Pricing Decisions

APPENDIX 6A

Managerial Accounting for Managers
Fifth Edition

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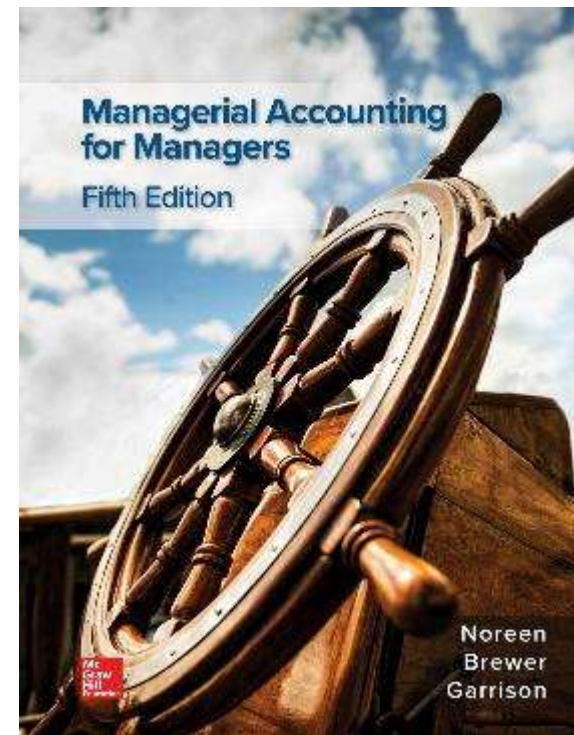Garrison

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Factors That Influence Pricing Decisions

Many factors can influence how companies establish their selling prices; we focus on three of those factors— customers, competitors, and costs.

# Factors That Influence Pricing Decisions – Customer Factors

Customers usually possess two things—latitude and private information—that complicate the pricing process.

Many companies have diverse customers who do not have an identical willingness to pay a particular price for a given product. In these situations, companies are keenly interested in quantifying the customers' price elasticity of demand.

Price Elasticity of Demand

Elasticity of Demand

The price elasticity of demand measures the degree to which the unit sales of a product or service are affected by a change in unit price.

Change in Price *versus* → **Change in Unit Sales**
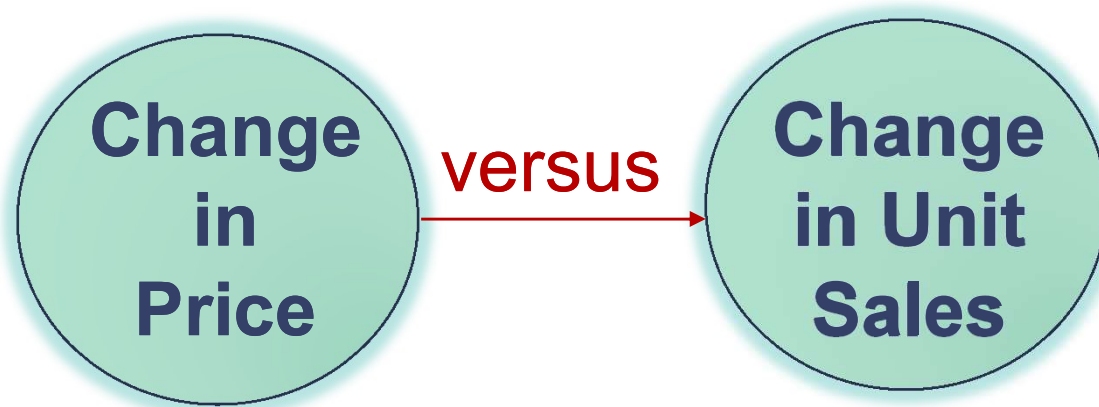
Price Elasticity of Demand – Ineleastic

Demand for a product is *inelastic* if a change in price has little effect on the number of units sold.

Example
The demand for designer perfumes sold at cosmetic counters in department stores is relatively inelastic.

