



PRICE AND PROFIT MANAGEMENT

As a manager of an agribusiness firm, your major responsibility lies in the area of decision making. The decisions with which you are confronted may concern production, purchases, merchandising, finance, personnel or other similar subjects. These decisions may be relatively routine and of little consequence to your business, or they may be more complex and have a major impact upon your firm's operations. Regardless, decisions must be made and a manager must take this responsibility seriously.

One of the most common, yet most important, areas requiring a manager's decision making participation is price setting. Obviously, price does have a major impact on an agribusiness firm, particularly a firm engaged in farm supply operations*. This impact is usually felt most directly through its affect on the firm's profit. How does your firm establish a price for the products or services it sells? How closely do you follow the pricing patterns of your competitors? Do you make price adjustments indiscriminately or do you consider the effect price increases or decreases will have on the volume of sales and the profitability of the firm?

What are the effects of a decision to change price? Initially one would suspect that a price change would have an effect on the level of your customers' demand for the product.

Normally you would associate a price decrease with a resultant increase in units sold (and visa versa). But what about your firm's gross profit? How will it be affected by

your decision to decrease price? This is the big unknown. Intuitively you know that if, as a result of a price decrease, the number of units sold increases enough to more than compensate for the reduced margin per unit, then gross profits will increase. Unfortunately, intuition is a poor substitute for sound managerial judgment in matters of such importance. This paper, therefore, is designed to provide for the manager some factual evidence of the relationship between price and gross profit. Hopefully, this evidence, when combined with sound judgment, will enable agribusiness managers to function more proficiently as price setting decision makers.

Some Definitions

In an attempt to avoid later confusion and enhance your understanding of the subject, I will first define those terms to be used in our price: profit discussions.

Gross Profit is defined as Total Sales Revenues less Total Cost of Goods Sold. Hence, if your total retail sales of Type A fertilizer were \$10,000 and your wholesale purchases of this product cost \$8,000, then your gross profit would be \$2,000.

Net Profit is defined as Gross Profit less Operating Cost (variable costs) and Overhead (fixed costs). If, in our example, wages, utilities, rent, and other variable resources cost \$600, while depreciation on buildings and equipment (a fixed cost) totaled \$400, then net profit would be \$1,000 (or \$2,000 less \$600 + \$400).

Gross Margin is defined as:

$$\frac{\text{Retail} - \text{Wholesale Price Per Unit} \times 100}{\text{Retail Price Per Unit}} ;$$

* *Farm Store Merchandising*, July 1970, page 54.

and is normally expressed as a percentage. If, in our example, Type A fertilizer was purchased wholesale for \$8 per bag and sold retail at \$10 per bag, our gross margin would be 20 percent. Gross margin is not to be confused with the term “*Markup*” which is common to businessmen and also expressed as a percentage; markup being defined as:

$$\frac{\text{Retail - Wholesale Price Per Unit} \times 100}{\text{Wholesale Price Per Unit}}$$

or 25 percent in our example.

The Problem

Let’s continue with our fertilizer example and illustrate why decisions concerning price adjustments are difficult for many managers. Suppose a competing fertilizer firm located nearby is selling Type A fertilizer retail for \$9 per bag. In an attempt to meet competition, you are considering a \$1 per bag reduction in your retail price. Your decision on whether or not to make the price reduction will undoubtedly rest on several factors; the most important of which is the effect the price reduction will have on your firm’s gross profit. Obviously, the price reduction will decrease gross margin from 20 to only 10 percent. However, one would also expect the price reduction to create an increase in the level of demand for your Type A fertilizer. At present you are selling 1,000 bags annually. Following the price reduction you would hope that unit sales would increase enough to compensate for the smaller gross margin and, therefore, *not adversely affect your firm’s gross profit*. Now ask yourself how much unit sales would have to increase before gross profit would be no less than prior to the price decrease? After some thought and calculations, you will conclude that a 100 percent increase in unit sales will be required. By selling 2,000 bags of Type A fertilizer at \$9 per bag you will again generate the \$2,000 gross profit. Few managers are intuitively aware that a 100 percent increase in unit sales is required to fully offset a 10

percent decrease in price per unit and leave gross profit unaffected. Perhaps this is the reason why those managers making price adjustments quickly and without a conscious consideration of the evidence soon find themselves faced with the confusing dilemma of a growing total sales revenue and a declining gross profit.

