CHAPTER 5

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Monitoring Food and Beverage Product Costs

OVERVIEW

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This chapter teaches you how to calculate the product-related costs of making the menu items you sell. In addition, you will learn how to compare the product cost results you actually achieve to those you planned to achieve. The chapter concludes by identifying steps you can take to help ensure you meet your operation's profit goals by monitoring your product costs and then reducing those costs if they are too high.

Chapter Outline

- Cost of Sales
- Computing Cost of Food Sold
- Computing Cost of Beverage Sold
- Computing Costs with Transfers
- Utilizing the Cost of Sales Formula
- Reducing the Cost of Sales Percentage
- Technology Tools
- Apply What You Have Learned
- Key Terms and Concepts
- Test Your Skills

LEARNING OUTCOMES

At the conclusion of this chapter, you will be able to:

- Accurately calculate food and beverage costs and their cost percentages.
- Compare product costs achieved in an operation against the product costs the operation planned to achieve.

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• Apply strategies designed to reduce an operation's cost of sales and its cost of sales percentage.

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)ST OF SALES

In Chapters 3 and 4, you learned how to properly purchase, receive, inventory and issue food and beverage products. You also learned in Chapter 1 that, when it follows the *Uniform System of Accounts for Restaurants*, an operation's food and beverage costs are reported two ways: (1) as a total dollar amount and (2) as a percentage of the operation's total sales.

The USAR recommends reporting food cost separately from beverage cost. When the amounts of an operation's individual food and beverage costs are combined, they are referred to as the operation's total cost of sales.

The ability to accurately calculate and report an operation's cost of sales is an important management skill. In nearly all foodservice operations, a manager's ability to control cost of sales will be used as a primary measure of that manager's competence and his or her abilities.

All restaurant managers must be able to calculate their actual food costs. In those operations that sell alcoholic beverages, the manager must also know how to calculate the operation's actual beverage costs. As well, managers should know how to estimate, or forecast, their future product costs. When they can do that accurately, they are able to compare the cost of sales their operations' actually achieve to the operations' cost of sales forecasts. If significant differences exist, they can take the steps needed to improve their operations product usage and, as a result, help to meet their profit goals.

COMPUTING COST OF FOOD SOLD

It is important to recognize that the cost of sales incurred by an operation in an accounting period is most often *not* equal to the amount of food purchases in that same accounting period. Because that is true, managers must use a very specific process to accurately calculate their cost of sales and cost of sales percentages. The cost of food sold formula they use to do so is shown in Figure 5.1.

It is important to recognize that an operation's cost of food sold is actually the dollar amount of all food sold *plus* the costs of any food which was thrown away, spoiled, wasted, or stolen. To best use the cost of food sold formula properly, managers must fully understand each of its individual parts.

BEGINNING INVENTORY

When calculating cost of food sold, **beginning inventory** is the dollar value of all food on hand at the beginning of an accounting period. It is determined by completing

FIGURE 5.1	Formula	for	Cost	of	Food	Sold

Beginning Inventory	
PLUS	
<u>Purchases</u> = <u>Food available for sale</u>	
LESS	
Ending Inventory = Cost of food consumed	
LESS	
Employee Meals = Cost of food sold	

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a physical inventory, which is an actual count and valuation of all foods in storage and/or in production areas (see Chapter 4).

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If, when taking a physical inventory, products are undercounted, your food costs will ultimately appear higher than they actually are. If, on the other hand, you erroneously overstate the value of products in inventory, a process called **padding inventory**, your costs will appear artificially low.

It is important that managers take accurate physical inventories and, for the purpose of calculating food or beverage costs, to recognize that the beginning inventory for an accounting period is always the ending inventory amount from the prior accounting period. Thus, for example, an operation's ending inventory for January 31st will become the operation's beginning inventory for February 1st.

PURCHASES

Purchases are the sum cost of all food bought during the accounting period. The purchases amount is determined by properly summing the value of all delivery invoices and other bills for products purchased in the accounting period.

FOOD AVAILABLE FOR SALE

Food available for sale is the sum of the beginning inventory and purchases made during a specific accounting period. Some managers refer to food available for sale as goods available for sale because this term was commonly used prior to the publication of the most recent edition of the USAR. Regardless of the term used, each represents the value of all food that was available for sale during that accounting period.

ENDING INVENTORY

Ending inventory refers to the dollar value of all food on hand at the end of the accounting period. It also must be determined by completing an accurate physical inventory.

COST OF FOOD CONSUMED

The cost of food consumed is the actual dollar value of all food used, or consumed, by the operation. Again, it is important to note that this is not merely the value of all food sold but, rather, the value of all food no longer in the establishment due to sale, spoilage, waste, or theft. Cost of food consumed also includes the cost of any complementary meals served to guests as well as the value of any food (meals) eaten by employees.

EMPLOYEE MEALS

Employee meal cost is actually a labor-related, not food-related, cost (see Chapter 7). Free or reduced-cost employee meals are a benefit much in the same manner as medical insurance or paid vacation. Therefore, the value of this benefit, if provided, should not be recorded as a cost of food but, rather, as a cost of labor. The dollar value of food eaten by employees is *subtracted* from the cost of food consumed and *added* to the cost of labor to more accurately reflect an operation's true cost of food sold. Food products do not have to be consumed as a full meal in order to be valued as a labor cost. Soft drinks, snacks, and other food items consumed by employees are all considered employee meals for the purpose of computing cost of

food sold. If records are kept on the number of employees consuming food each day, monthly employee meal costs are easily determined.

Some operators prefer to assign a fixed dollar value to each employee meal served in an accounting period rather than record the amount of food eaten by each employee. Thus, for example, if an operator assigns a value of \$3.00 to each employee meal served and 1,000 meals are served in a month, the value of employee meals for that month would be \$3,000 (\$3.00 per meal \times 1,000 meals served = \$3,000).

COST OF FOOD SOLD

Cost of food sold, or cost of goods sold, is the actual amount of all food expenses incurred by the operation *minus* the cost of employee meals. It is not possible to accurately determine this number unless a beginning physical inventory has been taken at the start of the accounting period, followed by another physical inventory taken at the end of the accounting period.

Calculating actual cost of food sold on a regular basis is important because it is not possible to improve your food cost control efforts unless you first know what your food costs actually are. In nearly all operations, cost of food sold is calculated on at least a monthly basis because it is reported on the operation's income statement (P&L). In many operations, these same costs are calculated on a weekly or even on a daily basis!

FOOD COST PERCENTAGE

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To properly analyze an operation's cost of sales for a specific accounting period, managers must first determine the amount of food used in that period and the amount of sales achieved in the same period. When they have done so, they can calculate their food cost percentage.

HERE'S HOW IT'S DONE 5.1

Managers calculate their food cost percentages by first accurately determining their cost of food sold and then dividing by their food sales:

 $\frac{\text{Cost of food sold}}{\text{Food sales}} = \text{Food cost \%}$

Some foodservice managers, however, are more interested in how much it costs to serve each of their guests rather than their operations' food cost percentages. Operations in which this average cost of meals served value is important include military bases, hospitals, senior living facilities, school and college foodservice operations, and business organizations that provide free meals to their workers.

Whether the guests served are soldiers, patients, residents, students, or workers, calculating an operation's cost per meal is easy because it uses a variation of the basic food cost percentage formula. The formula used to calculate the average cost of meals served in an operation is:

 $\frac{\text{Cost of food sold}}{\text{Total meals served}} = \text{Cost per meal}$

For example, assume a manager's operation incurred \$25,000 in cost of food sold during an accounting period. In that same accounting period, the manager served 10,000 meals. To calculate this operation's cost per meal, the manager applies the cost per meal formula. In this example:

 $\frac{\$25,000}{10,000 \text{ meals}} = \2.50 per meal

Whether managers are most interested in their cost of food percentage or in their cost per meal served, it is essential that they first calculate accurately the amount of their cost of food sold.

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The formula used to compute an operation's food cost percentage is:

 $\frac{\text{Cost of food sold}}{\text{Food sales}} = \text{Food cost \%}$

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An operation's food cost percentage represents that portion of food sales that was spent on all food expenses. To illustrate, assume you managed an operation that achieved \$50,000 in food sales in the current accounting period. In the period you spent \$15,000 for food. Your food cost percentage for the period would be calculated as:

 $\frac{\$15,000}{\$50,000} = 30\%$

COMPUTING COST OF BEVERAGE SOLD -

The proper computation of a beverage cost percentage is identical to that of a food cost percentage, with one important difference. Typically, there is no equivalent for employee meals because the consumption of alcoholic beverage products by employees who are working should be strictly prohibited. Thus, "employee drinks" would never be considered as a reduction from overall beverage cost. However, it is important to recognize that an operation's **cost of beverage sold** is actually the dollar amount of all beverage products sold as well as the costs of all beverages that were given away, wasted, or stolen. The cost of beverage sold formula is shown in Figure 5.2.

BEVERAGE COST PERCENTAGE

To properly analyze an operation's **beverage cost percentage**, managers must first determine the amount of beverages used in that period and the amount of beverage sales achieved in the same period.

The formula used to compute an operation's beverage cost percentage is:

$\frac{\text{Cost of beverage sold}}{\text{Beverage sales}} = \text{Beverage cost \%}$	
Deverage sales	
0	$\frac{1}{1}$ Severage sold = Beverage cost %

To illustrate, assume you managed an operation that achieved \$100,000 in beverage sales in the current accounting period. In the period, you spent \$18,000 for beverages. Your beverage cost percentage for the period would be calculated as:

\$18,000 \$100,000 = 18%

FIGURE 5.2 Formula for Cost of Beverage Sold

Beginning Inventory
PLUS
Purchases = Beverages available for sale
LESS
Ending Inventory = Cost of beverage sold

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COMPUTING COSTS WITH TRANSFERS

In some operations other reductions from, and additions to, food and beverage expenses must be considered when accurately calculating the operation's cost of goods sold. To illustrate, consider the situation you would face as a manager of Rio Lobo's, a popular Tex-Mex style restaurant that has a high volume of alcoholic beverage sales. To prepare your drinks, your bartenders use a large quantity of limes, lemons, and fruit juices issued from the kitchen. You would, of course, like your beverage cost percentage to reflect all of the costs associated with buying and using the beverages as well as the food ingredients needed in drink preparation. As a result, you must transfer the cost of any food ingredients used in drink production away from your cost of food sold and add them to your costs of beverage sold.

Assume further that, in this operation, your kitchen produces several standardized recipes that require the use of wines that are taken from your wine inventory as needed and beers that are issued from the bar. As a result you must transfer the cost of these wines and beers away from your cost of beverage sold and add them to your cost of food sold.

Location: <u>Rio L</u>	Location: <u>Rio Lobo</u> Month/Date: <u>1/15–1/21</u>				/Date: <u>1/15–1/21</u>	
Product Value						
Date	ltem	Quality	To Bar	From Bar	Issued By	Received By
1/15	Lemons	6	\$ 0.72		т. s.	В. Н.
	Limes	2 (large)	1.28		т. s.	В. Н.
	Cream	2 qt.	4.62		т. s.	В. Н.
1/16	Chablis	1 gal.		\$11.10	В. Н.	т. s.
1/17	Coffee	2 lb.	10.70		T. S.	В. Н.
1/18	Cherries	½ gal.	12.94		T. S.	В. Н.
1/18	Lemons	4	0.48		T. S.	В. Н.
	Limes (small)	12	2.24		т. S.	В. Н.
	lce cream (vanilla)	1 gal.	13.32		т. S.	В. Н.
1/19	Pineapple juice	½ gal.	3.00		т. s.	В. Н.
1/20	Tomato juice	1 case	20.00		т. s.	В. Н.
1/20	Sherry	750 ml		6.70	В. Н.	т. s.
1/21	Celery	1 bunch	0.54		T. S.	В. Н.
Total Product Value			\$69.84	\$17.80		

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FIGURE 5.3 Rio Lobo Weekly Transfer Record

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The value of transfers to and from one operating unit to another should be recorded on a product transfer form. The form includes a space for the amount of product transferred, the product's value, and the individuals authorizing the transfers. Figure 5.3 shows the way in which a product transfer form would be used at Rio Lobo's for the *first week* of the month of January.