Price Elasticity of Demand – Elastic

Demand for a product is *elastic* if a change in price has a substantial effect on the number of units sold.

Example
The demand for gasoline is relatively elastic because if a gas station raises its price, unit sales will drop as customers seek lower prices elsewhere.

Price Elasticity of Demand – Markups

As a manager, you should set *higher* markups over cost when demand is *inelastic,* and *lower* markups over cost when demand is *elastic*.

Competitors

Competitors have an important effect on a company's pricing decisions because they provide reference prices that influence the price elasticity of demand.

Costs

Customers and competitors play important roles in determining the price ceiling for a company's products and services. A company's price floor is determined by its incremental costs.

It is important to recognize that *if a company prices all of its products above the price floor, it does not guarantee the company will earn a profit.* This is because the total sales revenue earned minus incremental costs may not cover the company's fixed costs.

Cost-Plus Pricing

Companies frequently use a pricing approach where they mark up cost. A product's markup is the difference between its selling price and its cost and is usually expressed as a percentage of cost.

Selling price = (1 + Markup percentage) × Cost

If a company wanted to have a 20% markup over cost and the cost of a product was $50, then the selling price would be $60.

Selling Price = (1 + .20) × $50

Selling Price = $60

Learning Objective 8

Compute the selling price of a product using the absorption costing approach to cost-plus pricing.

The Three-Step Process

First, a company needs to calculate its unit product costs (including direct materials, direct labor, variable manufacturing overhead, and fixed manufacturing overhead).

Second, it needs to determine its markup percentage on absorption cost.

Third, it needs to multiply a product's unit product cost by the markup percentage to determine the product's selling price.

The Cost Base

Under the absorption approach to cost-plus pricing, the cost base is the *absorption costing unit product cost* rather than the variable cost.

The cost base includes direct materials, direct labor, and variable and fixed manufacturing overhead.

Determining a Product's Selling Price – Example

Here is information provided by the management of Ritter Company.

	Per Unit	Total
Direct materials	$ 6	
Direct labor	4	
Variable manufacturing overhead	3	
Fixed manufacturing overhead		$70,000
Variable S & A expenses	2	
Fixed S & A expenses		60,000

Management will use the absorption costing approach to cost-plus pricing to determine the selling price of the product in a three-step process.

Determining a Product's Selling Price – Step 1

The first step in the absorption costing approach to cost-plus pricing is to compute the unit product cost.

	Per Unit
Direct materials	$ 6
Direct labor	4
Variable manufacturing overhead	3
Fixed manufacturing overhead	7
Unit product cost	$ 20

($70,000 ÷ 10,000 units = $7 per unit)

Determining the Markup Percentage – Step 2

The second step in the absorption costing approach to cost-plus pricing is to determine the markup percentage.

The equation for calculating the markup percentage on absorption cost is shown below.

$$\text{Markup \% on absorption cost} = \frac{(\text{Required ROI} \times \text{Investment}) + \text{S \& A expenses}}{\text{Unit sales} \times \text{Unit product cost}}$$

The markup must be high enough to cover S & A expenses and to provide an adequate return on investment.

Determining the Markup Percentage – Step 2 – Example

Let's assume that Ritter must invest $100,000 in the product and market 10,000 units of product each year. The company requires a 20% ROI on all investments. Let's determine Ritter's markup percentage on absorption cost.

Determining the Markup Percentage – Step 2 – Example Calculation

$$\text{Markup \% on absorption cost} = \frac{(20\% \times \$100{,}000) + (\$2 \times 10{,}000 + \$60{,}000)}{10{,}000 \times \$20}$$

Variable S & A per unit

Total fixed S & A

$$\text{Markup \% on absorption cost} = \frac{(\$20{,}000 + \$80{,}000)}{\$200{,}000} = 50\%$$

Determining a Product's Selling Price – Step 3

The third step in the absorption costing approach to cost-plus pricing is to determine the product's selling price by multiplying its unit product cost by the sum of 1 + the markup percentage.

