**Pricing Products and Service**

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|  | **Introduction** |    |   |

**Some products have an established market price.** Consumers will not pay more than this price and there is no reason for a supplier to charge less—the supplier can sell all that it produces at this price. Under these circumstances, the supplier simply charges the prevailing market price for the product. Markets for basic raw materials such as farm products and minerals follow this pattern.What happens when a business is faced with the problem of setting its own prices? Clearly, the pricing decision can be critical. If the price is set too high, customers won't buy the company's products. If the price is set too low, the company's costs won't be covered.The usual approach in pricing is to *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.http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg716_0.jpgFor example, a company that uses a markup of 50% adds 50% to the costs of its products to determine selling prices. If a product costs $10, then the company would charge $15 for the product. This approach is called **cost-plus pricing**because a predetermined markup percentage is applied to a cost base to determine the selling price.Two key issues must be addressed with the cost-plus approach to pricing. First, what cost should be used? Second, how should the markup be determined? Several alternative approaches are considered, starting with the approach generally favored by economists.***The Economist’s Approach to Pricing***

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| If a company raises the price of a product, unit sales ordinarily fall. Because of this, pricing is a delicate balancing act in which the benefits of higher revenues per unit are traded off against the lower volume that results from charging a higher price. The sensitivity of unit sales to changes in price is called the *price elasticity of demand*. |   |  |

***Elasticity of Demand***A product's price elasticity should be a key element in setting its price. The **price elasticity of demand**measures the degree to which a change in price affects the unit sales of a product or service. Demand for a product is said to be *inelastic* if a change in price has little effect on the number of units sold. The demand for designer perfumes is relatively inelastic. Raising or lowering prices on these luxury goods has little effect on unit sales. The same can be said for status items.On the other hand, demand for a product is *elastic* if a change in price has a substantial effect on the volume of units sold. An example of a product whose demand is elastic is gasoline. If a gas station raises its price for gasoline, unit sales will drop as customers seek lower prices elsewhere.Price elasticity is very important in determining prices. Managers should set higher markups over cost when customers are relatively insensitive to price (i.e., demand is inelastic) and lower markups when customers are relatively sensitive to price (i.e., demand is elastic). This principle is followed in department stores. Merchandise sold in the bargain basement has a much lower markup than merchandise sold elsewhere in the store because customers who shop in the bargain basement are much more sensitive to price (i.e., demand is elastic).If the total fixed costs are the same whether the company charges $0.60 or $0.70, they cannot be relevant in the decision of which price to charge for the soap. **The optimal selling price should depend on two factors—the variable cost per unit and how sensitive unit sales are to changes in price.** Fixed costs play no role in setting the optimal price. **Fixed costs are relevant when deciding whether to offer a product but are not relevant when deciding how much to charge for the product.**Despite the apparent optimality of prices based on marking up variable costs according to the price elasticity of demand, surveys consistently reveal that most managers approach the pricing problem from a completely different perspective. They prefer to mark up some version of full, not variable, costs, and the markup is based on desired profits rather than on factors related to demand. This approach is called the *absorption costing approach to cost-plus pricing.*

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|  | **The Absorption Costing Approach to Cost-Plus Pricing** |    |   |

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| The absorption costing approach to cost-plus pricing differs from the economist’s approach both in what costs are marked up and in how the markup is determined. Under the absorption approach to cost-plus pricing, the cost base is the absorption costing unit product cost rather than variable cost.Absorption costing uses the total direct costs and overhead costs associated with manufacturing a product as the cost base. Generally accepted accounting principles (GAAP) require absorption costing for external reporting. Absorption costing is also known as "full absorption costing.” The difference is the treatment of fixed overhead expenses.  |   |  |

***Setting a Target Selling Price Using the Absorption Costing Approach***To illustrate, assume that the management wants to set the selling price on a product that has just undergone some design modifications. The accounting department has provided cost estimates for the redesigned product as shown below:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg720_1.jpg  The first step in the absorption costing approach to cost-plus pricing is to compute the unit product cost. (Absorption costing includes fixed manufacturing overhead). This amounts to $20 per unit at a volume of 10,000 units, as computed below:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg721_1.jpgThe company has a general policy of marking up unit product costs by 50%. A price quotation sheet is presented below. **Note that selling and administrative expenses are not included in the cost base. Instead, the markup is supposed to cover these expenses.**

