Menu Analysis and Planning for Sales

Learning Objectives

After reading this chapter, you should be able to:

- **apply the concept of menu pricing;**
- **know what causes menu item demand to falter, and devise a response;**
- **evaluate menu profitability and popularity;**
- **implement an appropriate course of action to correct menu deficiencies.**

In Practice

Just a few weeks into her job, Myla Thomas was proactive as she reworked the food and beverage cost control methods. She asked Chef Robert what steps he was taking in his menu analysis before introducing new menu items. They spoke on the phone about their next steps.

Myla: *Based on guest comments, I can see the need for some revision to the current menu. Have we completed the analysis of the current menu before determining why we need the changes?*

Robert: *I am working on that now. It's an ongoing process, as you know. I hope to install the new menu in one month. Would you have time this afternoon to do some taste tests with me?*

Myla: *Certainly. I'd be happy to!*

Just as Robert was hanging up the phone, Dana Clark, the new beverage manager, walked into the office. "So, what was it like here before Myla?" asked Dana with a smile.

"Well, our profit margin was just 2 percent. We were barely making it. Myla is exactly the jolt of electricity we all needed!" replied Robert. "We're back on the right track now."

menu analysis The evaluation of menu costs and sales data to identify customers' needs and perceptions and to improve menu performance.

INTRODUCTION

The purpose of this chapter is to show you how to conduct menu analysis as a way to maximize profit. **Menu analysis** is the evaluation of menu cost and sales data to identify customers' needs and perceptions and to improve menu performance. These steps enable you to make better decisions about marketing and operations.

As we saw in Chapter 2, the menu is the number-one sales tool. Figure 13-1 is the same as Figure 2-1, except that now the menu analysis functions are emphasized. These are the functions we will focus on in this chapter.

Just as important as controlling expenses is generating revenue. Increasing revenue has everything to do with your **pricing strategies.** Setting appropriate prices is what menu analysis helps you to accomplish.
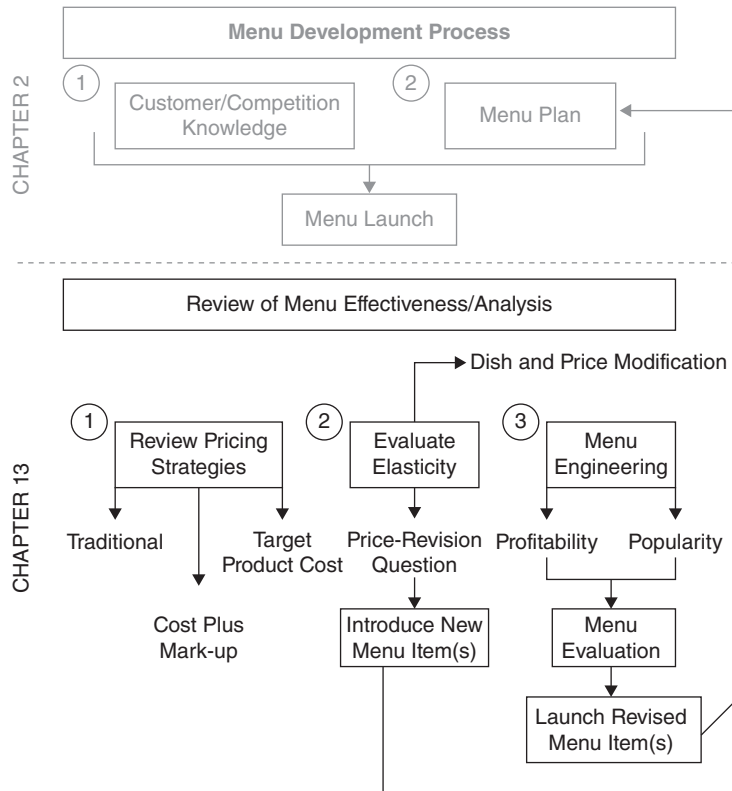

Figure 13-1 Review of Menu Effectiveness

Strategies for Menu Pricing

There are three basic methods widely used in the industry to price menu items: traditional approaches, cost plus markup pricing, and product cost percentage pricing.