	Per Unit
Direct materials	$ 6
Direct labor	4
Variable manufacturing overhead	3
Fixed manufacturing overhead	7
Unit product cost	$ 20
50% markup	10
Selling price	$ 30

$$\text{Selling price} = (1 + \text{Markup percentage}) \times \text{Cost}$$

Problems with the Absorption Costing Approach

The absorption costing approach essentially *assumes* that customers *need* the forecasted *unit sales* and will pay *whatever price* the company decides to charge. This is flawed logic simply because customers have a choice.

Problems with the Absorption Costing Approach – Example

Let's assume that Ritter sells only 7,000 units at $30 per unit, instead of the forecasted 10,000 units. Here is the income statement.

RITTER COMPANY
Income Statement
For the Year Ended December 31, 2017

Sales (7,000 units × $30)	$	210,000
Cost of goods sold (7,000 units × $23)		161,000
Gross margin		49,000
SG&A expenses		74,000
Net operating loss	$	(25,000)

$$\text{ROI} = \frac{\$ (25,000)}{\$ 100,000} = \text{-25\%}$$

Problems with the Absorption Costing Approach – Example Calculation

Let's assume that Ritter sells only 7,000 units at $30 per unit, instead of the forecasted 10,000.

Absorption costing approach to pricing is a safe approach only if customers choose to buy at least as many units as managers forecasted they would buy.

Cost of goods sold (7,000 units × $23)		161,000
Gross margin		**49,000**
SG&A expenses		**74,000**
Net operating loss	**$**	**(25,000)**

$$ROI = \frac{\$ \quad (25,000)}{\$ \quad 100,000} = \text{-25\%}$$

Learning Objective 9

Understand how customers' sensitivity to changes in price should influence pricing decisions.

Pricing and Customer Latitude

Customer latitude recognizes that customers can purchase a competitor's product or allocate their spending budget to some other product altogether. This latitude should be taken into account when setting prices.

As an example, management is considering increasing the price of Apple-Almond Shampoo from $5.00 to $5.50, but is fully aware that this 10% increase in price may result in a decline in unit sales from 200,000 to 170,000 because of the latitude that customers have in their purchasing decisions. Will there be an increase in profit with the higher price?

Profit = (P − V) × Q − Fixed expenses
Current Profit: $30,000 = ($5.00 - $2.00) × 200,000 - $570,000
Revised Profit: $25,000 = ($5.50 - $2.00) × 170,000 - $570,000

In this case, an increase in price may cause a decrease in volume that will result in a reduced profit for the company.

Customer Latitude – A Closer Look

Based on our previous calculations, we know that increasing the price from $5.00 to $5.50 could reduce profits if unit sales decrease by 15%. If unit sales decrease by more than 15%, profits will decline even more. But what would be the financial implications if unit sales actually decreased by something less than 15%?

Management could explore this possibility by calculating the unit sales (Q) needed at the higher price ($5.50) to achieve the same profit ($30,000) that is earned at the lower price ($5.00). Assuming that fixed expenses remain unchanged, that critical value of unit sales (Q) can be solved for as follows:

$$\text{Profit} = (P - V) \times Q - \text{Fixed expenses}$$
$$\$30,000 = (\$5.50 - \$2.00) \times Q - \$570,000$$
$$Q = 171,429 \text{ units (rounded)}$$

This calculation tells us that if the company sells 171,249 units at the selling price of $5.50, it will earn the same profit that it earned at the lower price of $5.00.

Choosing Optimal Prices – The Influence of Customer Latitude

Microsoft Excel, using the Solver Add-in, calculates an optimal price for any product or service once the percentage change in price and percentage change in unit sales have been specified. Assuming that a 10% increase in price causes a 13% decrease in unit sales, the optimal pricing model calculates an optimal price of $6.34 which would result in a net operating income of $43,547.