After all appropriate transfers have been made, accurate cost of beverage sold and cost of food sold calculations can be made.

Figure 5.4 illustrates the formulas you would use to calculate Cost of Food Sold and Cost of Beverage Sold at Rio Lobo's including transfers for the *entire month* of January.

FIGURE 5.4 Cost of Food Sold and Cost of Beverage Sold with Transfers

Accounting Period: 1/15-2/15	
Unit Name: <u>Rio Lobo's</u>	
Cost of Food Sold	
Beginning inventory	\$25,000
PLUS	
Purchases	40,000
= Food available for sale	\$65,000
LESS	
Ending inventory	\$27,000
= Cost of food consumed	\$38,000
LESS	
Food transfers from kitchen	5,000
PLUS	
Beverage transfers to kitchen	3,000
LESS	
Employee meals	1,000
= Cost of food sold	\$35,000
Cost of Beverage Sold	
Beginning beverage inventory	\$12,000
PLUS	
Purchases	18,000
= Beverages available for sale	\$30,000
LESS	
Ending inventory	14,000
= Cost of beverage consumed	\$16,000
PLUS	
Food transfers from kitchen	5,000
LESS	
Beverage transfers to kitchen	3,000
= Cost of beverage sold	\$18,000

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UTILIZING THE COST OF SALES FORMULA .

When managers truly understand the cost of sales formulas for food and beverages, they are in a good position to perform three additional tasks that can improve the management of their operations:

- 1. Calculating cost of sales for individual product categories
- 2. Estimating daily cost of sales
- 3. Comparing actual costs to attainable costs

CALCULATING COST OF SALES FOR INDIVIDUAL PRODUCT CATEGORIES

In some cases, managers are interested in knowing the cost of sales for their individual inventory items or groups of items in addition to their overall cost of sales. To illustrate, consider the manager of Benjamin's steakhouse. In the month of January, Benjamin's achieved \$190,000 in food sales. Figure 5.5 details Benjamin's food usage in five major inventory categories for the month.

In this case, the manager has decided to analyze her product usage in terms of five categories of food items. This is because, although she is interested in her overall food cost and food cost percentage, she is also interested in her meat cost percentage, as well as her product usage in other specific areas.

Calculating individual costs for her various product categories simply requires that she identify the desired product subcategories. She would then take beginning and ending inventories for each product category and then apply the cost of sales formula to determine the cost of the goods (products) sold in each category.

Because this manager understands the cost of sales formula, she can calculate food cost percentages by product category as well as calculate each category's proportion of her total cost, as shown in Figure 5.6.

Figure 5.6 shows that Benjamin's food cost percentage for January was 34.2 percent ($$65,000 \div $190,000 = 34.2\%$). To calculate the food cost percentages in each category, the manager at Benjamin's uses \$190,000 as the denominator in her food cost percentage calculations and the total amount of the cost of food sold in each product category as the numerator.

In some cases, managers want to know the proportion of total food cost accounted for by each product category. To calculate the proportion of total product cost percentage, the manager at Benjamin's would use the following formula:

Cost in product category Total cost in all categories	= Proportion of total product cost
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Unit Name: Benjamin's					Date: 、	January 31
	Meat	Seafood	Dairy	Produce	Other	Total
Beginning inventory	\$26,500	\$ 4,600	\$ 7,300	\$ 2,250	\$23,000	\$ 63,650
Purchases	33,800	17,700	4,400	15,550	1,800	73,250
Goods available	60,300	22,300	11,700	17,800	24,800	136,900
Ending inventory	28,000	10,900	6,000	4,500	21,000	70,400
Cost of food consumed	32,300	11,400	5,700	13,300	3,800	66,500
Employee meals	900	200	100	250	50	1,500
Cost of Food Sold	\$31,400	\$11,200	\$ 5,600	\$13,050	\$ 3,750	\$ 65,000

FIGURE 5.5 Inventory by Product Category

Benjamin's Sales: \$190,000					
Category	Cost of Food Sold	Food Cost %	Proportion of Total Product Cost (%)		
Meat	\$31,400	16.5%	48.3%		
Seafood	11,200	5.9%	17.2%		
Dairy	5,600	2.9%	8.6%		
Produce	13,050	6.9%	20.1%		
Other	3,750	2.0%	5.8%		
Total	\$65,000	34.2%	100.0%		

FIGURE 5.6 Food Cost Category % Percentage and Proportion of Total

Thus:

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Cost in meat category Total cost in all categories Proportion of total product cost

In this example, that would be:

\$31,400 \$65,000 = 48.3%

By using the categories listed in Figure 5.6, this manager might be better able to determine when her costs are above those she would expect. Using the category food cost proportion approach, she would know, for example, that meats accounted for 48.3 percent of her total food usage in the month of January. She could compare this figure to the meat expense of prior months to determine whether her meat cost proportion is rising, declining, or staying constant. If her category cost or her overall percentages are higher than she anticipated, she must find out why and then take corrective action as necessary.

HERE'S HOW IT'S DONE 5.2

All managers should be interested in their overall product costs and cost percentages, but sometimes managers are also interested in their cost of goods sold percentages for individual food or beverage product categories. To see why, consider a manager who calculated her beverage cost percentage for last month and found it to be 22 percent. Utilizing a minor variation of the beverage cost percentage formula, the manager can calculate individual beverage cost percentages for beer, wine, and spirits sales as shown below.

Product	Sales	Cost of Beverage Sol	d Beverage Cost (%)
Beer	\$ 8,000	\$1,600	20%
Wine	12,000	3,600	30%
Spirits	10,000	1,400	14%
Total	\$30,000	\$6,600	22%

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Using beer as an example, the formula the manager would use to calculate her beverage cost percentage for "beer" is: $\frac{\text{Cost of beverage sold for beer}}{\text{Beer sales}} = \text{Beverage cost \% for beer}$

In many cases, restaurant managers calculate separate cost of sales percentages or proportions only for certain items such as meats and seafoods. Similarly, beverage managers often calculate separate cost of sales percentages for their beer, wine, and liquor sales.

In this illustration, the manager may well gain more critical information about her operation by knowing the beverage cost percentages of her individual beverage categories than she would by knowing only her overall beverage cost percentage.

Today's modern POS systems routinely report an operation's product sales by category. Because that is so, managers utilizing the same product categories when taking their beginning and ending inventories can calculate individual product category cost percentages as well as the overall cost percentages achieved in their operations.

ESTIMATING DAILY COST OF SALES

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The best managers want to know their cost of sales on a daily or weekly basis, rather than merely on a monthly basis. When they do, they can better address cost of salesrelated problems as they occur. But you know that the accurate calculation of an operation's actual cost of sales requires its managers to conduct a physical inventory.

You could, of course, take a physical inventory every day. If you did, you could compute your operation's daily cost of sales. But taking an accurate physical inventory in most operations is a very time-consuming task. It would be convenient if you could have a close estimate of your food usage on a daily or weekly basis without the extra effort of a daily inventory count. Fortunately, such an approximation method exists. Figure 5.7 illustrates a six-column form, which you can use for a variety of purposes. One of them is to estimate food cost percentages on a daily or weekly basis.

To illustrate how the form is used, assume that you own an Italian restaurant that serves no liquor and caters to a family-oriented clientele. You would like to

Date:						
Weekday	Today	To Date	Today	To Date	Today	To Date

FIGURE 5.7 Six-Column Form

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monitor your food cost percentage on a more regular basis than once per month, which is your regular accounting and inventory period. You have decided to use a six-column form to estimate your food cost percentage. Since you keep track of both daily sales and daily purchases, you can easily do so. In the space above the first two columns, you put the word "Sales." Above the middle two columns, you write "Purchases," and above the last two columns, you enter "Cost %."

You then proceed each day to enter your daily sales revenue in the column labeled Sales Today. Your invoices for food deliveries are totaled daily and entered in the column titled Purchases Today. Dividing the Purchases Today column by the Sales Today column yields the figure that is placed in the Cost % Today column.

Purchases to Date (the cumulative purchases amount) is divided by Sales to Date (the cumulative sales amount) to yield the Cost % to Date figure. A quick summary of the form is as follows:

Six-Column Food Cost % Estimate
1. $\frac{Purchases today}{Sales today} = Cost \% today$
2. $\frac{Purchases to date}{Sales to date} = Cost \% to date$

Figure 5.8 shows this information for your operation for the time period January 15 (Monday) to January 21 (Sunday).

As you can see, you buy most of your food at the beginning of the week, but sales are highest in the later part of the week. This is a common occurrence at many foodservice establishments. As can also be seen, your daily cost percentage ranges

Date: <u>1/15–1/21</u>						
	Sa	les	Purchases		Cost %	
Weekday	Today	To Date	Today	To Date	Today	To Date
Monday	\$ 850.40	\$ 850.40	\$1,106.20	\$1,106.20	130.0%	130.0%
Tuesday	920.63	1,771.03	841.40	1,947.60	91.4%	110.0%
Wednesday	1,185.00	2,956.03	519.60	2,467.20	43.8%	83.5%
Thursday	971.20	3,927.23	488.50	2,955.70	50.3%	75.3%
Friday	1,947.58	5,874.81	792.31	3,748.01	40.7%	63.8%
Saturday	2,006.41	7,881.22	286.20	4,034.21	14.3%	51.2%
Sunday	2,404.20	10,285.42	0	4,034.21	0%	39.2%
Total	\$10,285.42		\$4,034.21		39.2%	
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FIGURE 5.8 Six-Column Food Cost Estimate

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from a high of 130 percent (Monday) to a low of 0 percent (Sunday), when no deliveries are made. In the Cost % to Date column, however, the range is only from a high of 130 percent (Monday) to a low of 39.20 percent (Sunday).

In order for the six-column food cost to be an accurate estimate, you must make one important assumption: For any time period you are evaluating, the beginning inventory and ending inventory amounts are the same. In other words, over any given time period, you will have approximately the same amount of food on hand at all times. If this assumption is correct, the six-column food cost estimate is, in fact, a good indicator of your food usage.

If you assume that your inventory is constant (e.g., that beginning inventory equals ending inventory), the cost of sales formula indicates that your cost of food sold for the one-week period in this example would be a little less than \$4,034.21, (39.20 percent of sales). Why a little less? Because the cost of food formula indicates that we must still subtract the value of employee meals, if any are provided, because they are an employee benefit and not a food expense.

How accurate is the six-column form for estimating product usage? For most operators, it is quite accurate and has the following advantages:

- **1.** It is very simple to compute, requiring 10 minutes or less of data entry per day for most operations (the cells in a six-column Excel spreadsheet can be formulated to do the math for you).
- 2. It records both sales history and purchasing patterns.
- 3. It identifies problems before the end of the monthly accounting period.
- 4. By the ninth or tenth day, the degree of accuracy in the To Date column is very high.
- 5. It is a daily reminder to both management and employees that there is a very definite relationship between sales and expenses.