Traditional Pricing

Traditional menu pricing methods have been based on varied and often unreliable criteria. These pricing methods are not based on actual costs and profits; this uncertainty is dangerous for any restaurant. Some traditional pricing methods include the following:

- *Intuition*. Establishing prices based on intuition or feeling can result in failure to recover full costs, or in an unsatisfactory and unpredictable profit margin.

- *Competitive Pricing.* This simple method of pricing bases prices on what competitors in your market area are charging. In many instances, restaurants price slightly below the competition to capture a greater market share; in others, prices may be slightly elevated to achieve a more upscale image than that of the competition. This is often referred to as market positioning, and it is common in highly competitive areas.

  This may be a satisfactory method of pricing if the product or service is comparable to that of the competition, and if the prices may result in a satisfactory profit. However, this system assumes that both restaurants' costs, target markets, and business volumes are the same or similar. It also assumes that the competitor has established its prices using sound profitability analysis. If the menu was priced on intuition, the competitor may not be profitable, and neither will you. This is common in a buffet situation.

- *Buffet Pricing.* Managers following this method often initially adopt a competitor's pricing structure. This strategy is used because with a new product or new menu, you have no history of sales data to determine costs or average checks. In this case, some restaurants have grand opening sales to attract customers and establish a basis for future pricing and decision-making. The next step, after compiling a few days of sales history, is to determine the average cost per buffet customer. Buffet cost is calculated by subtracting the cost value of ending inventory from beginning inventory plus additions. This is divided by the number of buffet customers to determine the average cost per customer. Then costs are subtracted from sales to determine the profit margin. The final step is to add a desired markup rate to achieve the final price. The prices must be reviewed frequently to ensure that they are in line with customers' perception of what the buffet was worth.

- *"Follow the Leader" Pricing.* A form of competitive pricing, this method implies that there is a leader or dominant operation whose price structure and changes are followed by others in the market. The "follow the leader" method makes the same assumptions as competitive pricing and has the same deficiencies.

- *Psychological Pricing.* This method is based on customers' perceived value. There are two aspects of psychological pricing. The first relates to perception of price. The common practice of pricing an item at $4.95 rather than $5.00 relies upon the customer's perceiving the price as being significantly less than $5.00. This practice is becoming less popular, especially in upscale operations, as the value of a nickel or penny decreases and customers react to $4.95 as though it is $5.00.

  Secondly, management sets the pricing structure based upon a conscious evaluation of what the customer expects to pay for the product or service offered. This pricing method can be used successfully in famous gourmet restaurants, exclusive resorts, or restricted-membership clubs. It is not as effective in most restaurants due to the increased demand for value. Failing to give the customer strong perceived value does not allow for the survival of a restaurant. Each of the above pricing philosophies may be imprudent or incomplete ways of setting prices.

Cost Plus Markup Pricing

This type of method involves adding a markup to the product cost as follows:

price = (item cost percentage × markup) + item cost.

As an example, if we assume that the product cost is $4 and the desired markup for the menu item is 75 percent, the price would be computed as follows: price = (0.75 × 4) + 4 = $7. It is important to note the distinction between markup rate and percentage margin: Markup rate

is a percentage of cost, whereas percentage margin relates the return as a percentage of sales. Based on the example above:

Markup percent = $3 (profit) ÷ $4 (cost) = 75 percent

Margin percent = $3 (profit) ÷ $7 (price) = 43 percent

This method of pricing is very popular in the food-service industry because it is very simple to use and because it is based on hard cost data, helping to reduce the manager's feeling of uncertainty. In many cases, such pricing is practically necessary if the manager is setting prices for dozens of items. In a competitive environment, cost plus markup pricing can be interpreted as a form of tacit collusion or competitive pricing, particularly if the competitors apply conventional industry markup rates for homogenous products.

The logical weakness of cost plus markup pricing is that price is considered a function of cost, whereas the true causal relationship is just the opposite. Cost is determined by volume (production or sales), which, in turn, depends on prices, as you will see later as we discuss sales mix. Cost plus markup pricing also could lead to an irrational pricing policy, if the price is based on total average cost as opposed to direct product cost. Total average cost refers to the sum of allocated fixed cost and direct variable cost. In this instance the restaurant might increase prices when sales decrease because the lower the sales quantity, the higher the fixed cost allocated to a single item—and thus the higher the sales price. As you will see in subsequent sections, a price increase at a time of sales decrease is usually not the best pricing policy. Therefore, markup should be based on menu item cost and not on total cost; in this way, price is not affected by changes in sales quantity. Conventional markup certainly could be the result of the trial and error process by restaurant managers, but basing markup on average variable cost might save you a few errors.

