFORMATIONAL AND INDIVIDUAL DETERMINANTS OF COST-BASED VS. MARKET-BASED INDUSTRIAL PRICING STRATEGIES

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### ABSTRACT

There are two things we know about cost-based pricing. First, it is the most widely used method in industry. Second, marketing academics universally condemn its use. Unfortunately, there is little research about why cost-based pricing is so popular in practice. However, using cost-based pricing is not an either/or proposition. Most managers use a combination of cost-based and market-based pricing strategies. In this study, we examine how informational, organizational and individual factors may lead managers to put more emphasis on cost-based than market-based pricing strategies for industrial products.

### INTRODUCTION

Since the Hall and Hitch (1939) study, researchers have consistently found that cost-based pricing is the most widely used method in industry (Diamantopoulos 1991). Academics are similarly consistent in their condemnation of this practice. For example, Monroe (1990) claims that cost-plus pricing ignores demand factors and the consideration of price-volume-cost relationships. Nagle and Holden (1995: 4) suggest that cost-based pricing methods can result in over-pricing in weak markets and under-pricing in strong markets, the opposite of what is desired. While there has been a great deal of research documenting the use of cost-based pricing by managers, there has been little effort towards explaining why managers use cost-based pricing (Diamantopoulos 1994).

The lure of cost-based pricing must be very strong indeed since managers are seemingly unable to resist the tidal wave of normative pricing models in the academic literature which incorporate market factors such as consumer demand characteristics and expected competitive reactions into the pricing decision. In this study, we examine a set of informational, organizational and individual conditions under which a manager is likely to place more importance on cost-based pricing strategies than market-based pricing strategies when making an overall pricing decision for a single industrial product.

### THE PRICING WINDOW OF OPPORTUNITY

As most writers on pricing realize, costs have to be an integral element of the overall pricing decision. In fact, Monroe (1990) describes a, "pricing window of opportunity" which is bounded below by a firm's cost

structure and margin requirements. This window is bounded above by consumers' reservation prices and the prices being charged by the competition. Between these two boundaries lie the opportunities for pricing managers.

In our empirical study, we operationalize this metaphor by measuring the relative importance of the upper (market-based) and lower (cost-based) boundaries in the pricing decision for an individual industrial product. Respondents were provided with a description of ten pricing strategies. We used the Morris and Calantone (1990) framework to classify these pricing strategies as being either cost-based or market-based. Cost-based pricing strategies included cost-plus pricing, target-return pricing and contribution pricing. Market-based pricing strategies include skim pricing, penetration pricing, experience curve pricing, leader pricing, parity pricing, low-priced supplier pricing, complementary product pricing, bundling, and customer value pricing.

Previous research on pricing objectives shows that managers often use more than one objective in their pricing decisions (e.g., Diamantopoulos 1991). To reflect the similar complexity of the pricing strategy decision, we allowed respondents to indicate their usage of up to three pricing strategies (pre-testing showed that none of the managers used more than three strategies). Their responses to this question were ratio-scaled (importance weights summing to 100%).

Using these data, we constructed a three-level ordinal dependent variable based on the proportion of the importance of cost-based pricing in the manager's pricing decision (none, moderate and high). The "none" value corresponds to an importance of 0% for cost-based pricing and, therefore, 100% for market-based pricing. The moderate category ranged from greater than zero to less than 60% importance for cost-based pricing. Below 60%, the market-based strategies were more important than cost-based pricing strategies. The high level indicates a cost-based importance greater than or equal to 60%.

### FACTORS AFFECTING THE RELATIVE IMPORTANCE OF COST-BASED PRICING

In order to implement a market-based pricing strategy, a manager needs a number of different types of information. For example, the manager has to understand the degree of and bases of

segmentation in the market, the elasticity of demand, market growth rates, and so on. In addition, the manager should forecast how competitors will react to a price change. In contrast, the information required to implement a cost-based pricing strategy comes from the firm's accounting system. We expect that the conditions discussed below, the availability or nature of accounting information may affect the relative importance of cost-based pricing strategies.

### **Information about Demand**

In their criticisms of the use of cost-based pricing, most authors correctly point out that this approach to pricing ignores relevant information about market conditions (Harrison and Wilkes 1975). This leads to our first hypothesis:

Hypothesis 1: Managers with less information about market demand will place more emphasis on cost-based pricing strategies.