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Those managers whose operations use an issuing system (see Chapter 4), rather than daily purchases, for recording their daily food usage can simply substitute "Issues" for "Purchases" in the six-column form and achieved the same cost of sales estimate results.

The use of a six-column food cost estimator is highly recommended for the operator who elects to conduct a physical inventory less often than every two weeks. Because it keeps costs uppermost in the minds of managers and employees alike, it is recommended that this cost estimate be posted where all employees can see it. It communicates daily to employees both sales and the costs required to generate those sales. It also provides a visual reminder of the importance of controlling product usage.

COMPARING ACTUAL COSTS TO ATTAINABLE COSTS

When managers can calculate their overall cost of sales amounts and percentages, and can even estimate these costs on a daily or weekly basis, they are in a good position to answer three important operational questions:

- 1. What are our actual product costs?
- 2. What should be our attainable product costs?
- 3. How close are we to our cost goals?

DETERMINING ACTUAL PRODUCT COST

In Chapter 3, you learned that every menu item sold in a restaurant should be produced from a standardized recipe to ensure product quality and consistency and to aid in product purchasing.

In addition to having a standardized recipe for each item, managers should have a standardized recipe cost sheet for each item. The **standardized recipe cost sheet** is simply a record of the ingredient costs required to produce a standardized recipe. Managers use standardized recipe cost sheets to calculate their total recipe costs and their individual portion costs.

A standardized cost sheet can be created using any basic spreadsheet software. The spreadsheet (or a manager using a manual calculator) simply multiplies the cost of each ingredient times the amount of the ingredient used. For example, if the cost of an ingredient in a recipe is \$2.00 per cup and the standardized recipe calls for 3 cups, then the cost for this recipe ingredient is calculated as follows:

$2.00 \text{ cost per cup} \times 3 \text{ cups required} = 6.00 \text{ ingredient cost}$

Standard spreadsheet programs are an excellent means of creating these records, doing the mathematical calculations and keeping the recipe costs current. Properly maintained, recipe cost sheets provide you with up-to-date information that can help with pricing decisions in addition to comparing your actual food and beverage costs with those you should incur.

Figure 5.9 shows the format you might use for a standardized recipe cost sheet if you operate Steamer's, a small soup and sandwich carryout kiosk. The recipe in this example is for beef stew, and it yields a total recipe cost of \$43.46 and a cost

FIGURE 5.9 Standardized Recipe Cost Sheet

Unit Name: Steamer's	
Menu Item: Beef Stew	Recipe Number: <u>146</u>
Special Notes:	Recipe Yield: <u>40</u>
All ingredients weighed as edible	Portion Size: 8 oz.
Portion (EP)	Portion Cost: \$1.09

Ingredients		Ingredient Cost		
ltem	Amount	Unit Cost	Total Cost	
Corn, frozen	3 lb.	.60 lb.	\$ 1.80	
Tomatoes	3 lb.	1.40 lb.	4.20	
Potatoes	5 lb.	0.40 lb.	2.00	
Beef cubes	5 lb.	5.76 lb.	28.80	
Carrots	2 lb.	.36 lb.	.72	
Water	2 gal.	N/A		
Salt	2 T	.30 lb.	.02	
Pepper	2 t	12.00 lb.	.12	
Garlic	1 clove	.80/clove	.80	
Tomato juice	1 qt.	4.00 gal.	1.00	
Onions	4 lb.	1.00 lb.	4.00	
Total Cost			\$43.46	
Total Recipe Cost: \$43.46		Recipe Type: Soups/Stews		
Portion Cost: \$1.09		Date Costed: <u>4/15</u>		
Previous Portion Cost: <u>\$1.01</u>		Previous Dated Costed: <u>1/15</u>		

per serving (portion cost) of \$1.09. Note that all ingredients are listed in their edible portion (EP) forms, a concept addressed in detail later in this chapter.

A standardized recipe cost sheet can be produced in seconds today using a personal computer. This formerly tedious task has become so simplified there is just no reason for management not to have accurate, up-to-date costing sheets for all its recipes. As a result, it easy for managers to know the precise portion costs that should be attainable when standardized recipes are followed carefully.

FUN ON THE WEB!

A number of companies offer recipe-costing programs for sale. These programs assist managers with portion cost calculation and much more.

To review programs of this type, enter "recipe costing software" in your favorite search engine. Pay special attention to those programs that interface (connect electronically) with an operation's POS and inventory management systems. One especially popular product offering of this type is "Food Trak," developed and marketed by Systems Concept Inc. Systems Concept Inc. is a Microsoft Gold Certified Partner, the highest level of partnership available through Microsoft. Watch for it in your search results.

Accurately calculating portion costs based on standardized recipe cost is important. However, some managers have difficulty computing total recipe costs because recipes often contain ingredient amounts that are used in a different quantity than they are purchased. For example, you may purchase soy sauce by the gallon, but your recipes may call for it to be added by the cup or tablespoon. In other cases, ingredients may be purchased in pounds or gallons but added to recipes in grams and liters. When situations such as this arise, an ingredient conversion table or chart similar to the one presented in Figure 5.10 must be used. This is so because recipe ingredient weights, measures, and sizes must be precisely computed if your recipe costs are to be accurate.

FUN ON THE WEB!

The USDA offers managers free recipe conversion information that can really speed up the recipe conversion process. To review this valuable resource and download a copy, go to: http://teamnutrition.usda.gov/Resources/rec_adjust.pdf.

Calculating recipe costs and portion costs accurately is important. For you to correctly calculate recipe costs, however, you must understand the concept of product yield and how it affects costs.

PRODUCT YIELD

Most foodservice products are delivered in the **as purchased** (**AP**) state. This refers to the weight or count of a product as it is delivered to the foodservice operator. For example, if a case of lettuce containing 24 heads is delivered to an operation, the lettuce will be delivered in its AP state.

Edible portion (EP) refers to the weight of a product after it has been cleaned, trimmed, cooked, and portioned. For example, after the 24 heads of lettuce delivered in AP state have been trimmed, washed and chopped, or otherwise prepared, the heads will be in the EP state.

AP refers to food products as the operator receives them, and EP refers to food products as the guest receives them. Foodservice buyers purchase ingredients at AP costs, but these items are served in their EP state. To determine actual recipe costs, it is often necessary to conduct a yield test to determine an ingredient's EP, rather than AP, costs.

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FIGURE 5.10 Ingredient Conversion Table

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Weight and Measure Equivalents				
ltem	Equivalent			
60 drops	1 teaspoon			
3 teaspoons	1 tablespoon			
2 tablespoons	1 liquid ounce			
4 tablespoons	1⁄4 cup			
16 tablespoons	1 cup			
2 cups	1 pint			
2 pints	1 quart			
4 quarts	1 gallon			
4 pecks	1 bushel			
16 ounces	1 pound			
Select Spic	es*			
Pepper: 4.20 tablespoons	1 ounce			
Salt: 1.55 tablespoons	1 ounce			
Common Can	Sizes			
Can Size	Quantity			
No. 303	1¼ cups			
No. 2	2½ cups			
No. 2½	3½ cups			
No. 5	7⅓ cups			
No. 10	13 cups			
Conversion Fo	rmulas			
To Convert	Multiply By			
Ounces to grams	Ounces	28.35		
Grams to ounces	Grams	0.035		
Liters to quarts	Liters	0.950		
Quarts to liters	Quarts	1.057		
Pounds to kilos	Pounds	0.45		
Kilos to pounds	Kilos	2.20		
Inches to centimeters	Inches	2.54		
Centimeters to inches	Centimeters	0.39		

*Spices have different conversions based on their individual weights.

A yield test is a procedure used for computing your actual EP costs on an AP product that will experience weight or volume loss during preparation.

To illustrate how a yield test results in the determination of actual product cost, assume you purchased 10 pounds of fresh carrots (AP) to be used for stew. You know that you will have product losses due to the peeling and trimming of the carrots. As a result, the original 10 pounds of fresh carrots for your stew will yield less than 10 pounds when the carrots are peeled and sliced into their EP state.

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The formula used to calculate product yields is:

Product as purchased (AP) – Losses due to preparation = Product edible portion (EP)

Returning to the example of 10 pounds of fresh carrots, if one half pound of carrots is lost in their preparation, the product's EP yield would be calculated as:

10 lb. AP – 0.5 pounds loss due to preparation = 9.5 lb. EP

Many fresh produce items, as well as many meat and seafood items purchased in their AP state, will yield significantly reduced amounts when converted to their EP states. For meats and seafood, managers conduct a **butcher's yield test** that considers loss due to trimming inedible fat and bones, as well as losses due to cooking or slicing when they calculate their EP costs. A sample butcher's yield test showing the EP yield for the beef chuck used in the beef stew recipe previously presented is shown in Figure 5.11.

When performing yield tests managers are interested in a product's waste percentage and yield percentage. **Waste percentage** is the percentage of product lost due to cooking, trimming, portioning, or cleaning. For example, the yield test shown in Figure 5.11 indicates that that 8 pounds, or 128 ounces (8 lb. \times 16 oz. = 128 oz.), of beef chuck will lose 3 pounds, or 48 ounces (3 lb. \times 16 oz. = 48 oz.), during the preparation process. You can compute this item's waste percentage using the following formula:

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\frac{\text{Product loss}}{\text{AP weight}} = \text{Waste \%}
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In this example:

Waste % =
$$\frac{48 \text{ oz.}}{128 \text{ oz.}} = 0.375$$
, or 37.5%

Once waste percentage has been determined, it is possible to compute an ingredient's yield percentage. Yield percentage is the percentage of product you will have remaining after cooking, trimming, portioning, or cleaning.

FIGURE 5.11 Butcher's Yield Test Results

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Unit Name: <u>Steamer's</u> Specification: <u># 842</u> AP Amount Tested: <u>8 lb.</u> Price per Pound AP: <u>\$3.60</u>	Item: <u>Beef Cubes</u>	Date Tested: <u>1/1</u> Item Description: <u>Beef Chuck</u>	
Loss Detail	Weight	Use % of Original	
AP	8 lb. 0 oz.	100.0%	
Fat loss	1 lb. 2 oz.	14.1%	
Bone loss	1 lb. 14 oz.	23.4%	
Cooking loss	0	0%	
Carving loss	0	0%	
Total product loss (waste)	3 lb. 0 oz.	37.5%	
Product yield: <u>62.5%</u> Yield test performed by: <u>L. D.</u>	EP cost per	oound: <u>\$5.76</u>	

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Waste % + Yield % = 100%, so yield percentage can be calculated as shown in the following formula:

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Yield % = 1.00 - Waste %

In the beef cubes example, the yield percentage is computed as:

Yield % = 1.00 - 0.375 = 0.625, or 62.5%

Yield percentage is important because, if you know a product's yield percentage, you can compute the AP weight you must buy to yield the appropriate EP weight amount needed in your recipes. You can determine the amount of an AP ingredient you must have on hand by using the following formula:

 $\frac{\text{EP required}}{\text{Product yield \%}} = \text{AP required}$

In the example recipe shown in Figure 5.9, with an EP required of 5 pounds of beef cubes, or 80 ounces (5 lb. \times 16 oz. = 80 oz.), and a product yield percentage of 62.5 percent, or 0.625, the computation to determine the appropriate AP amount of beef chuck to buy to produce the beef stew recipe is:

 $\frac{80 \text{ oz.}}{0.625} = 128 \text{ oz.}$

This can be converted to pounds:

 $\frac{128 \text{ oz.}}{16 \text{ oz. / lb.}} = 8 \text{ lb. AP required}$

To check the preceding figures to verify that you should use a yield percentage of 0.625 when purchasing this item, you can proceed as follows:

EP required = AP required × Yield %

In this example,

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 $\mathsf{EP} \ \mathsf{required} = 8 \ \mathsf{lb.} \times 0.625 = 5 \ \mathsf{lb.}$

Another way to determine product yield percentage is to compute it directly using the following formula:

 $\frac{\mathsf{EP weight}}{\mathsf{AP weight}} = \mathsf{Product yield \%}$

In the beef cubes example, the EP weight needed in the recipe is equal to the product's AP weight of 8 pounds less the product's preparation loss of 3 pounds.