Targeted Product Cost Percentage Pricing

Another form of pricing that is analogous to cost plus markup pricing is known as targeted product cost percentage pricing. Like the costing of food recipes, it can be used with a profit objective in view. The method for calculating product cost percentage is simple. The manager must first determine the **targeted ideal cost** percentage and potential cost of an item. Targeted ideal cost refers to the ideal amount of cost your company hopes to spend for the menu item. Potential costing, discussed in Chapter 4, refers to the calculated expectation of what the cost should be. Let us assume that the manager has set his target cost percentage at 25, and the potential cost of the menu item is $3. The calculation is as follows:

targeted ideal cost The ideal amount your company wants to spend; it is your goal, or what you have budgeted to spend.

price = potential cost / target cost percentage = 3/0.25 = $12.00

Cost-Based or Customer-Based Prices?

Dimitri Zafiris, food and beverage director of Barnabey's Hotel in Los Angeles, says that setting prices used to be easy: "You developed a menu, looked at the costs, and said, 'I need to make X,' and you marked it up accordingly—and people would buy it." Now, he says, the restaurant sets prices based on what customers are willing to pay rather than its own costs. For example, a new four-course menu with wine would have been priced at $180 based on its cost. However, careful analysis revealed that hotel customers would be willing to pay 20 percent more for the menu than the hotel had planned to charge. The hotel settled on a price of $200.

The difficulty with this method is fundamental: Even though your cost is high, if the customer does not perceive value at your price, he or she will not order the item. Likewise, the customer may be willing to pay more than the sales price you calculated. Keep these limitations in mind; you have profit objectives to meet for your establishment, but the customer must also have a positive perception of value.

ELASTICITY OF DEMAND

elasticity of demand The responsiveness of buyers to changes in price, defined as the percentage change in the quantity demanded divided by the percentage change in price.

The most popular measure of the impact of price on sales is demand elasticity. In general, **elasticity of demand** refers to the relationship of a relative change of price to the relative change of demand. The impact of elasticity on demand is mostly felt in a homogeneously competitive environment. For example, if two area restaurants offer a similar item, and one decides to increase its prices, that restaurant may lose sales. The manager must understand the relationship between menu prices and the customer demand for the menu items. The formula for deriving price elasticity of demand is as follows:

$$\text{elasticity} = \text{(relative) percentage change in sales volume} / \text{(relative) percentage change in price}$$

For instance, if reducing a hamburger's price by 2 percent causes a 4 percent increase in hamburger sales, the price elasticity is $4/-2 = -2$; that is, the relative volume change is twice as large as the relative price change. The negative sign is due to the fact that price and sales changes are inversely related. In fact, elasticity is always negative when a drop in price results in an increase in quantity sold. But are you selling enough of these cheaper burgers to make more profit? If you lower the price from $2 to $1.90, for example, and your sales go from 500 to 526 per week, you are still earning the same $1,000 in revenue per week.

Furthermore, the sale of some items (like soups and appetizers) will depend on the prices of other, main-course items. The degree of this dependency is measured by the cross-price elasticity, which is defined as the percentage change in unit sales of one item (such as soup) caused by a percentage change in unit sales of another product (such as a burger). It is important to note that if the main course items are priced too high, customers may not have enough money—or may not want to spend enough money—to buy soup or an appetizer, which often have higher profit percentages than the main-course items.

If two products are competing against each other—say, a mushroom burger versus a chili burger—the cross-price elasticity is positive. If, on the other hand, the products are complementary

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Elasticity Depends on the Product

The demand for water is much more elastic than the demand for cigarettes. When cities raise the price of water by 10 percent, water usage goes down by as much as 12 percent. When the price of agricultural water goes up 10 percent, usage drops by about 20 percent. Agricultural users of water are much more sensitive to price than city dwellers, but both are much more sensitive to price than smokers. When the price of cigarettes increases by 10 percent, consumption of cigarettes drops by only 3 to 5 percent.