	A	B	C	D	E	F	G
1		Optimal Pricing Model					
2	Apple-Almond Shampoo:						
3	Current unit sales	200,000					
4	Current selling price per unit	$5.00					
5	Variable cost per unit	$2.00					
6	Traceable fixed costs	$570,000					
7							
8	Percentage change in selling price	10%					
9	Percentage change in unit sales	-13%					
10							
11		Per Unit		Unit Sales		Total	
12	Sales	$ 6.34	×	141,467	=	$ 896,481	
13	Variable expenses	2.00	×	141,467	=	282,934	
14	Contribution margin	$ 4.34	×	141,467	=	613,547	
15	Traceable fixed expenses					570,000	
16	Net operating income					$ 43,547	
17							

A Visual Perspective of the Optimal Pricing Model

A visual perspective can also illustrate the optimal pricing model. In this graph, the price that maximizes profit is a selling price of $6.34, which results in a total profit of $43,547.
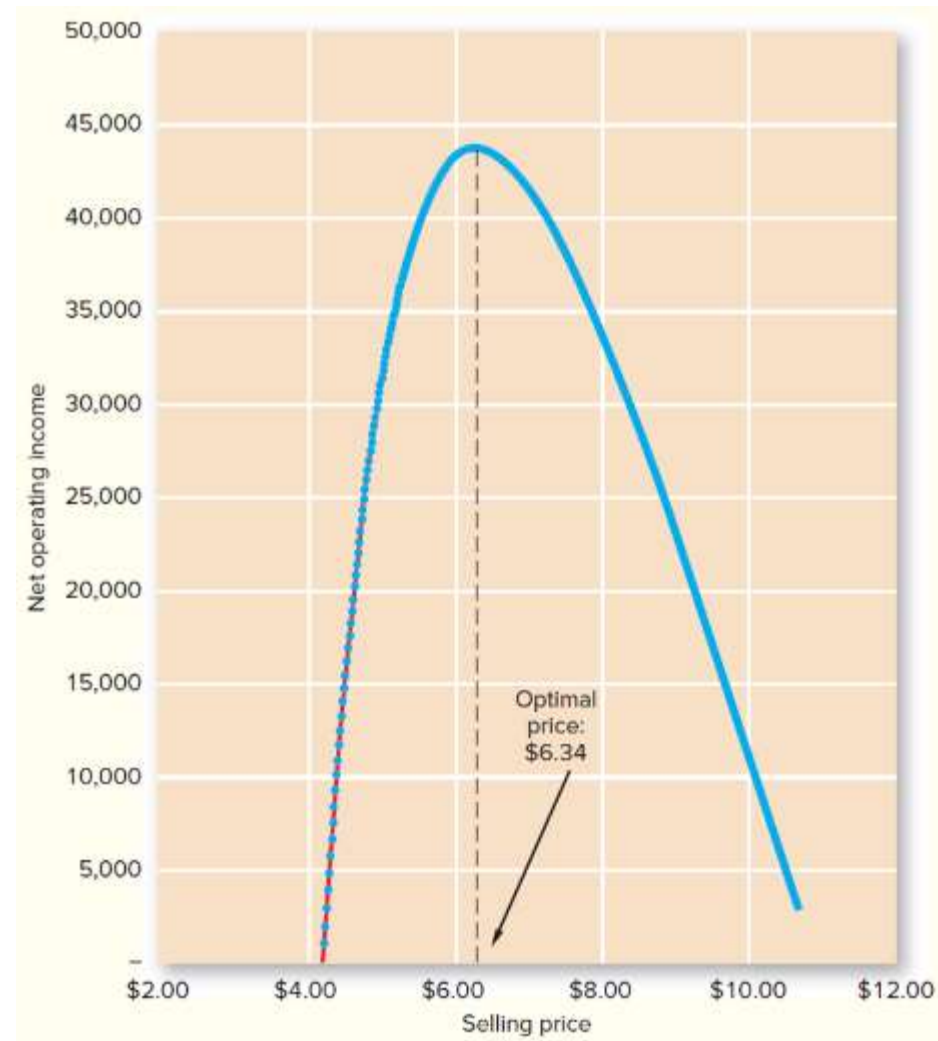
Learning Objective 10

Analyze pricing decisions using value-based pricing.