Thus, EP weight equals 5 pounds, and product yield percentage is computed as follows:

 $\frac{5 \text{ lb.}}{8 \text{ lb.}} = 62.5\%$

Managers can only calculate recipe costs accurately if they know their edible portion costs. Edible portion cost (EP cost) is the portion cost of the item after cooking, trimming, portioning, or cleaning. The EP cost is useful to know because it represents the true cost of an ingredient or menu item based on its product yield.

It is important to note that in some cases, the same product may have different yields when purchased from different suppliers. As a result, managers should always use EP cost rather than AP prices to compare product prices offered from various suppliers. In general, you want to choose the supplier that offers the lowest EP cost for the same product, assuming the same specification or quality is being purchased.

To compute a product's actual EP cost, you simply divide the AP price per pound or unit by the product's yield percentage.

In our example, with an AP price per pound for beef chuck of \$3.60 and a product yield of 0.625, the EP cost would be \$5.76. This EP cost is computed using the EP cost formula:

AP price / lb EP cost / lb.	
Product yield %	

In this example:

 $\frac{\$3.60 \text{ AP cost / lb.}}{0.625 \text{ product yield}} = \$5.76 \text{ EP cost / lb.}$

You know now that your actual EP cost per pound when buying beef chuck with this particular specification, and from this supplier, is \$5.76. You should conduct additional butcher yield tests if you are considering changing suppliers, modifying your beef chuck purchase specifications, or varying the quality level of the beef used in your recipe. In addition, it is usually a good idea to conduct yield tests on all of your meat and seafood items at least twice per year.

HERE'S HOW IT'S DONE 5.3

The formula managers use to calculate a product yield percentage is:

 $\frac{\text{EP weight}}{\text{AP weight}} = \text{Product yield \%}$

Managers must understand the concept of a product yield percentage and how this percentage is calculated because it helps them answer two very important questions:

- 1. How much of a product should I buy?
- 2. What will the product cost?

How Much to Buy

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To calculate how much of a product to buy, managers simply divide the EP amount that is needed in a recipe by the product's yield percentage. For example, if 15 pounds of a product is needed in its recipe-ready EP state and the product's yield is 75 percent, the manager must buy:

 $\frac{15 \text{ lb. EP needed}}{0.75 \text{ yield}} = 20 \text{ lb.}$

When the manager buys 20 pounds of the product and achieves a 75 percent yield, 15 pounds of product in its EP state will be available. (\bullet)

What Will It Cost?

To find their true costs, managers must always price the ingredients used in their recipes in each ingredient's EP state, even when the product is purchased in an AP state. To calculate what a product will actually cost, managers divide the product's AP price by the product's yield percentage. For example, if a product is purchased by the pound in its AP state, the ingredient costs \$6.00 per pound, and the product's yield is 75 percent, then the product's actual recipe-ready EP cost per pound will be:

 $\frac{\$6.00 \text{ / lb. AP}}{0.75 \text{ yield}} = \8.00 / lb. EP

When managers know how to calculate product yield percentages, they are better prepared to do a good job purchasing and accurately calculating the true portion costs of their standardized recipes.

Waste percentage and yield percentage can be known if records are kept on meat cookery, the cleaning and processing of vegetables and fruits, and the unavoidable losses that can occur in some products during portioning. Most recipes assume consistency in these areas, and good foodservice managers take the losses into account when making purchasing decisions. For example, in the beef stew recipe example, knowing that you will experience a yield percentage of 0.625 will help you determine exactly the right amount of meat to purchase. Good vendors are an excellent source for providing information related to trim and loss rates for standard products they sell. With this information, some operators even go so far as to add a minimum or required yield percentage as a part their product specifications.

DETERMINING OPERATIONAL EFFICIENCY

It is good for managers to be able to calculate their actual product cost. To manage your operation exceptionally well, however, you must be able to compare how well you are doing with how well you *should* be doing. This process of assessing how well you are doing begins with determining your attainable product cost.

Attainable product cost is defined as the cost of goods sold figure that should be achievable in your operation if avoidable losses were completely eliminated. Some managers refer to attainable product cost as standard cost, because these would be the costs they achieved if all of their units' operational standards were met.

When you compare attainable product cost to your actual product cost, you get a measure of your operation's efficiency. The formula for this **operational efficiency ratio** is:

 $\frac{\text{Actual product cost}}{\text{Attainable product cost}} = \text{Operational efficiency ratio}$

To illustrate, assume again that you own Steamer's, the small soup and sandwich carryout kiosk referred to in the previous example. By calculating your recipe and portion costs, you determine your attainable product cost for a week to be \$850. That is, if your operation is very efficient in its food usage, your cost of sales for the week should be \$850. Assume further that you actually achieve a product cost of \$850 for that week. Applying the operational efficiency ratio, your results would be:

 $\frac{\$850 \text{ actual product cost}}{\$850 \text{ attainable product cost}} = 100\%$

These results represent perfection in the relationship between your attainable and actual operational results. In this example, your operation incurred no avoidable product loss.

Assume, however, that actual product costs were higher than attainable product cost; for example, \$900. In that case, the operational efficiency ratio formula would be computed as:

\$900 actual product cost105 9%
\$850 attainable product cost

In this scenario, you would know that your actual product usage, and thus your cost, was 5.9 percent higher than your attainable product cost goal.

A 100 percent operational efficiency ratio is rarely achieved, for a number of reasons. One key reason is that some product loss in a foodservice operation is virtually unavoidable. Consider, for example, the cost of a product such as fresh

brewed coffee. Although you may be able to compute the portion cost of producing an 8-ounce cup of coffee, it is much more difficult to estimate the amount of product that must be discarded on a regular basis to ensure that guests are getting only freshly brewed coffee. Further, at the end of the day, it is likely that some brewed coffee will be discarded.

An additional reason why 100 percent operational efficiency ratios are rarely achieved is that every foodservice operation employs people, and people make errors at work. Despite these challenges, however, managers should strive to ensure their actual product costs are as close as possible to their attainable product costs.

In general, operational efficiency ratings in the range of 100 to 110 percent are attainable. Variance beyond that, however, can indicate serious product control problems. Ratios that are too high—that is, ratios above 110 percent—could be an indication of excessive waste, ingredient theft, spoilage, overportioning, or inaccurate recipe cost sheet computation.

Operating efficiency ratings that are too low, that is, ratings in the 80 to 90 percent range must also be avoided. Efficiency ratios such as these could be the result of miscalculation of the number of items sold, inaccurate ingredient costing, under portioning, incorrect standardized cost sheets, or errors in valuing inventory.

Many managers find that it is helpful to share operational efficiency ratio results with employees because an operation's staff should also be very interested in the answer to the fundamental question of: "How well are we doing?"

ACCEPTABLE AND UNACCEPTABLE VARIANCE

In Chapter 2, you learned how managers calculate their sales variance and their sales variance percentages. Using a similar approach, managers can calculate their product cost variances and product cost variance percentages. When comparing their actual product costs with their attainable product costs they use the following formula:

Actual product cost – Attainable product cost	- Cost percentage variance
Attainable product cost	- Cost percentage variance

For example, assume a manager calculated her attainable product cost to be \$8000 for a week. The manager's actual product cost was \$8,500 for the week, resulting in a variance of \$500 (\$8,500 actual product cost – \$8,000 attainable product cost = \$500).

In this example, the manager's cost percentage variance would be calculated as:

Managers calculate and analyze their cost percentage variances because they realize they should not treat all variances from expected results in the same way. For example, a variance of one or two dollars from an expected result of several thousand dollars is small enough that it likely constitutes a very acceptable level of variation. A variance of one or two dollars from an expected result of nine dollars, however, might well be cause for concern and, thus, is likely unacceptable.

Figure 5.12 displays the operational efficiency ratios, dollar variances, and percentage variances that might result if you were to compute individual efficiency ratios on a variety of individual products in a steakhouse. The important concept here is a simple one: As a manager, your attention should be directed toward those areas where the need is greatest. In most cases, this means addressing large dollar variances and/or large percentage variances from your expected results.

ltem	Actual Cost	Attainable Cost	Efficiency Ratio	Dollar Variance	Percentage Variance
Steaks	\$1,010	\$1,000	1.01	\$10.00	1%
Coffee	\$ 20	\$ 10	2.00	\$10.00	100%
Bolla Soave	\$ 550	\$ 500	1.10	\$50.00	10%
Horseradish	\$ 22	\$ 20	1.10	\$ 2.00	10%
Parsley	\$ 45	\$ 50	0.90	-\$ 5.00	-10%

FIGURE 5.12 Acceptable and Unacceptable Variance

Results such as those shown in Figure 5.12 call upon you to make decisions about the acceptability of the variances you may encounter. Efficiency ratios in this example range from 0.90 to 2.00.

The \$10.00 variance in actual steak cost is likely within an acceptable range because the expected cost was \$1,000 and the efficiency ratio was 1.01. The \$10.00 variance in coffee costs, however, is likely unacceptable because it represents actual costs that were twice as high as the expected coffee costs and that efficiency ratio is 2.00.

In a similar manner, the 10 percent variance in the cost of Bolla Soave wine represents \$50 and thus may well be worth investigating, whereas the 10 percent parsley cost variation of \$5.00 may be too small to merit your immediate attention.

Although it is not possible to determine one range of variance acceptability that is appropriate for all food facilities, it is important for you to establish variances from attainable costs that are acceptable for your own operation. When you do so, you will be able to easily identify those variations that must be investigated and corrected.

HERE'S HOW IT'S DONE 5.4

In most cases, when managers calculate a cost percentage variance, they will generate a positive number. That is true because, in many cases, an operation's actual product costs will exceed its attainable or ideal product costs. In some cases, however, the cost variance percentage will be negative.

For example, assume a manager estimated he would incur \$500 in salad dressing cost after serving 1,000 salads. After serving 1,000 salads, the manager's actual salad dressing cost was \$450. To calculate the cost percentage variance, the manager applies the cost percentage variance formula:

 $\frac{\text{Actual product cost} - \text{Attainable product cost}}{\text{Attainable product cost}} = \frac{\text{Cost percentage}}{\text{variance}}$

In this example, the manager's cost percentage variance for salad dressing is: $\frac{\$440-\$500}{\$500}=-12.0\%$

In this example, the manager's salad dressing costs were 12 percent less than he had anticipated. There can be several reasons why an operation could achieve a negative cost percentage variance. One reason could be that the price paid for salad dressing by the operation was less than originally estimated. In that case, a negative cost percentage variance actually indicates good news for the operation.

It could be instead, however, that the operations' wait staff was serving less than the standardized amount of dressing on each guest's salad. Although this would cause a short-term decrease in the operation's per-salad dressing costs, the practice is also likely to cause a long-term decrease in guest satisfaction. For this reason, managers must investigate negative cost percentage variances indicating reduced costs just as thoroughly as they examine those positive cost percentage variances that indicate excessive costs.