Sources: Terry L. Anderson and Clay J. Landry, "Trickle-Down Economic", *The Wall Street Journal,* August 23, 1999, p. A14; Gene Koretz, "Still Hooked on the Evil Weed," *BusinessWeek,* July 5, 1999, p. 18.

(like pizza and pizza toppings) and the customer must consume them together but buy them separately, the elasticity figure will be negative. In conclusion, the manager must know the price response function to make rational pricing decisions. Note that there may be considerable difference between the value of a meal to a customer and the price he or she is able and willing to pay for it. Pricing should therefore focus on the latter rather than on the former.

PRICE REVISION

The revision of the price of an item may become necessary either because of a change in production costs or because sales fail to reach the expected level. It is reasonable to have an established procedure for examining the problem, in the form of a checklist. Before attempting price revision, the following are some questions the manager should answer:

- Have prices changed recently? If yes, what effects on the volume of sales could be attributable to the price changes?

- Is there a noticeable long-term trend in prices, and if so, what is it?

- What types and amounts of discounts are in place in your restaurant?

- To what extent do your prices, discounts, and terms of sale differ from those of your competitors? Is there any price leadership in operation?

- What volume changes would you need in order to compensate for price changes?

- What information might show the market reaction to price changes of your actual and potential competitors?

- Where is the break-even point? (This is discussed in Chapter 14.) To what extent is the restaurant's target profit attained?

- To what extent does the current contribution per item differ from the potential contribution? (See Chapter 9.)

- What is your market share in the area you serve? Is it increasing, steady, or declining? Does it make sense to change the menu entirely?

- What is the current cost structure of the product? Has there been any departure from the recipes or costing methods?

- Have the cost changes you have experienced also affected your competitors? If not, why not?

- What are the present limits of your productive capacity? To what extent is this capacity currently utilized? If the restaurant is operating at or near capacity, could extra capital be found to increase capacity, and if so, at what cost?

- Have any of the unit factor costs (labor, recipe items, and so on) changed, and if so, to what extent?

Once these questions are answered adequately, the manager should consider eliminating old items and introducing new ones, or conducting menu analysis before deciding.

Introducing New Menu Items

There are several reasons why managers make decisions to eliminate menu items and introduce new ones. Some depend on the answers to the questions above; others could be due to

changes in customers' preferences, such as healthy food choices and menu fatigue. Whatever the reason, most decisions are based on both quantitative and qualitative factors.

Quantitative decisions are based on data collection. Some of this data corresponds to the questions asked above. For example, the POS system can provide data on sales of different items.

Qualitative decisions rely on intuition, perception, and professional common sense. These decisions include information from both before and after the menu launch date and involve reevaluating customer trends in product preferences. This is important for continued menu development. As time goes on, your guests' perceived value, tastes, and nutritional wishes will change, as will your available ingredients, and your staff will learn new ways to combine and present recipes. You will need to be able to use these new changes to improve your menu.

Menu Engineering

menu engineering
Techniques used for analyzing menu profitability and popularity.

In this section, we will focus on menu engineering methods to maximize sales. **Menu engineering** is the most conservative and complete approach to maximizing sales. It works on the basis of gross profit and menu item price elasticity, and from that data you can measure the popularity and profitability of each menu item. The gross-profit theory of menu analysis states that profits are maximized through the correct combinations of selling prices, costs, and sales counts. Menu engineering provides a quantitative method of evaluating the success of a new menu as compared to a previous one.

The data required to prepare the menu engineering analysis includes selling prices, sales counts of each menu item, and direct product costs. Non-entrée food items, as well as beverages, should be separated and analyzed by category. Menu engineering includes price elasticity testing. A price is said to be inelastic when the quantity sold does not vary with price increases or reductions. It would be unwise to reduce the price of an inelastic item, since the sales would be unaffected. On the other hand, an item has an elastic price when sales counts can

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What Did That Salmon Dish Cost?

Restaurants mark up food costs by an average of 300 percent to cover their overhead and to generate a profit, but the markup is not the same for all items on the menu. Some ingredients—especially prime cuts of beef and exotic seafood such as fresh scallops—are so costly that diners would not tolerate a 300 percent markup. So restaurants make it up on the inexpensive items, such as vegetables, pasta, and salmon. Why salmon? The farmed variety is only $2.50 per pound wholesale, much cheaper than prime restaurant-quality beef. At the Docks Restaurant in New York, a 10-ounce salmon dinner garnished with potatoes and coleslaw is priced at $19.50. The actual cost of the ingredients is only $1.90.