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|   | Price Quotation Sheet— Absorption Basis (10,000 Units)http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg721_2.jpg |   |

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***Determining the Markup Percentage***The markup percentage of 50% could be a widely used rule of thumb in the industry or just a company tradition that seems to work. The markup percentage may also be the result of an explicit computation. The markup over cost should be largely determined by market conditions. However, many companies base their markup on cost and desired profit. The reasoning goes like this. The markup must be large enough to cover selling and administrative expenses and provide an adequate return on investment. Given the forecasted unit sales, the markup can be computed as follows:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg721_3.jpgTo show how this formula is applied, assume the company invests $100,000 in operating assets such as equipment to produce and market 10,000 units of the product each year. If a 20% ROI is required, then the markup for the product would be determined as follows:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg721_4.jpgThe markup of 50% leads to a target selling price of $30. *If the company actually sells 10,000 units* of the product at this price, the company's ROI on this product will indeed be 20%. However, if it turns out that more than 10,000 units are sold at this price, the ROI will be greater than 20%. If less than 10,000 units are sold, the ROI will be less than 20%. ***The required ROI will be attained only if the forecasted unit sales volume is attained.***

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|   | Income Statement and ROI Analysis—Actual Unit Sales = 10,000 Units; Selling Price = $30http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg722_1.jpg |   |

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***Problems with the Absorption Costing Approach***The absorption costing approach makes pricing decisions look deceptively simple. All a company needs to do is compute its unit product cost, decide how much profit it wants, and then set its price. It appears that a company can ignore demand and arrive at a price that will safely yield whatever profit it wants. However, as noted above, the absorption costing approach relies on a forecast of unit sales. Neither the markup nor the unit product cost can be computed without such a forecast.The absorption costing approach essentially assumes that customers *need* the forecasted unit sales and will pay whatever price the company decides to charge. However, customers have a choice. If the price is too high, they can buy from a competitor or they may choose not to buy at all. Suppose, for example, when the price is set at $30, it sells only 7,000 units rather than the 10,000 units forecasted. As shown below, the company would then have a loss of $25,000 on the product instead of a profit of $20,000. Some managers believe that the absorption costing approach to pricing is safe. This is an illusion. The absorption costing approach is safe only if customers choose to buy at least as many units as managers forecasted they would buy.

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|   | Income Statement and ROI Analysis—Actual Unit Sales = 7,000 Units; Selling Price = $30http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg723_1.jpg |   |

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|    | **Target Costing** |    |   |

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| Our discussion thus far has presumed that a product has already been developed, has been costed, and is ready to be marketed as soon as a price is set. In many cases, the sequence of events is just the reverse. That is, the company already *knows* what price should be charged based on the market, and the problem is to *develop* a product that can be marketed profitably at the desired price. Even in this situation, where the normal sequence of events is reversed, cost is still a crucial factor. The company can use an approach called *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 profitably made for that maximum target cost figure.  |   |  |

The target cost for a product is computed by starting with the product's anticipated selling price and then deducting the desired profit, as follows:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg724_1.jpg**The product development team is then 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***The target costing approach was developed in recognition of two important characteristics of markets and costs. The first is that many companies have less control over price than they would like to think. The market (i.e., supply and demand) really determines price, and a company that attempts to ignore this does so at its peril. Therefore, the anticipated market price is taken as a given in target costing. The second observation is that most of a product's cost is determined in the design stage. Once a product has been designed and has gone into production, not much can be done to significantly reduce its cost. Most of the opportunities to reduce cost come from designing the product so that it is simple to make, uses inexpensive parts, and is robust and reliable. If the company has little control over market price and little control over cost once the product has gone into production, then it follows that the major opportunities for affecting profit come in the design stage where valuable features that customers are willing to pay for can be added and where most of the costs are really determined. So that is where the effort is concentrated—in designing and developing the product. The difference between target costing and other approaches to product development is profound. Instead of designing the product and then finding out how much it costs, the target cost is set first and then the product is designed so that the target cost is attained.***An Example of Target Costing***To provide a simple example of target costing, assume the following situation: Handy Company wishes to invest $2,000,000 to design, develop, and produce a new hand mixer. The company's Marketing Department surveyed the features and prices of competing products and determined that a price of $30 would enable it to sell an estimated 40,000 hand mixers per year. Because the company desires a 15% ROI, the target cost to manufacture, sell, distribute, and service one mixer is $22.50 as computed below:http://highered.mheducation.com/sites/dl/premium/0077317769/student/pg725_1.jpgThis $22.50 target cost would be broken down into target costs for the various functions: manufacturing, marketing, distribution, after-sales service, and so on. Each functional area would be responsible for keeping its actual costs within target.  |

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**EXERCISE A–2 Absorption Costing Approach to Setting a Selling Price [LOA–2]**

Guided Example A-2

Martin Company is considering the introduction of a new product. To determine a selling price, the company has gathered the following information:

***Required:***

The company uses the absorption costing approach to cost-plus pricing.