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Green and Growing!

Increasingly, foodservice operators recognize that most human activity, including their own businesses, leaves a "carbon footprint" on the planet. A carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases (carbon dioxide) produced. The term is useful for individuals and organizations to conceptualize their personal (or organizational) impact in contributing to global warming.

Examples of activities in which foodservice operations engage to help reduce their carbon footprint include the following:

• Buy food products locally.

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• Monitor efficient energy usage regularly.

- Avoid the sale of bottled waters where the packaging and shipping of these items result in the unnecessary production of carbon dioxide.
- Use cold water for washing and cleaning when practical and sanitary.
- Reduce, reuse, and recycle!

Reduction of a business's carbon footprint is good for the environment and for business. Keep watching the hospitality trade press for an ever-increasing number of new strategies you can consider for reducing your own operation's carbon footprint!

REDUCING THE COST OF SALES PERCENTAGE •

In some cases, managers who evaluate their product usage will find that their operations are extremely effective at utilizing their food and beverage products. In other cases, managers may find that their product-related costs are just too high to allow them to meet their profit goals. When that occurs, corrective action must be taken. To illustrate, assume a manager has a food cost percentage goal, or target, of 35 percent. In a specific accounting period, however, the manager's operation actually achieved a 38 percent food cost. In this example, the manager must take steps to reduce the excessive cost of sales percentage. Recall, however, that sales to customers mean costs are incurred. Increased sales mean increased costs. Therefore, despite missing his or her target, this manager's goal would not simply be to reduce overall product cost. Rather, the goal would be to maintain current (and increasing!) sales levels while achieving product costs that are at their proper proportion of sales. To do just that, restaurant managers must perform three important tasks:

- 1. Minimizing product loss in the kitchen
- 2. Minimizing product loss in the bar

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3. Optimizing overall cost of sales percentage

MINIMIZING PRODUCT LOSS IN THE KITCHEN

Loss of food products can happen when control systems do not prevent losses incurred while products are in storage, losses due to overcooking or overportioning, and loses due to employee theft. It's especially important to have programs in place that will minimize the chances of product theft by employees. Although all kitchens can expect to experience small amounts of employee-related product loss, such as an employee eating an apple in secret, or nibbling a carrot where the supervisor cannot see it, extensive loss of product must be prevented.

Most kitchen-related theft deals with the removal of food products, rather than money, from the premises. This is because, unlike bartenders, few kitchen production

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workers also handle cash. Kitchen workers can, however, work with service personnel to defraud the operation (see Chapter 11). In addition, many kitchen workers will have direct have access to valuable food and beverage products. The following product security tips are helpful when designing control systems to ensure the safety and security of food (and beverage) products:

Product Security Tips

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- 1. Keep all storage areas locked and secure.
- 2. Issue food only with proper authorization and management approval.
- 3. Monitor the use of all carryovers.
- 4. Do not allow food to be prepared unless a guest check or other written request precedes the preparation.
- 5. Maintain an active inventory management system.
- **6.** Ensure that all food received is signed for by the appropriate receiving clerk.
- 7. Do not pay suppliers for food products without an appropriate and signed invoice.
- 8. Do not use "petty cash" to pay for food items unless a receipt and the product can be produced.
- **9.** Conduct systematic physical inventories of all level A, B, and C products.
- **10.** Do not allow employees to remove food from the premises without management's specific approval.

MINIMIZING PRODUCT LOSS IN THE BAR

Employee product theft can occur in either the bar or the kitchen production areas, but it is often more prevalent in the bar areas. Experienced food and beverage managers seem to have an endless supply of stories related to theft in bar operations. Indeed, bar theft is one of the most frequent types of thefts in the foodservice industry. Although it may well be impossible to halt all kinds of bar theft, the following are activities you should watch for to help ensure the opportunities for product theft in a bar are minimized.

ORDER FILLED BUT NOT RUNG UP

In the "order filled but not rung up" case, the bartender delivers the drink as requested by the guest or server, but the drink sale is never recorded in the POS system, and the bartender simply pockets the amount of the sale. As a result, the sales as recorded in the POS will be equal to the amount of money in the cash drawer. All drinks should be recorded by the POS system to prevent this type of theft. Management's vigilance is critical to ensure that no drink is prepared until after the order is properly recorded (entered in the POS or rung up on the cash register).

OVER- AND UNDERPOURING

When bartenders overpour, they are stealing from the operation. When they underpour, they are shortchanging the guest. Remember that your bartenders will pour the appropriate amount if you always insist that they do so. When bartenders underpour, they may be making up for drinks they have given away or sold but have not rung up. When they overpour, they may be doing so for their friends or for the extra tips this activity may yield. In either case, management must prevent such behavior.

Proper portion size in the spirits area is ensured through the enforced use of jiggers, metered devices, or other mechanical or electronic equipment. In the case of draft beer, head size—that is, the amount of foam on top of the glass—directly affects portion size and portion cost, and, thus, it too must be controlled.

FUN ON THE WEB!

Product loss related to draft beer can be due to either employee theft or to improper dispensing issues (e.g., wrong service temperature, too much carbonation, improperly cleaned beer lines). As a result, draft beer dispensing systems and their maintenance is a critical area of concern for bar managers. A variety of quality dispensing systems are on the market. To review them, enter "draft beer product control" in your favorite search engine, then carefully review the results.

DILUTION OF PRODUCT

Often called *watering down* the drinks, this method of bar or storeroom theft involves adding water to the product to make up for spirits that have either been stolen or given away. It is especially easy to water down products such as gin, vodka, rum, or tequila because these clear spirits will not change color with the addition of water. Detection of this type of theft is often difficult. Periodic sampling of a knownproof alcohol against bar stock by a knowledgeable food and beverage director is one of the defenses against such bartender fraud. Since each alcohol product has a particular specific gravity or weight associated with it, you may also check for product dilution through the use of a **hydrometer**, which identifies specific gravity. If water has been added to the bottle of liquor, the specific gravity will change from the value originally associated with that liquor.

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PRODUCT SUBSTITUTION

When a specific call brand liquor has been ordered and paid for by a guest, it should, of course, be served to that guest. If, however, a bartender substitutes a less expensive well liquor for the call brand, while charging the guest for the higher priced call liquor, the bartender may intend to keep the difference in the prices paid for the two items. This has the effect of shortchanging guests, who paid higher prices for premium liquor drinks they did not receive. Conversely, if guests have ordered well drinks, but the bartender makes their drinks from premium or super premium call liquors, guests have received more value than they will pay for and the operation is shortchanged.

Although it is impossible to list all types of product-related bar thefts, it is important to note that they can and do occur. Conscientious managers should hire honest bartenders, train them well, and demand that they follow all house policies. Perhaps the best advice of all is simply to be vigilant. Watch the bar area carefully, or enlist the aid of a **spotter**, a professional who, for a fee, will observe the bar operation. Commonly known as **mystery shoppers**, spotters pose as anonymous customers but, during their unannounced visits, they observe workers carefully and later report to management any unusual or inappropriate behavior by bartenders or service staff.

Although alcoholic beverage theft most often occurs during the normal operation of the bar, in some operations it may also occur in other areas. Consider, for example, a couple who wish to serve champagne to their guests at their upcoming wedding reception. The reception will be held in a local hotel. It is estimated that 10 cases of champagne will be required to serve all the guests. The hotel's food and beverage director orders 12 cases of champagne because it would not be appropriate to run out during the reception. The newlyweds will pay for each bottle used. Potential difficulties could arise in two ways.

In the first, more champagne is used than should have been used because the bartenders serve guests in larger than normal glasses or they pour larger than normal portions. Because portion sizes are not controlled, the safe service of alcohol during the reception could be questionable. As well, the bride and groom will be charged for the extra product consumed. This will raise their bill for the reception needlessly and will likely decrease their satisfaction with the event.

In the second scenario, 12 cases are ordered and 10 cases of champagne are used, as planned, but the hotel's bartending staff also steals 1 case. The result is that only 1 case is available to be returned to inventory. The bartenders maintain that all 11 cases were served. Management, trusting the integrity of the bartenders, would likely call on the guests to pay for 1 extra case of product. Imagine, however, the embarrassment if the bride and groom demand that management produce the empty bottles from 11 cases! As these two scenarios illustrate, management must be vigilant to ensure that alcoholic beverage products are never stolen from the operation or from its guests.

To control drink production, it is also important to designate portion size and glassware to be used. This helps ensure that the portion size of the drink is appropriate and consistent with the guest's visual perception of a full glass. The ice to be used in drinks is also important for controlling drink production.

What does ice have to do with standardized beverage production? A lot! Large ice cubes will leave space between them when scooped into a glass. This will permit a larger amount of mixers to be added, which may dilute the drink more than intended. By contrast, smaller cubes or (especially) shaved ice will pack a glass and permit less of the mixer to be added. This may, in turn, give the impression of a stronger drink. A second difference created by ice size is that large cubes have less exposed surface area and will melt (and dilute the drink) at a slower pace than smaller cubes. As a result, in the bar area, you should select an ice machine that makes ice in a form that you feel best fits your view of proper spacing in the glass and that possesses the most desirable melting characteristics.

FUN ON THE WEB!

Several companies sell advanced automatic beverage-dispensing systems. One of the best known is Berg. To see its products, enter "Berg Liquor Controls" in your favorite search engine. Go to Berg's site and then click "Why Liquor Control."

Some companies sell high-quality commercial ice machines. Scotsman is one of those. To learn more about machines that produce ice cubes, nuggets and flakes, enter "Scotsman ice machines" in your favorite search engine, locate its site, and then click: "Products" to review the ice production options available to foodservice managers.

DIRECT THEFT

Alcohol is a highly desirable product for many employees; therefore, its direct theft is always a possibility. This is especially true in a beverage service area that is secluded or in which bartenders have direct access to product inventory and ease of exit. Proper controls as well as strict rules limiting the access of employees to beer, wine, and liquor storage areas should help deter and detect this sort of theft.

It is also important to remember that not all alcohol sales take place in a traditional, designated bar area. Because of this, additional problem areas related to beverage product control include:

1. In-room minibars

- **2.** Bottle sales
- 3. Open bars
- 4. Banquet operations

IN-ROOM MINIBARS

Minibars, typically containing bottled and canned beer, 100-ml wine bottles, and 50-ml liquor bottles, are popular in hotels that cater to upscale travelers. The control issue here is one of matching requests by the hotel's housekeeping department for bottle replacement with actual guest usage. Some large hotels deal with this issue by having a single individual or even a department charged with the responsibility of refilling the minibars. Many modern minibars record liquor sales electronically as products are removed by guests but such records still must be carefully monitored to ensure that items issued from storage are indeed used to restock the minibars and are not lost to employee theft.

BOTTLE SALES

When liquor sales are made by the bottle, either through room service in a hotel, or at a reception area, the control issue is one of verifying bottle count. The guest and the operation must both be treated fairly in such a transaction. In the case of full-bottle sales to a guest room, the guest should be required to sign a receipt confirming acceptance of the product. This is the only way to avoid potential misunderstandings about cost.

In the case of receptions or banquets, guests should be charged only for empty bottles, or, in the case of a purchase of a specified number of bottles, should be shown both full and empty bottles equal to the number used and charged for the event. In an effort to protect both the establishment and the guest from employee theft, the thoughtful beverage manager will mark the bottles for receptions or banquets in a way that is not easily duplicated. Marking bottles helps prevent employees from bringing in their own empty bottles and then removing full ones at the event host's expense.