To take another example, the ingredients of the best-selling Angus beef tenderloin at the Sunset Grill in Nashville, Tennessee, cost the restaurant $8.42. Applying the average 300 percent markup, the price of the meal would be $33.68. But few diners would order the meal at that price. So instead the restaurant charges just $25. In contrast, the restaurant charges $9 for its Grilled Vegetable Plate whose ingredients cost only $1.55.

Source: Eileen Daspin, "Entrée Economics," *The Wall Street Journal,* March 10, 2000, pp. W1 and W4. Reprinted by permission of The Wall Street Journal, Copyright © 2000 Dow Jones & Company, Inc. All Rights Reserved Worldwide. License number 2103290892213.

be affected dramatically via price increases or reductions. Dropping the price of an elastic item may stimulate sales and increase total profit. On the other hand, increasing the price of a difficult-to-handle, high-cost elastic item that draws in customers may lower the number sold, thus increasing the contribution margin for the item but not the overall restaurant profit percentage.

A menu designed solely from the perspective of achieving the lowest overall food cost percentages will cause the operation to sacrifice total sales revenues. This is because low-food-cost items are usually priced higher in percentages than high-food-cost items. An operation takes dollars, not percentages, to the bank. In many instances, raising food cost percentages to stimulate additional sales may actually increase profitability. As revenue increases, the percentage of fixed costs (such as rent and insurance) is lowered. According to Rick Braa at the 2006 Hospitality Financial and Technology Professional (HFTP) conference: "Opportunities are often lost by focusing solely on percentages, but they are only a good measurement." Take for example the calculations in Figures 13-2. Which item would you rather sell more of: the pasta or the steak?

	Pasta	Steak
Price	100.0%	100.0%
Food Cost	25.0%	40.0%
Labor Cost	23.2%	15.0%
Prime Cost	48.2%	55.0%
Gross Profit	51.8%	45.0%

Figure 13-2 Menu Prices 1

Now take a look at Figure 13-3 below. The pasta sells for $12.95 and the steak sells for $19.95.

	Pasta		Steak	
Price	$12.95	100.0%	$19.95	100.0%
Food Cost	$3.24	25.0%	$7.98	40.0%
Labor Cost	$3.00	23.2%	$3.00	15.0%
Prime Cost	$6.24	48.2%	$10.98	55.0%
Gross Profit	$6.71	51.8%	$8.97	45.0%

Figure 13-3 Menu Prices 2

What is your answer after seeing Figure 13-3? The answer is obvious; you will take more money to the bank with the steak if both items sell an equal amount.

Menu Profitability Analysis

To determine a menu item's profitability or contribution margin, you need to know two things: the item's selling price and the item's recipe cost. Selling price minus recipe cost is equal to the contribution margin. The contribution margin will be valuable for calculations in this section; you will need to know how to perform it on all of your menu items. Follow this example for an ahi tuna entrée:

Selling price	=	$18.75
Recipe food cost (8-ounce portion of tuna)	=	($0.93)
Garnishes	=	($0.40)
Vegetable, starch, roll, and butter	=	($1.00)
Total cost	=	($2.33)
Contribution margin	=	$16.42

This example shows how to determine the profitability, or total contribution margin, of an item. First, subtract the recipe cost from the sale price. Then multiply that by the number of items sold. For example, if 50 orders of ahi tuna were sold, the total contribution margin for the item would be 50 × ($18.75 − $2.33), or $821. The profitability, then, is the ratio of an item's profit contribution to the total profit contribution of all items sold within one menu category. Here is the formula:

profitability = one item's profit contribution / total category contribution

Menu Popularity Analysis

Using the selling price and quantity of each item sold, you can determine popularity percentages for each item within a category. A category is a group of like items, such as entrées, appetizers, desserts, or alcoholic beverages. You will also need to know the total number of items sold from the category. Use this formula for each item:

popularity percentage = number of the item sold / total number of items sold

sales mix Number of sales of menu items; perhaps patternized. Also, the products and sales packages offered.