### **Bureaucratization**

As firms become larger, they tend to become increasingly difficult to control without formal management and planning systems (Tricker and Boland 1982). One by-product of such bureaucratization is an increased interest for detailed budgeting processes and a decreased concern for customer needs (Aplin and Cosier 1980). We expect that the bureaucratic processes which often grow along with the size of the firm will lead to increased reliance on accounting cost data for pricing decisions. This leads to our second hypothesis:

Hypothesis 2: Larger firms will place more emphasis on cost-based pricing strategies.

### **Size of Pricing Decision Group**

Many organizational decisions are made in a group setting including determining pricing strategy. For a group, the task of implementing a cost-based pricing strategy differs greatly from implementing a market-based pricing strategy. Cost-based pricing requires agreement on the correct basis for product cost (which itself might be a difficult problem) and the desired mark-up or margin. Once this number is established, the price is determined by the application of a simple arithmetic operation. Market-based pricing requires that the group share each member's private information on customers and competitors in addition to the evaluation of any common information available. Once this information is shared, it must be operationalized into a price level for the product which is a very difficult task (Morse and Zimmerman 1997).

Comparing the tasks facing groups considering cost-based and market-based pricing strategies, we see that these tasks vary in their technical as well as social demands (Herold 1979). Cost-based pricing strategies are low on both dimensions while market-based pricing strategies are high on both. As group size increases, the problems of coordinating the inputs from all group members increases as well (Herold 1979). As group size increases, the group may be motivated to focus on the easier problem of implementing a cost-based pricing strategy. Therefore, our third hypothesis is:

Hypothesis 3: The larger the price-setting group, the greater the emphasis on cost-based pricing strategies.

### **Demands on Manager's Time**

Due to their limited information processing capacity as human beings, managers will tend to simplify their decision making where possible (March and Simon 1958). If a manager is responsible for the pricing of a single product, all else equal, s/he can devote more time to gathering information about competitors and customers. Therefore, the more products for which a given manager is responsible for pricing decisions, the greater the demands on the manager's time and the higher the motivation to simplify the process. In such a situation, researchers argue that managers within an organization may notice and attend to only a small proportion of external information (Mintzberg 1973). Their tendency is to focus on information which is more easily accessed and is more familiar (O'Reilly 1990) such as is available from the organization's accounting system. Consequently our fourth hypothesis is:

Hypothesis 4: The larger the number of products being priced by the manager, the greater emphasis on cost-based pricing strategies.

### **Experience**

The main components of a manager's experience in an industry are information about customers and competitors (Porac, Thomas and Baden-Fuller 1989). An inexperienced manager, however, has no such storehouse of knowledge upon which to draw. In the absence of such information, the inexperienced manager might choose to rely more on the available accounting cost data and, therefore, put more emphasis on cost-based pricing strategies. This leads to our fifth hypothesis:

Hypothesis 5: With increasing experience, the manager will place less emphasis on cost-based pricing strategies.

We tested these hypotheses using a survey of marketing managers which is described next.

### EMPIRICAL STUDY

Our empirical study examined the pricing decisions of differentiated, durable capital goods in business-to-business markets. Fifteen such industries were identified using 4-digit SIC codes. These industries included heavy equipment, machine and metal working tools, electronic equipment, and transportation equipment.

Contact names and addresses were purchased from Dun and Bradstreet. A total of 1021 firms was selected from this list. Each firm was sent a survey package including a personalized, hand-signed cover letter with a pledge of confidentiality of individual responses, a four-page survey and a \$1 incentive. A total of 347 surveys were returned to the authors. Of these, 62 were returned blank and 15 were incomplete or otherwise unusable. This yielded a gross response rate of 34% (347/1007 delivered). The total usable sample was 270 for a usable response rate of 27% which is a similar sample size and usable response rate to recent surveys of marketing managers. Readers interested in more details about the survey administration should contact the authors.

The mean importance of cost-based pricing was 38% and the median was 23%. One hundred and sixteen (43%) respondents allocated no importance to cost-based pricing in their decision. There were 52 (19%) respondents with a moderate level (between 0% and 60%). Ninety-nine respondents (37%) allocated more than 60% to cost-based pricing. Three respondents were dropped due to lack of complete data on the independent variables.