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OPEN BARS

Open bars (hosted bars) are those in which no charge is made to guests for the individual drinks they consume but, when the bar is closed, one total amount is charged to the host or sponsor of the open bar. Open bars are common, especially at events such as weddings, special-occasion parties, and cocktail receptions. Unfortunately, because the individual drinker is not paying for each drink, the open-bar situation can sometimes create an "all you can drink" mindset among guests and bartenders. Because that can be the case, consumption by individual drinkers at open bars must be carefully monitored.

The production control issues associated with open bars fall into one of two main categories: namely, portion size and accountability. At open bars guests can sometimes cajole bartenders into serving drinks with larger than normal amounts of alcohol. This must, of course, be prevented. Bartenders, as well as guests, must understand that, although it may be an open bar, someone will be paying the bill at the end of the event. The hosts of the open bar have the right to expect reasonable portion control if they are paying on a per-drink or per-bottle-used basis. If the foodservice operation has established a per-person charge for the open bar, overportioning costs will have to be absorbed by the operation. This means strict control of portion size and total liquor consumption per guest must be carefully monitored.

As great an issue as overportioning is, accountability looms larger and larger on the horizon as an area of legitimate cost control concern for the effective beverage manager. Recall from Chapter 4 that dram shop legislation increasingly holds liquor sellers responsible for the actions of those they serve. As a result, bartenders who work open bars should be specially trained to spot signs of guest intoxication. As difficult as it may sometimes be, guests should be made aware that it is illegal, in

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all states, to serve an intoxicated guest. To do so puts the entire food and beverage operation at risk.

Some managers have virtually eliminated the open-bar concept, preferring to go to a coupon system where each coupon issued is good for one drink, and the number of coupons issued, rather than the number of drinks served, can be controlled. Although the possibility exists that coupons can be shared and, thus, given to an intoxicated guest, the coupon system does demonstrate an attempt by management to exercise reasonable care, an effort that may prove vital in their defense in the event of dram shop-related litigation.

BANQUET OPERATIONS

The sale of alcoholic beverages during a seated banquet usually takes the form of bottled-wine sales. Guests may be provided with a set number of bottles on the table, to be shared by those seated at the table. Alternatively, as they consume their wine, they can be served by the banquet wait staff. It is the latter method that presents the greatest product control problems because the host of the event will be charged by either the number of bottles served or the number of guests served. If the payment is based on the number of bottles served, the bottles should be marked and the empties made available for inspection by either the guest or the banquet captain. If the sale is based on the number of glasses poured, then both the host of the event and the beverage operation must be in agreement as to the desired portion size and the total number of portions allowed to be served to each guest, table, or to the entire group.

OPTIMIZING OVERALL COST OF SALES PERCENTAGE

After management has determined what an operation's costs actually are, and has compared them to what the operation's costs should be, it may often be found that Walt Kelly's Pogo comic character was correct when he said, "We have met the enemy, and he is us!"

Foodservice managers (and their bosses) often seem to be on a never-ending quest to reduce food and beverage production costs. Although you must remember to guard against inappropriate cost cutting efforts, you may, in some cases, find yourself managing an operation where food and beverage production costs, when expressed as a percentage of sales, are simply too high and must be reduced. As you design strategies to reduce your product costs, it is helpful to review potential solutions based on the cost of sales equation.

You have learned that the product cost percentage equation is deceptively easy to state. In its simplest form, it can be represented as:

 $\frac{A}{B} = C$

where:

A =Cost of products sold

B =Sales

C = Cost percentage

This formula can, however, become extremely complex. Its analysis occupies many a food organization staff meeting and can give the foodservice operator many sleepless nights! Essentially, six basic cost reduction strategies are available to influence this rather simple formula. A quick algebra lesson, however, prior to our discussion of these six approaches may be useful. In general, the rules of algebra reveal the following things about any A/B = C formula:

- If A is unchanged and B increases, C decreases.
- If A is unchanged and B decreases, C increases.
- If A increases at the same proportional rate B increases, C remains unchanged.
- If A decreases and B is unchanged, C decreases.
- If A increases and B is unchanged, C increases.

Put into foodservice management terms, these same algebraic statements can be translated as follows:

- If product costs can be kept constant while sales increase, the product cost percentage goes down.
- If product costs remain constant but sales decline, the cost percentage increases.
- If product costs go up at the same rate sales go up, the cost percentage will remain unchanged.
- If product costs can be reduced while sales remain constant, the cost percentage goes down.
- If product costs increase with no increase in sales, the cost percentage will go up.

In general, foodservice managers work to control the variables that impact product cost percentage and seek to reduce the overall value of C in the cost percentage equation. The six cost reduction approaches used to optimize overall product cost percentage, along with a summary of each approach, are presented here to help you devise your own cost reduction strategies:

How to Reduce Overall Product Cost Percentage

- 1. Ensure that all products purchased are sold.
- 2. Decrease portion size relative to price.
- 3. Vary recipe composition.
- 4. Alter product quality.
- 5. Achieve a more favorable sales mix.
- 6. Increase price relative to portion size.

To reduce your product costs, you will ultimately select an appropriate strategy from this relatively small number of alternatives. These strategies can be applied to excessive food costs or to excessive beverage costs. It is the careful selection and mixing of these approaches to cost control that differentiate the successful operator from the unsuccessful one.

To illustrate, assume that you own and operate a family style restaurant. You compute your actual food cost percentage for last month and have determined that it was 4 percentage points higher than you had planned. If you have approximately six cost-reducing options available to you, by the mathematics law of permutations, this means you have $(6 \times 5 \times 4 \times 3 \times 2)$, or 720 possible combinations of these six differing cost reduction methods. No wonder, then, there is so much information written about reducing product costs!

It is not the authors' contention that all product cost reduction methods are exhausted by these six approaches, but rather the approaches are presented here as a means of systematically analyzing the various cost percentage reduction alternatives that are available to most managers.

ENSURE THAT ALL PRODUCT PURCHASED IS SOLD

These seven words have tremendous implications. They include all phases of professional purchasing, receiving, storage, inventory, issuing, production, service, and cash control. Perhaps the hospitality industry's greatest challenge in the area of cost control is ensuring that all products, once purchased, do indeed generate cash sales that are ultimately deposited into the operation's bank account!

DECREASE PORTION SIZE RELATIVE TO PRICE

Product cost percentages are directly affected by portion size. Too often, foodservice managers and bar operators assume that their standard portion sizes must conform to some unwritten rule of uniformity. This is simply not the case. Most guests would prefer a smaller portion size of higher quality ingredients than the reverse. In fact, one problem some restaurants have is that their portion sizes are simply too large. The result is excessive food loss because uneaten products must be thrown away. It is important to remember that portion sizes are determined by the foodservice manager and, as a result, they are variable.

To see the impact of portion size on product cost percentage review the data in Figure 5.13. This figure presents the significant effect on liquor cost percentage of varying the standard drink size served in an operation using \$16.00 per liter as the standard cost of liquor and assuming 0.8-ounce evaporation per 33.8-ounce (1-liter, or 1,000-ml) bottle, and a standard \$7.00 selling price per drink.

Note that, in this example, the manager's product cost percentage ranges from 6.93 percent when a 1-ounce portion is served, to a 13.85 percent product cost when a 2-ounce portion is served.

Portion size directly affects product cost percentage and guest perceptions of value delivered. As a result, when establishing your portion sizes, you should take all of the variables affecting your operation into account. These may include your location, pricing structure, competition, and the clientele you are seeking to attract.

VARY RECIPE COMPOSITION

Experienced managers know that even the simplest standardized recipes can often be varied somewhat. For example, what is the proper amount of beef and the proper amount of carrots to use when making 100 servings of high-quality beef stew? Because the cost of beef exceeds the cost of carrots, 100 servings of beef stew made with increased amounts of beef will cost more than 100 servings made with increased amount carrots. The question of what constitutes an ideal recipe composition must be answered by management. The answer to that question, for each standardized recipe utilize in an operation, will directly affect the operations' overall food cost percentage.

Similarly, the proportion of alcohol to mixer has a profound effect on beverage cost percentages. In some cases, the amount of alcohol used in drinks can be reduced,

FIGURE 5.13 Impact of Drink Size on Liquor Cost Percentage at Constant Selling Price of \$7.00 per Drink

Drink Size	Drinks per Liter	Cost Per Liter	Cost Per Drink (cents)	Sales Per Liter	Liquor Cost % Per Liter
2 oz.	16.5	\$16.00	97.0	\$115.50	13.85%
1¾ oz.	18.9	\$16.00	84.7	\$132.30	12.09%
1½ oz.	22.0	\$16.00	72.7	\$154.00	10.39%
1¼ oz.	26.4	\$16.00	60.6	\$184.80	8.66%
1 oz.	33.0	\$16.00	48.5	\$231.00	6.93%

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yet overall drink sizes can actually be increased. This can be done, for example, by increasing the proportion of lower-cost standardized drink recipe ingredients such as milk, juices, and soda and reducing the proportion of higher-costs spirit products. Utilization of the strategy often contributes to a feeling of satisfaction by the guest, while allowing the operator to reduce beverage costs and increase profitability.

ALTER PRODUCT QUALITY

In nearly all cases, higher-quality products cost an operator more than lower-quality products. That is certainly true for managers purchasing food and beverages. As a result, one way to achieve cost savings is to reduce product quality. This area must be approached with great caution, however, because you do not want to offer inferior quality. Rather, you should always strive to purchase the quality of product appropriate for its intended use.

For example, managers may find that less expensive canned asparagus can be excellent when used in a baked casserole dish, but the same canned product is likely an unacceptable substitution for the freshly cooked asparagus accompanying a \$45.00 rib-eye steak.

Similarly, a specific coffee liqueur such as Kahlua, when called for by a guest, must, of course, be used to prepare that guest's drink. It may be quite acceptable, however, to use a non-brand name and lower-cost coffee liqueur for the many specialty drinks (e.g. Black Russian, Brave Bull, Black Magic, or Sombrero) that include coffee liqueur as an ingredient. In this example, a lower-cost generic-type coffee liqueur might be used for these specific drinks with totally satisfactory results. With appropriate experience and care, you can determine the quality of ingredients that best serve your operation and your guests and then purchase only that specific quality.

When managers find that an appropriate ingredient, rather than the highest-cost ingredient, provides good quality and good value to guests, they might be able to reduce product costs by using product substitution. But recall that managers must be very careful in this area. Lower-quality products may cost an operator less, but customers may also perceive that menu items made from these lower-quality ingredients provide reduced levels of value to them, and that reaction by guests must always be avoided.

Consider the Cost

"You're our food guru. They are offering the same size pizza as we do, but for \$2.00 less. How can they do that?" asked Kevin Gustafson to Sara Leiboda. Sara was the director of operations for the seven-unit Brooklyn Pizza House restaurants. Kevin was the company president. The Brooklyn Pizza House was known for its mid-priced, high-quality, deep dish-style pizza.

Located near the main campus at State University, the company's target market is students who attend the school. The advertising programs in use by the company are clever and effective. Business and profits are good. But now Kevin and Sara were discussing the new \$9.99 pizza promotion that had just been announced by their major competitor.

"They changed their cheese topping formulation Kevin," replied Sara. "They increased their use of pizza cheese by another 25 percent. One of my friends works in their central production kitchen. That's where they process and prepackage the pizza ingredients for delivery to their stores. My friend says they changed their 75/25 mozzarella/ pizza cheese ratio to a 50/50 ratio. As you know, we only use 100 percent mozzarella cheese on all of our pizzas. "Why recorded them do that?" school Kering

"Why would they do that?" asked Kevin.

