

Product Pricing and Breakeven Concept

The Mississippi State University Extension Service (MSUES) has worked with hundreds of entrepreneurs and small businesses since its beginning. The people who come for help range from those with an idea for a new BBQ sauce to those with millions of dollars looking to invest in a major processing operation. Clients big or small should know how to price a product properly.

Costs and Gross Margin

Those investigating the possibility of a new business startup often ask, "How do I price my product to make sure I'm making a profit?" Of course, this question raises another question: "Are people willing to pay that price for my product?" The answers to these questions require a cost analysis of your product. Without a detailed cost analysis of the product, it is difficult to determine pricing that is acceptable to the consumer and profitable for you. When it comes to selling products, the old adage "buy low, sell high" applies. The question to address concerning your product price is "how high?" To begin deciding a product's price, determine the total cost of manufacturing your product. Failure to account for total cost is a common mistake that leads to underpricing your product. Total cost includes total variable costs plus total fixed costs. Variable costs are those costs directly related to the production of the product; they vary with the number of units produced. Variable costs directly related to produc-

tion may also be referred to as cost of goods sold (COGS). Variable costs include ingredients, direct labor, packaging, utilities and others. Fixed costs, those costs that must be paid whether or not a product is manufactured, are categorized as overhead costs. These costs include depreciation, insurance, rent, taxes, interest on investment, and others. Gross margin is the percentage of sales dollars available to pay fixed costs and return a profit. Gross profit is the gross margin percentage expressed in dollar terms. After you calculate your production costs, you can use the following formula to determine a selling price for your product.

Selling Price Determination

To calculate selling price, you must record costs and identify a desired gross margin percentage.

Determine your variable costs of production, which are those expenses directly related to the production of the product (COGS).

Determine what mark-up (gross) margin you want to use. A gross margin percentage of 40% in food wholesale pricing is common.

Divide your variable costs (cost of goods sold) by $(1 - \text{markup margin } \%)$ to get the minimum price you should accept for your product.

$$\text{Selling Price} = (\text{Cost of goods sold}) / (100\% - \% \text{ of gross margin desired})$$



MISSISSIPPI STATE
UNIVERSITY
EXTENSION SERVICE

For example, if the desired gross margin is 40 percent and the cost of goods sold is \$2.25 per unit of product, the formula is as follows:

$$\text{Selling Price} = \$2.25 / (100\% - 40\%) = \$2.25 / (60\%) = \$2.25 / 0.60 = \$3.75$$

Profits and Break-Even Analysis

One of the most pressing issues in considering whether to begin manufacturing a new product (or to add a product to an existing line) is to determine if that product will be profitable. Figuring out that answer is difficult at best, but there is a simple way to figure out which products to eliminate from consideration and which to pursue. This method, called a "break-even analysis," determines the point at which sales (revenues) are exactly equal to costs (expenses). At the break-even point, zero profit is made and zero losses are incurred. The break-even analysis helps determine how many units of a product must be sold to cover all costs. This makes it possible to determine the sales volume needed to cover your costs, defined as your business break-even point.

The basic equation used for determining the break-even point is

$$\text{Price} * \text{Quantity Sold} = \text{COGS} * \text{Quantity Sold} + \text{Fixed Costs}$$

Because profit is zero at the break-even point, sales must, by definition, be equal to the total expenses. "Quantity sold" represents the number of units to be sold to break even (zero profit). From the previous example, the cost per unit of product is \$2.25, the selling price per unit is \$3.75, and there is an annual fixed cost of \$23,000 to manufacture the product. How many units must be sold to break even? Going back to the equation and listing the known values results in this equation:

$$3.75 * \text{Quantity Sold} = 2.25 * \text{Quantity Sold} + 23,000$$

$$3.75 * \text{Quantity Sold} - 2.25 * \text{Quantity Sold} = 23,000$$

$$1.50 * \text{Quantity Sold} = 23,000$$

$$\text{Quantity Sold} = 15,333$$

In this case, 15,333 units of the product must be sold to cover COGS and fixed costs. In dollar terms, the break-even point is \$57,498.75 (where total sales of the product = 15,333 units sold * \$3.75 per unit).

This is the number of units of product that must be sold to cover all variable and fixed costs and enable your firm to reach the zero economic profit point. Every unit sold beyond 15,333 units represents an additional \$1.50 in profit (\$3.75 - \$2.25 = \$1.50 profit per unit.) After 15,333 units are sold, all fixed costs are covered by the gross sales of these units. Producing another unit beyond this break-even quantity of 15,333 units at the break-even price of \$3.75 results in economic profit earned after variable costs (COGS) are paid.

Other Considerations

Product pricing should always begin with determination of the costs associated with producing the product. To be certain that all costs have been accounted for, you should have a good recordkeeping system in place and keep it current with new pricing information. Using the above formula to determine a selling price will allow you to make a profit beyond the breakeven point, assuming the market exists for your product. Other considerations may justify selling at a higher price. Once the minimum price has been determined, other factors in the market may allow you to increase the price, which will allow you to reach the breakeven point with fewer units sold. Consider your competition: what competitors exist in the market area? Is your product of higher quality than the competition's product? Is your product unique in the market or do close substitutes exist?

Conclusion

For assistance in pricing your product, contact Drs. Ken Hood or Kimberly Morgan, Extension specialists in Mississippi State University's Department of Agricultural Economics. You can reach them by phone at (662) 325-2750 or by e-mail at hood@agecon.msstate.edu or morgan@agecon.msstate.edu. For additional information, including publications related to building your business plan and direct marketing your food products as well as e-commerce learning modules, please visit the Entrepreneurs and Their Communities resource area on the national eXtension portal at <http://www.extension.org/entrepreneurship>.

Copyright 2012 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

By **Dr. Ken Hood**, Extension professor, Department of Agricultural Economics, and **Dr. Kim Morgan**, Assistant Extension professor, Department of Agricultural Economics.

Discrimination based upon race, color, religion, sex, national origin, age, disability, or veteran's status is a violation of federal and state law and MSU policy and will not be tolerated. Discrimination based upon sexual orientation or group affiliation is a violation of MSU policy and will not be tolerated.

Information Sheet 1948

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. DR. GARY JACKSON, Director (POD 11-12)



MISSISSIPPI STATE
UNIVERSITY

EXTENSION SERVICE

msu*cares.com*