The scales used to measure the independent variables addressed the ease of estimating the market demand for the product, the company size in terms of annual dollar sales, the number of people involved in the pricing decision, the number of products the manager is personally involved with for pricing, and the number of years the manager has been in the industry.

### Results

To assess the relationship between the importance of cost-based pricing and the informational, organizational and personal factors, we used an ordinal probit model. The base level was the "no importance" level. Therefore, the coefficients indicate the direction of influence on increasing levels of importance for cost-based pricing. The results of the model estimation are presented in Table 1.

TABLE 1: ORDERED PROBIT MODEL RESULTS

Variable	DF	Estimate	Std. Err.	Chi-Square	Pr > Chi
Intercept	1	-0.326	0.287	1.28	0.26
Estimate demand	1	0.071	0.043	2.69	0.10
Size of firm	1	-0.082	0.046	3.17	0.07
Number of people	1	-0.009	0.025	0.16	0.69
Number of products	1	-0.012	0.007	2.17	0.14
Experience	1	0.015	0.009	2.56	0.10
Intercept (for other level of DV)	1	0.508	0.064		

The coefficient for the ease of estimating demand in the market is positive and significant at the  $p < 0.10$  level. This means that managers are likely to place more weight to cost-based pricing when demand is difficult to estimate. Therefore, we find support for Hypothesis 1.

The coefficient for firm size is negative and significant at the  $p < 0.07$  level. This result is the opposite of our expectation. It turns out that larger firms place less weight on cost-based pricing than smaller firms. Therefore, we reject Hypothesis 2.

Note that the resources required to evaluate market-based pricing strategies are much greater than those needed to arrive at a price using cost-based methods. One possible explanation for our results is that larger firms make such informational resources more readily available to managers.

The size of the group (Hypothesis 3) and the number of products being priced (Hypothesis 4) had no significant effect on the weight allocated to cost-based pricing. While the coefficient for the number of products is not significant ( $p < 0.15$ ), it is interesting to note that the sign is in the wrong direction. This might be a function of the identifiability of the pricing strategy decision when a single manager is assigned this responsibility. Using cost-based pricing strategies in this situation may give these managers an easier way to justify their decisions to superiors. An interesting future direction for research would be to manipulate accountability and other task characteristics to examine how they affect the usage of cost-based pricing.

Finally, we find that the weight assigned to cost-based pricing increases with the experience of the manager ( $p < 0.10$ ). This is the opposite of our expectation. Therefore, we reject Hypothesis 5. This is the most curious result in our study. One possible

explanation is that less experienced managers are younger and, therefore, closer to the academy which preaches the evils of cost-based pricing strategies. In addition, more recent graduates may be better trained in using the latest market-based pricing methods and the information systems required to support their use. On the other hand, one might argue that more experienced managers build their assumptions about customer and competitor reaction into the margin targets or mark-up levels. For example, a more experienced manager should have a good sense of how his/her own firm's cost structure compares to that of competitors. In addition, long experience in the market provides an experienced manager past data on how price changes, especially price increases, are greeted by customers. By combining this information, the manager may use "target contribution margin" pricing but be able to work with superiors to establish an appropriate level of contribution margin for this specific product facing these competitors. In the absence of understanding how managers actually implement cost-based pricing strategies in their companies, it may be premature to condemn this practice out of hand.

### CONCLUSIONS

While the study of pricing remains a very active research topic, there continues to be a disconnect between the normative methods suggested by the academic literature and the pricing methods used in actual practice. Following the release of every empirical pricing paper which shows that cost-based strategies are widely used in industry comes the inevitable response from academics that managers (again!) are being short-sighted or acting sub-optimally.

While there is a blizzard of articles on how managers should be setting prices, there is very little research about how managers actually formulate pricing strategy (for an exception, see Bonoma, Crittenden and Dolan 1988). There is even less understanding of why managers use the cost-based pricing strategies which have been shown to lead to problems in so many situations addressed in the normative pricing literature. This study represents a small step in trying to understand why managers might persist in relying heavily on cost-based pricing strategies. It also provides a starting point for future research into how managers actually establish pricing strategies. Perhaps when we understand more about why cost-based methods are so widely used by managers, we can make more progress in gaining acceptance and usage of more appropriate market-based pricing strategies.

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