"Well," replied Sara, "it's simple. Pizza cheese is a processed cheese product that costs quite a bit less than highquality mozzarella. Pizza cheese can actually contain as little as 51 percent real cheese and still be sold as pizza cheese. It melts O.K., but it can't compare to real mozzarella in taste. By using it, they can reduce their per-pizza costs and, because their costs are lower, they can even reduce their selling prices. That's what they did. I guess they think it will increase their sales, reduce their food cost percentage, and ultimately increase their profits.

- 1. Why do you think this competitor decided to reduce the quality of cheese used in its pizzas?
- **2.** Do you think students at the university will notice the change? Would you advise Kevin and Sara to make the same change to their pizza formulation? Why or why not?

ACHIEVE A MORE FAVORABLE SALES MIX

Experienced managers know that their customers' item selection decisions will have a direct and significant impact on the product cost percentages that will be achieved in these managers' operations. This is so because an operation's product cost percentages are determined in large part by the operation's sales mix.

Sales mix is defined as the series of guest purchasing decisions that result in a specific food or beverage cost percentage. Sales mix affects overall product cost percentage anytime guests have a choice among several menu selections, each selection having its own unique product cost percentage.

To see a simple example of how sales mix can directly affect an operation's product costs, assume a quick service restaurant offered only three menu items for sale. In this restaurant, the manager also offers a special "value meal" that includes one of each item, as shown in Figure 5.14.

From the data in Figure 5.14, it is easy to see that if, on a specific day, 100 percent of the restaurant's customers bought a hamburger and nothing else, the operation's product cost for that day would be 37.6 percent.

If, on another day, 100 percent of the restaurant's customers bought a soft drink and nothing else, the product cost percentage for that day would be 15.2 percent. Similarly, if every customer purchased only the "value meal" on a specific day, the operation would achieve a 33.1 percent product cost on that day. In this example, it is easy to see that the operation's actual product cost will be largely determined by the mix of the individual product costs resulting from the menu item choices made by the operation's customers.

To show a more realistic example of the effect of sales mix on product costs, assume that you are the food and beverage director at the Raider Resort, a 400-room beachfront hotel property on the Gulf Coast of Texas. In addition to your regular restaurant, you monitor your beverage sales in three serving areas:

- 1. *Banquets:* The beverages served in receptions prior to meal events. These sales are made in your grand ballroom, foyer, or outdoors. Banquet beverages are also served during banquet meal functions.
- 2. *The Starlight Bar:* An upscale bar with soft piano music that typically appeals to hotel guests who are 55 years and older.
- **3.** *Harry O's:* A bar with indoor and poolside seating. Contemporary top-40 music played in the evenings draws a younger crowd interested in mingling and dancing.

You compute a separate beverage cost percentage for each of these beverage outlets. Figure 5.15 details the separate operating results recently achieved in each location. It also shows the overall (combined) beverage cost percentage achieved in all three units when calculated using the beverage cost percentage formula introduced earlier in this chapter.

In this example, assume that you know each beverage location uses the same portion size for all standard drinks. Well and call liquors, as well as wine-by-theglass brands, are the same in all three locations. In this resort setting, you dislike

FIGURE 5.14 Four-item menu

Menu Item	Product Cost	Selling Price	Product Cost %
Hamburger	\$1.50	\$3.99	37.6%
French Fries	\$0.50	\$1.99	25.1%
Soft Drink	\$0.15	\$0.99	15.2%
Value Meal	\$2.15	\$6.49	33.1%

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FIGURE 5.15 Raider Resort

Monthly Beverage Percentage Report						
Location	Cost of Beverages	Beverage Sales	Beverage Cost %			
Banquets	\$20,500	\$ 80,000	25.6%			
Starlight Bar	10,350	45,500	22.7%			
Harry O's	16,350	67,000	24.4%			
Total	\$47,200	\$192,500	24.5%			

the difficulty associated with serving draft beer; thus, beer is sold in cans or bottles only. All three bars offer the same beer choices.

In addition, bartenders are typically rotated on a regular basis through every serving location. Given all that, should you be concerned that your beverage cost percentage varies so greatly by service location? The answer, in this case, is that you most likely have no cause for concern. In this situation, it is clear that your sales mix, and not poor control systems, have primarily determined your beverage cost percentage in each individual location.

A closer examination of the three outlets, as shown in Figure 5.16, reveals how this can happen.

Although product cost percentages are the same in each location for the individual beverage categories, the overall beverage cost percentages in the three units

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FIGURE 5.16 Raider Beverage Outlets

Monthly Beverage Percentage Recap								
#1 Outlet Name: Ba	#1 Outlet Name: Banquets Month: January							
Product	Cost of Beverages	Beverage Sales	Beverage Cost %					
Beer	\$ 2,500	\$10,000	25.0%					
Wine	12,000	40,000	30.0%					
Spirits	6,000	30,000	20.0%					
Total	\$20,500	\$80,000	25.6%					
#2 Outlet Name: <u>St</u>	tarlight Bar							
Product	Cost of Beverages	Beverage Sales	Beverage Cost %					
Beer	\$ 3,750	\$15,000	25.0%					
Wine	1,500	5,000	30.0%					
Spirits	5,100	25,500	20.0%					
Total	\$10,350	\$45,500	22.7%					
#3 Outlet Name: <u>H</u>	arry O's							
Product	Cost of Beverages	Beverage Sales	Beverage Cost %					
Beer	\$11,250	\$45,000	25.0%					
Wine	2,100	7,000	30.0%					
Spirits	3,000	15,000	20.0%					
Total	\$16,350	\$67,000	24.4%					

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Beverage Sales Percentage Recap						
Unit	Beer	Wine	Spirits	Total Sales		
Banquets	12.5%	50.0%	37.5%	100%		
Starlight Bar	33.0%	11.0%	56.0%	100%		
Harry O's	67.0%	10.5%	22.5%	100%		

FIGURE 5.17 Raider Resort

is not the same. The reason that each unit varies in total beverage cost percentage is due to sales mix, the guests' overall preference for the specific product choices offered for sale. In other words, guests, and not management alone, have helped to determine the final beverage cost percentages in each of the units.

Managers can directly help to influence guest selection and sales mix by such techniques as strategic pricing, effective menu design, and creative marketing, but to some degree it will always be the guest who will determine an operation's overall cost percentage. This is so because it is customers and their choices that determine an operations' sales mix.

In the example of the Raider Resort, it is easy to analyze the sales mix by examining Figure 5.17, a detailing of the beverage products selected by guests in each beverage outlet.

Each sales percent in Figure 5.17 was computed using this formula:

Therefore, in the case of beer sales in the banquets area, and using the data from Figure 5.16:

$\frac{\text{Banquet beer sales}}{\text{Total banquet beverage sales}} = \% \text{ banquet beer sales}$	
or <u>\$10,000</u> <u>\$80,000</u> = 12.5%	

As indicated, each beverage outlet operates with a unique sales mix. Figure 5.17 shows that in the banquet area the sales mix is heavy in wines and spirits, the choice of many guests when they are at a reception or dining out.

The Starlight Bar clientele is older, and their preferred drink tends to be spirits. Harry O's, on the other hand, caters to a younger crowd that, in this example, prefers beer. It is important to remember that, despite controls that are in place, costs that are in line, and effective management policies, variations in product cost percentages can still occur due to sales mix, rather than other factors. Experienced managers recognize this fact, and as a result, they monitor sales mix carefully to determine its impact on the overall product cost percentages of both food and beverages.

Because you now understand sales mix, you can recognize that the effective marketing and promotion of good (lower product cost) items can help you reduce your product cost percentage and increase your profitability, while allowing the portion size, recipe composition, and product quality of your menu items to remain constant.

Cost Control Around the World

It is easy to see that sales mix has a significant impact on an operation's product cost percentages. This is true with food, and it is especially true in the area of alcoholic beverages because the drinking preferences of local customers vary greatly across the globe.

You can readily see this by reviewing the alcoholic beverage consumption patterns of countries that consume the most beer, wine, and spirits per capita. This brief table indicates the countries where per capita consumption of beer, wine, and spirits vary.

It is easy to see that a multinational restaurant offering its guests beer, wine, and spirits choices could

experience very different sales results in the countries shown in the table based solely on the preferences of the country's alcoholic beverage drinkers. Thus, a manager of a steakhouse in Berlin, Germany, will very likely experience a different beverage sales mix than will a manager operating the same steakhouse in Florence, Italy, or in Moscow, Russia. Foodservice managers working internationally must monitor and carefully review the impact local dining and drinking preferences will have on their sales mix and, as a result, on their product cost percentages.

Consumption Rank	Beer	Wine	Spirits
1	Czech Republic	Luxembourg	Russia
2	Ireland	France	Thailand
3	Germany	Italy	Bahamas

Source: LiveScience Staff, "Global Alcohol Consumption: Top 20 Booze-Drinking Countries," LiveScience (Feb. 15, 2012).

INCREASE PRICE RELATIVE TO PORTION SIZE

In many cases, managers facing rising product cost percentages feel they simply must increase their selling prices. Although increasing prices is often relatively easy to do, this area must be approached with the greatest caution of all. There is no bigger temptation in foodservice than to raise prices in an effort to counteract management's ineffectiveness at controlling product costs. This temptation must be resisted.

There are times, of course, when selling prices on selected menu items must be increased. This is especially true in inflationary times or in terms of unique product shortages. Price increases should be considered, however, only when all other alternatives and needed steps to control costs have been considered and effectively implemented. Any price increases passed on to guests should reflect only increases in your costs, not your inefficiency.

While in most cases, it is important to keep menu prices low, some operators may be afraid to charge 25 or 50 cents more for similar menu items than their competition. In some instances, keeping prices in line with competitors' prices is a good strategy. More frequently, however, decor, quality of product, and service may allow you to charge higher prices than your competitors. Experienced managers know that, given the proper facility ambiance, most guests will not react negatively to small variances in prices because it is perceived value, not price alone, which drives a guest's purchase decision.

You have learned that managing the food and beverage production process is a complex task and that it must be accomplished with the utmost skill. In fact, the goal of all your purchasing and production systems should be to deliver to guests only high-quality products sold at a fair price. It is important that your food and beverage products are prepared correctly and at an appropriate cost to you, but it is just as important to ensure that these products are sold to guests at prices that help ensure your operation's profitability. For that reason, the important task of properly pricing your menu items will be the topic of the next chapter.

Technology Tools

In the past, restaurants were slow to install technological tools in kitchen areas where production staff could easily use them. Increasingly, however, these installations are being made. In a professional kitchen, cost control efforts are often shared between management and the production staff. Advanced technology programs available for kitchen production use include those that can help both you and your production staff members:

- 1. Perform nutrition-related analysis of menu items, including:
 - a. Recipe nutrient analysis
 - **b.** Diet analysis
 - c. FDA (Food and Drug Administration) food labels
 - d. Diabetic exchange
 - e. Weight management components
- 2. Calculate total recipe costs and per portion costs.
- 3. Compute product yield and product waste percentages.
- 4. Compute actual versus ideal costs based on product issues.
- 5. Estimate and compute daily food cost.
- 6. Maintain product usage records by:
 - a. Vendor
 - **b.** Product
 - c. Food category
 - d. Individual menu item
 - e. Ingredient
- 7. Compare portions served to portions produced to monitor overportioning and waste.
- 8. Report food and beverage product usage variances based on actual sales.
- 9. Suggest usage for carryover products.
- **10.** Conduct "make versus buy" calculations on convenience items to optimize employee productivity and minimize costs.