Value-Based Pricing

An alternative to cost-plus pricing is value-based pricing. Companies that use value-based pricing establish selling prices based on the economic value of the benefits that their products and services provide to customers.

One approach to value-based pricing relies on a concept known as the economic value to the customer (EVC). A product's economic value to the customer is the price of the customer's best available alternative plus the value of what differentiates the product from that alternative. The price of the best available alternative is known as the reference value, whereas the value of what differentiates a product from the best available alternative is known as the differentiation value.

Economic value to the customer = Reference value + Differentiation value

Reference value ≤ Value-based price ≤ EVC

Economic Value to the Customer – An Example

As an example, assume that the managers of Hike America magazine want to establish a selling price for a one-month full-page advertisement in their magazine. Hiking Trails magazine, their primary competitor, charges $5,000 per month for a full-page ad. The managers of Hike America believe that they can justify a higher selling price by quantifying the EVC. The chart calculates a differential value of $4,000.

	Hike America	Hiking Trails
Number of readers (a)	200,000	300,000
Percent of readers who buy advertised products each month (b)	.002	.001
Number of readers per month buying advertised products (a) × (b)	400	300
Monthly sales per reader who buys advertised products (a)	$100	$80
Contribution margin ratio (b)	25%	25%
Monthly contribution margin per reader who buys advertised products (a) × (b)	$25	$20
Number of readers per month buying advertised products (a)	400	300
Monthly contribution margin per reader who buys advertised products (b)	$25	$20
Contribution margin per month provided by a full-page ad (a) × (b)	$10,000	$6,000
Differentiation value		$4,000

Economic value to the customer = Reference value + Differentiation value
Economic value to the customer = $5,000 + $4,000
Economic value to the customer = $9,000

Reference value ≤ Value-based price ≤ EVC
$5,000 ≤ Value-based price ≤ $9,000

Learning Objective 11

Compute the target cost for
a new product or service.

Target Costing

Target costing is the process of determining the *maximum allowable cost* for a new product and then developing a prototype that can be made for that maximum target cost figure. The equation for determining a target price is shown below:

Target cost = Anticipated selling price – Desired profit

Once the target cost is determined, the product development team is given the responsibility of designing the product so that it can be made for no more than the target cost.

Reasons for Using Target Costing – Part 1

Two characteristics of prices and product costs include:

1. The market (i.e., supply and demand) determines price.

2. Most of the cost of a product is determined in the design stage.

Reasons for Using Target Costing – Part 2

Target costing was developed in recognition of the two characteristics summarized on the previous screen.

Target costing begins the product development process by recognizing and responding to *existing market prices.* Other approaches allow engineers to design products without considering market prices.

Reasons for Using Target Costing – Part 3

Target costing focuses a company's cost reduction efforts in the *product design* stage of production.

Other approaches attempt to squeeze costs out of the manufacturing process after they come to the realization that the cost of a manufactured product does not bear a profitable relationship to the existing market price.

Target Costing: An Example

Handy Appliance feels there is a niche for a hand mixer with special features. The marketing department believes that a price of $30 would be about right and that about 40,000 mixers could be sold. An investment of $2 million is required to gear up for production. The company requires a 15% ROI on invested funds.

Let's see how we determine the target cost.

Target Costing: Example Solution

Projected sales (40,000 units × $30)	**$ 1,200,000**
Desired profit ($2,000,000 × 15%)	**300,000**
Target cost for 40,000 mixers	**$ 900,000**
Target cost per mixer ($900,000 ÷ 40,000)	**$ 22.50**

Each functional area within Handy Appliance would be responsible for keeping its actual costs within the target established for that area.

End of Appendix 6A