For the venison in Figure 13-4, the equation would be 54 / 429 = 12.6 percent. These percentages add up to what is called the sales mix. **Sales mix** is the number of individual menu items sold compared to all the items sold in that category.

The popularity of a single menu item could also determine your overall cost, especially when its percentage is very high. Note the example in Figures 13-4 and 13-5, in which item popularity affects cost.

Figure 13-4 Menu Popularity Analysis 1

# of item	Menu Items	#a Recipe Cost	#b Selling Price	#c January Number Sold	#d Sales Mix	#e February Number Sold	#f Sales Mix	#g March Number Sold	#h Sales Mix
1	Tuna Ahi	$2.33	$18.75	48	11.2%	40	9.3%	60	14.0%
2	Pork Chop Grilled	$3.70	$16.95	64	14.9%	64	14.9%	64	14.9%
3	Cod Grilled Atlantic	$4.00	$17.50	26	6.1%	26	6.1%	26	6.1%
4	Tian Of Pepper & Mush.	$4.81	$15.50	51	11.9%	66	15.4%	40	9.3%
5	Huckleberry Glaze Venison	$6.72	$22.50	54	12.6%	60	14.0%	40	9.3%
6	Beef Tenderloin	$4.46	$22.00	95	22.1%	95	22.1%	95	22.1%
7	Chicken Saute with Olive	$3.40	$16.75	37	8.6%	37	8.6%	37	8.6%
8	Monkfish saddle W/lentils	$5.97	$22.00	31	7.2%	31	7.2%	31	7.2%
9	Tomato - Garlic Fettuccin	$2.04	$15.95	23	5.4%	10	2.3%	36	8.4%
Total				429	100.0%	429	100.0%	429	100.0%

Figure 13-5 Menu Popularity Analysis 2

		#i	#j	#k	#l	#m	#n
# of item	Menu Items	Total Cost January (#a × #c)	Total Cost February (#a × #e)	Total Cost March (#a × #g)	Total Revenue January (#b × #c)	Total Revenue February (#b × #e)	Total Revenue March (#b × #g)
1	Tuna Ahi	$111.84	$93.20	$139.80	$900.00	$750.00	$1,125.00
2	Pork Chop Grilled	$236.80	$236.80	$236.80	$1,084.80	$1,084.80	$1,084.80
3	Cod Grilled Atlantic	$104.00	$104.00	$104.00	$455.00	$455.00	$455.00
4	Tian Of Pepper & Mush.	$245.31	$317.46	$192.40	$790.50	$1,023.00	$620.00
5	Huckleberry Glaze Venison	$362.88	$403.20	$268.80	$1,215.00	$1,350.00	$900.00
6	Beef Tenderloin	$423.70	$423.70	$423.70	$2,090.00	$2,090.00	$2,090.00
7	Chicken Saute with Olive	$125.80	$125.80	$125.80	$619.75	$619.75	$619.75
8	Monkfish saddle W/lentils	$185.07	$185.07	$185.07	$682.00	$682.00	$682.00
9	Tomato - Garlic Fettuccini	$46.92	$20.40	$73.44	$366.85	$159.50	$574.20
Total		$1,842.32	$1,909.63	$1,749.81	$8,203.90	$8,214.05	$8,150.75

As you can see, the changes in customer demand (popularity) of any item can affect the sales mix percentage of that item in the overall picture. If your least-profitable items are the most popular, for example, your overall cost percentage may be unacceptably high.

The numbers in Figure 13-5 show the revenue and cost totals for each of the months in the example. Each column lists a formula that corresponds to the columns in Figure 13-4. The costs and revenues vary each month solely due to changes in popularity and sales mix.

Although product cost and sales prices remain the same from month to month, the overall cost percentages do not (Figure 13-6). The cost and prices remain the same for January through March, but not the cost percentages in Column Q. The reason that each month varies in total cost percentages is the variation in sales mix, or customer selection. This means the customer, not the manager, has determined the cost percentages. You might do everything—portion control, standard recipes, wise purchasing, and so on—to ensure your control procedures are followed, but it is ultimately customer demand that will determine your actual cost—and the customer's demand is influenced by your pricing strategies.

Evaluating Menu Profitability and Popularity

Figure 13-7 provides the data with which to rank the items in our example by profitability and popularity for the month of January.