1. Compute the markup required to achieve the desired ROI.
2. Compute the selling price per unit.

**EXERCISE A–3 Target Costing [LOA–3]**

Guided Example A-3

Shimada Products Corporation of Japan is anxious to enter the electronic calculator market. Management believes that in order to be competitive in world markets, the price of the electronic calculator that the company is developing cannot exceed $15. Shimada’s required rate of return is 12% on all investments. An investment of $5,000,000 would be required to purchase the equipment needed to produce the 300,000 calculators that management believes can be sold each year at the $15 price.

***Required:***

Compute the target cost of one calculator.

**PROBLEM A–5 Standard Costs; Absorption Costing Approach to Setting Prices[LOA–2]**

Wilderness Products, Inc., has designed a self-inflating sleeping pad for use by backpackers and campers. The following information is available about the new product:

1. An investment of $1,350,000 will be necessary to carry inventories and accounts receivable and to purchase some new equipment needed in the manufacturing process. The company’s required rate of return is 24% on all investments.
2. A standard cost card has been prepared for the sleeping pad, as shown below:

1. The only variable selling and administrative expense will be a sales commission of $9 per pad. Fixed selling and administrative expenses will be (per year):

1. Because the company manufactures many products, no more than 38,400 direct labor-hours per year can be devoted to production of the new sleeping pads.
2. Manufacturing overhead costs are allocated to products on the basis of direct labor-hours.

***Required:***

1. Assume that the company uses the absorption approach to cost-plus pricing.
	1. Compute the markup that the company needs on the pads to achieve a 24% return on investment (ROI) if it sells all of the pads it can produce.
	2. Using the mark-up you have computed, prepare a price quotation sheet for a single sleeping pad.
	3. Assume that the company is able to sell all of the pads that it can produce. Prepare an income statement for the first year of activity and compute the company’s ROI for the year on the pads, using the ROI formula from Chapter 11.
2. After marketing the sleeping pads for several years, the company is experiencing a falloff in demand due to an economic recession. A large retail outlet will make a bulk purchase of pads if its label is sewn in and if an acceptable price can be worked out. What is the minimum acceptable price for this special order?

**PROBLEM A–8 Target Costing [LOA–3]**

National Restaurant Supply, Inc., sells restaurant equipment and supplies throughout most of the United States. Management is considering adding a machine that makes sorbet to its line of ice cream making machines. Management will negotiate the price of the sorbet machine with its Swedish manufacturer.

Management of National Restaurant Supply believes the sorbet machine can be sold to its customers in the United States for $4,950. At that price, annual sales of the sorbet machine should be 100 units. If the sorbet machine is added to National Restaurant Supply’s product lines, the company will have to invest $600,000 in inventories and special warehouse fixtures. The variable cost of selling the sorbet machines would be $650 per machine.

***Required:***

1. If National Restaurant Supply requires a 15% return on investment (ROI), what is the maximum amount the company would be willing to pay the Swedish manufacturer for the sorbet machines?
2. The manager who is flying to Sweden to negotiate the purchase price of the machines would like to know how the purchase price of the machines would affect National Restaurant Supply’s ROI. Construct a chart that shows National Restaurant Supply’s ROI as a function of the purchase price of the sorbet machine. Put the purchase price on the *X*-axis and the resulting ROI on the *Y*-axis. Plot the ROI for purchase prices between $3,000 and $4,000 per machine.
3. After many hours of negotiations, management has concluded that the Swedish manufacturer is unwilling to sell the sorbet machine at a low enough price so that National Restaurant Supply is able to earn its 15% required ROI. Apart from simply giving up on the idea of adding the sorbet machine to National Restaurant Supply’s product lines, what could management do?

**Decreasing the selling price may generate enough additional unit sales to make carrying the sorbet machines more profitable.**

**Improve the selling process to decrease the variable selling costs.**

**Are the new warehouse fixtures really necessary?**