FUN ON THE WEB!

Many of the software programs available for assisting in foodservice operations are geared toward commercial restaurants. Some of the very best programs, however, have been developed for the institutional foodservice market.

To view the product features offered by two of these companies, search the Internet to locate the website of Computrition, a company that was originally formed to assist health care facility foodservice operators. Next, locate the home page of the Cbord Group, a company that was formed to assist foodservice managers operating campus dining facilities.

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Apply What You Have Learned

ennifer Tye is the manager of a fine dining restaurant chain that serves its guests a variety of traditional Southern dishes prepared with the very finest of ingredients. It is most famous for its upscale version of Chicken Fried Steak.

At Jennifer's restaurant, this dish (beef steak, seasoned, breaded, and then pan fried) is prepared using USDA Prime rib-eye steak. As the price of rib-eye has increased, Jennifer's food cost percentage on this item has risen dramatically.

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Currently, Jennifer is considering whether the selling price of this dish should be increased significantly or if she should take other steps to help reduce her overall product cost percentage.

- 1. What issues should Jennifer consider prior to making this decision?
- 2. What alternatives to raising prices do you think are available to Jennifer?
- 3. What would you advise Jennifer to do?

Key Terms and Concepts

The following are terms and concepts discussed in the chapter that are important for you as a manager. To help you review, please define the terms below.

cost of sales beginning inventory padding inventory purchases food available for sale goods available for sale ending inventory cost of food consumed employee meal cost cost of food sold food acest percentage	beverage cost percentage standardized recipe cost sheet as purchased (AP) edible portion (EP) yield test butcher's yield test waste percentage yield percentage edible portion cost	operational efficiency ratio head size hydrometer spotter mystery shopper open bar hosted bar sales mix
cost of food sold food cost percentage cost of beverage sold	edible portion cost (EP cost) attainable product cost	

Test Your Skills

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You may download the Excel spreadsheets for the Test Your Skills exercises from the student companion website at www.wiley.com/college/dopson. Complete the exercises by placing your answers in the shaded boxes and answering the questions as indicated.

1. Belinda Gates is the manager at the Roasted Pepper restaurant. Belinda records her monthly food and beverage sales separately. She also follows the *USAR* recommendation and thus separately calculates her product costs for food, beverages, and her overall cost of sales. Help Belinda complete this portion of her monthly operating records by calculating her total cost of sales and all of her cost of sales percentages for the month.

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Roasted Pepper: Sales and Cost of Sales						
This Month Percent						
SALES						
Food	\$ 90,000	75%				
Beverages	30,000	25%				
Total Sales	\$120,000	100%				
COST OF SALES						
Food	\$ 25,200					
Beverages	6,600					
Total Cost of Sales						

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2. Saint John's Hospital foodservice director, Herman Zindu, has a problem. He has the following information about his operation for the month of April, but has forgotten how to compute cost of food sold for the month. Use Herman's figures to compute actual cost of food sold for his operation.

Could Herman have computed this figure if he had not taken a physical inventory on April 30? Why or why not?

Inventory March 31			\$22,184.50
April Purchases:			
Meats		\$11,501.00	
Dairy		6,300.00	
Fruits and vegetables		9,641.00	
All others foods		32,384.00	
Total Purchases			
Number of employees eating			
monthly	2,550		
Cost per employee meal	\$ 1.25		
Inventory on April 30			\$23,942.06

Beginning inventory	
Purchases	
Goods available for sale	
Ending inventory	
Cost of food consumed	
Employee meals (30 days)	
Cost of food sold	

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3. Spike Dykes operates the student foodservice in a dormitory at Clairmont College. Spike is interested in calculating his "Food Cost per Student Meal Served." Data about his costs and meals served for the spring semester can be found in the following table. Help Spike complete the table.

In which months did Spike achieve his lowest and highest cost per meal? Spike wants his average cost per meal for the semester to be below \$3.00. Did he achieve this goal?

	Jan	Feb	March	April	May	Total
Beginning inventory	\$22,500	\$21,750	\$26,500	\$25,500	\$16,000	
Purchases	\$65,000	\$64,750	\$63,000	\$64,500	\$64,300	
Goods available for sale						
Ending inventory	\$21,750	\$26,500	\$25,500	\$16,000	\$12,000	
Cost of food consumed						
Employee meals	\$ 5,750	\$ 5,500	\$ 5,250	\$ 5,000	\$ 4,850	
Cost of food sold						
Meals served	20,750	20,100	21,500	21,250	19,000	
Cost per meal						

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4. Jana Foster is the general manager for a new restaurant in the Champos Restaurants chain. This new facility is located in a beachfront resort town, and sales there are excellent. The problem, according to Jana's regional manager, is that the new operation is consistently operating at a beverage cost percentage higher than the company average. Jana's regional manager has flown to Jana's town to see why her beverage cost percentage is too high. The prices set by the company for all restaurants are \$3.00 for beer, \$3.50 for wine, \$5.00 for spirits (nonfrozen specialty drinks), and \$7.00 for frozen specialty drinks.

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Help Jana compare her beverage cost percentages with the following company averages.

Company Averages				
Product	Product Mix	Cost of Beverages	Beverage Sales	Beverage Cost %
Beer	30%	\$24,336	\$121,680	
Wine	20%	20,280	81,120	
Spirits (nonfrozen specialty drinks)	30%	30,420	121,680	
Spirits (frozen specialty drinks)	20%	24,336	81,120	
Total				
Jana's Beachfront Restaurant				
Product	Product Mix	Cost of Beverages	Beverage Sales	Beverage Cost %
Beer	15%	\$14,700	\$ 73,500	
Wine	5%	6,125	24,500	
Spirits (nonfrozen specialty drinks)	15%	18,375	73,500	
Spirits (frozen specialty drinks)	65%	95,550	318,500	
Total				

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Look at the sales mix and the beverage cost percentages of both the company and the beachfront restaurant. Explain why Jana's total beverage cost percentages are consistently higher than the company averages. What would you advise Jana to tell her regional manager?

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5. "Fast Eddie" Green operates a restaurant in the casino town of Taloona. He is checking over the work of his assistant manager, who has been newly hired. One of the jobs of the assistant manager is to complete daily the sixcolumn food cost estimate. "Fast Eddie" finds that, although the purchase and sales data are there for the first 10 days of the accounting period, the form has not been completed. Complete the form for "Fast Eddie" so that he can go home.

	PURCH	PURCHASES		SALES		бт %
Weekday	Today	To Date	Today	To Date	Today	To Date
1/11	\$ 1,645.80		\$ 3,842.50			
1/12	2,006.40		2,970.05			
1/13	1,107.20		2,855.20			
1/14	986.24		3,001.45			
1/15	1,245.60		3,645.20			
1/16	2,006.40		4,850.22			
1/17	0.00		6,701.55			
1/18	1,799.90		3,609.20			
1/19	851.95		2,966.60			
1/20	924.50		3,105.25			
Total						

6. Elaine is the director of foodservice at a large retirement center, and she has asked Gerry, one of her managers, to investigate the costs involved in adding a carving station to the regular Sunday brunch menu. Gerry is trying to decide which carved meats could be served. He must first determine the EP costs and yields of the various kinds of meats. Help him calculate the EP cost and yield of an inside round of beef.

Butcher's	Yield	Test	Results
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Unit Name: Elaine's

Date Tested: May 20

Item:	Inside	Round	

Specification: <u># 138</u>

AP Amount Tested: 20 lb.

Price per Pound AP: \$6.00

Loss Detail	Pounds	Ounces	Total Ounces	% of Original
AP weight	20 lb.	0 oz.		
Fat loss	3 lb.	6 oz.		
Bone loss	2 lb.	4 oz.		
Cooking loss	1 lb.	12 oz.		
Carving Loss	0	8 oz.		
Total Production Loss				
EP Weight				

Net product yield %:

Yield test performed by: GW

EP cost per pound:

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7. Lebron operates "Ham from Heaven," a sandwich shop specializing in slow roasted spicy ham sandwiches. Currently, Lebron buys bone-in hams and roasts them in-house. These hams cost \$2.99 per pound and produce a 58 percent usable yield. Semi-boneless hams of the same quality cost \$3.99 per pound, with a 78 percent yield. Boneless hams of the same quality would cost \$6.99 per pound and produce a 96 percent yield. Calculate the EP cost per pound of each alternative.

Choose the alternative you would recommend to Lebron and explain your reason for choosing it. Specifically, what factors would influence your decision?

Ham from Heaven						
	AP Price per Pound	Yield	EP Cost per Pound			
Bone-in ham						
Semi-boneless ham						
Boneless ham						

8. Maxine Wilson is the director of dietary services at State College. Each semester, Maxine carefully monitors the average cost of serving her students dinner in the residence halls. Maxine's attainable costs and actual food costs for the most recently completed semester are shown below. Calculate the efficiency ratio, dollar variance, and percentage variance in each of Maxine's product categories and her total dinner cost per student below.

What was the overall percentage variance for Maxine's dinner cost per student? Is this cause for concern?

Which product category showed the highest percentage variance? What do you think may have caused this variance?

Product Category	Actual Cost	Attainable Cost	Efficiency Ratio	Dollar Variance	Percentage Variance
Meat	\$1.09	\$1.06			
Seafood	\$0.55	\$0.41			
Fruits	\$0.48	\$0.51			
Vegetables	\$0.46	\$0.45			
Dairy products	\$0.29	\$0.28			
Desserts	\$0.25	\$0.30			
Cost Per student (dinner)	\$3.12	\$3.01			

9. Nancy operates a takeout cookie store in the mall. Business is good, and guests seem to enjoy the products. Her employees, mostly young teens, are a problem because they seem to like the products also. Nancy takes a physical inventory on a weekly basis. This week, her total cost of goods sold figure was \$725.58. Nancy has determined that this week she will also compute her attainable food cost and her operational efficiency ratio. Help Nancy by completing the following information using the attainable food cost form.

After completing the form, give Nancy five suggestions to keep her employees from eating all of her profits.

Attainable Food Cost					
Unit Name: <u>Nancy's</u>					
Date Prepared: <u>1/</u>	Tii	me Period:	1/15 to 1/21		
Prepared By: <u>S.L.</u>					
ltem	Number Sold in Dozens	Cost per Dozen	Total Cost	Menu Price per Dozen	Total Sales
Chocolate chip	85	\$1.32		\$3.40	
Macadamia	60	\$1.61		\$4.10	
Coconut chip	70	\$0.83		\$2.95	
Fudge	141	\$1.42		\$3.80	
M & M	68	\$1.39		\$3.40	
Soft drinks	295	\$0.16		\$0.85	
Coffee	160	\$0.09		\$0.75	
Attainable product cost					
Actual product cost:					
Attainable product cost:					
Operational efficiency ratio:					
Attainable food cost %:					

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10. This chapter introduced six different action steps managers could take to reduce their cost of food and cost of food percentages when they encounter rising costs. In some foodservice settings, such as schools, colleges, and correctional and health care facilities, however, managers are allotted a fixed amount of money to spend per meal served and this amount may only be adjusted on an annual basis. Thus, managers of these facility types cannot readily increase their prices in the face of rising costs. Review the six alternative cost reduction strategies presented in the chapter and identify three specific actions you would recommend noncommercial foodservice managers could take to stay within their budgets during times of rapidly rising product costs.