The Solution

As was indicated earlier, a consideration of the evidence, when combined with sound judgment, will assist the manager in finding the correct solution to the price:profit decision making problem. The following tables were designed and prepared in an attempt to bring the evidence quickly and easily to the attention of managers*. Table 1 is based on the following price:profit relationship:

$$\frac{\text{Percentage Price Change}}{\% \text{ Gross Margin} - \% \text{ Price Chg}} \times 100 =$$

Percentage Unit Sales
Adjustment Required to Leave
Gross Profit Unaffected

More specifically, Table 1 removes the guesswork and intuition from the manager’s acquisition of evidence on potential adjustments of price, unit sales and gross profit.

Using the example noted earlier, let’s observe how Table 1 may be used in price and profit management. The manager of the fertilizer firm is contemplating a 10 percent (\$1 per bag) reduction in his retail price in an attempt to meet competition. The manager is well aware that such a price reduction will reduce gross margin from 20 to only 10 percent and that a unit sales increase is likely to result. The unanswered question concerns the exact

** A special word of appreciation is due Mr. Frank Pirnique for his invaluable computer-preparation of Tables 1 to 6.

size of the unit sales increase required to exactly offset the reduction in gross margin and, thereby, leave gross profit for the firm at a level no smaller than before the price decrease. To answer this question, the manager turns to Table 1, finds the appropriate percentage price change listed in the first column (i.e., -10 percent), then moves horizontally across the row of figures until reaching the column labeled with the appropriate current (i.e., prior to a price adjustment) percentage gross margin (i.e., 20 percent). The figure listed at the intersection of the -10 percent price row and 20 percent margin column shows the percentage increase in unit sales required to maintain gross profit. Finding that a 100 percent increase in unit sales will be needed, the manager must now add to this evidence his judgment as to whether or not this sales increase can be achieved. Then he is prepared to make the appropriate pricing decision.

Suppose the manager was contemplating a 5 percent price increase instead. Table 1 shows that with a current gross margin of 20 percent, a price increase from \$10 to \$10.50 per bag of Type A fertilizer would cause no decrease in gross profit for the firm so long as unit sales did not drop below 800 bags, i.e., up to a 20 percent decline in unit sales volume.

Alternative Uses

Tables 1 to 6 have other related uses. For example, suppose you are currently selling 10,000 tons of a special type of feed mixture annually at \$50 per ton retail. You purchased the feed mixture wholesale at \$45 per ton. A large local feedlot operator approaches you one day and offers to purchase 10,000 tons of feed annually if you will reduce the listed retail price per ton. Obviously, with this 100 percent increase in unit sales volume, you can afford to reduce your retail price somewhat without damaging your firm's gross profit. But how much of a reduction in retail price can you afford? Using Table 1, move

down the 10 percent current gross margin column until you find the 100 percent increase entry (which refers to required unit sales increase), and then move horizontally across this row until you find the entry in the price change column. It shows that you could reduce your listed retail price by 5 percent (to \$47.50 per ton) and, with the increase in unit sales, not adversely affect your firm's gross profit.

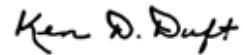
In the feed example above, price could be reduced, unit sales increased and yet leave gross profit unaffected. But what about the added expense of handling the increase in tonnage? Surely operating costs would increase as a result of the tonnage increase and, thereby, adversely affect the firm's net profit. Similarly, any decrease in tonnage resulting from a price increase would probably decrease handling (variable) costs somewhat. If overhead is large compared to operational costs, the adjustment to net profit as a result of handling a greater or smaller volume may be relatively small. However, since it is just as vital to protect a firm's net profit as it is to guard gross profits, some managers may wish that any price adjustment (particularly a decrease) be associated with a slight increase in the firm's gross profit. Hence, any increase in operational costs due to the volume increase will not adversely affect net profit.

Tables 2 to 6 are to be interpreted exactly as Table 1 except that they are based on a 5, 10, 15, 20 and 25 percent increase in gross profit for volume increases and a 5, 10, 15, 20 and 25 percent decrease in gross profit for volume decreases. The manager simply selects that table which correctly represents his views of the preferred gross profit change and proceeds as before. For example, if the manager of our Type A fertilizer operation expects and the resultant increase in unit sales volume to cause a 20 percent rise in operational costs, then he should choose Table 5 as his source of evidence, thereby lending some protection to his net profit through a larger gross profit.

Summary

All agribusiness firms deal with a product or a service. It is the manager's responsibility to make adjustments in the price of this product or service when such a decision is warranted. Because of the direct link between price and firm profit, a manager cannot make a pricing decision based only on intuition or a competitive urge. Instead, the manager must fully understand the price:profit relationship

and use the evidence generated by this relationship to make only those price adjustments which lend protection to a firm's profits. This paper provides quick and easy access to the price:profit evidence. It is your responsibility to use this evidence wisely and attain the final judgment.



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