Now you have the tools to classify each item in the category into one of four groups (Figure 13-8).

Figure 13-6 Menu Popularity Analysis by Month

Location	#o Total Revenue	#p Total Cost	#q #p #o Cost %
January	$8,203.90	$1,842.32	22.5%
February	$8,214.05	$1,909.63	23.2%
March	$8,150.75	$1,749.81	21.5%
Total	$24,568.70	$5,501.76	22.4%

Figure 13-7 Menu Analysis with Price

Menu Item	Recipe Cost	Selling Price	Difference Between Cost and Price *	Difference Divided by Category Total	Item's Profitability Rank	January Number Sold	Sales Mix	Item's Popularity Rank
Tuna Ahi	$2.33	$18.75	$16.42	12.60%	2	48	11.20%	5
Pork Chop Grilled	$3.70	$16.95	$13.25	10.20%	7	64	14.90%	2
Cod Grilled Atlantic	$4.00	$17.50	$13.50	10.40%	6	26	6.10%	8
Tian Of Pepper & Mush.	$4.81	$15.50	$10.69	8.20%	9	51	11.90%	4
Huckleberry Venison	$6.72	$22.50	$15.72	12.10%	4	54	12.60%	3
Beef Tenderloin	$4.46	$22.00	$17.54	13.50%	1	95	22.10%	1
Chicken Saute with Olive	$3.40	$16.75	$13.35	10.00%	8	37	8.60%	6
Monkfish saddle W/lentils	$5.97	$22.00	$16.03	12.30%	3	31	7.20%	7
Tomato - Garlic Fettuccini	$2.04	$15.95	$13.91	10.70%	5	23	5.40%	9
TOTALS:			$130.41	100.00%		429	100.00%	

* this equals profit contribution

Figure 13-8 Profitability and Popularity

Items	Rank
Highly popular and highly profitable	Star (e.g., beef tenderloin)
Highly popular but less than average profitable	Plow Horse (e.g., pork chop)
Less than average popularity but highly profitable	Puzzle (e.g., monk fish)
Less than average popularity and less than average profitability	Dog (e.g., chicken saute)

Evaluate your items according to their popularity and profitability. All of your menu items will fall into the chart shown in Figure 13-9 below, giving you a picture of how your menu engineering has been in the past and where your energies should be spent in improvement.
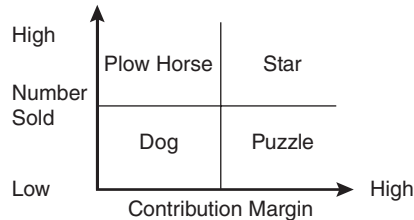

Figure 13-9 Evaluation of Menu Items

It is important to note that, in order to place any value on these calculations, you must prepare your menu items the same way each time. High-profit menu items and house specialties also must be prepared consistently. This is the ideal, but in reality, studies conducted by the company Software Creation show this to be the case only 50 to 75 percent of the time.

In the **star** category, items are both profitable and popular. Give them a highly visible menu location and strictly maintain their quality. Employ the test for elasticity mentioned previously. You want to know if you can raise the price and still sell large numbers of these items.

Plow horse items are popular but do not attain average profitability. The overall strategy would be to increase the contribution margin of these items. Price increases should be considered. Generally, it is not wise to lower these items' prices due to the already low contribution margin. Furthermore, little money should be spent on promoting these items since they are already popular. However, if the intent is to draw customers' attention to other menu items or to increase total sales volume, this may be a good strategy. Evaluate your recipes to determine whether costs can be reduced without lowering perceived value.

Puzzle items are profitable but low-sale items. Evaluate the quality of each: Is it a poor product, perhaps with a low standard of presentation? Is it simply an unpopular product that needs some sales promotion? Is it overpriced? These conditions will result in a perception of low value and will reduce customer demand. If the item is elastic and is believed to be a highly popular item, lowering its price could make it a star. If this product is unpopular in your marketplace, perhaps it should be left off the next menu or replaced with another item that has the potential of increasing sales and profitability. Assess its related costs, such as shelf life, waste, spoilage, leftovers, and labor. Remember that it does not matter how much money you make per sale if you have no sales!

An item that is neither popular nor profitable, in the **dog** category, should not remain on the menu unless it serves to influence the sales of other menu items or there is hope that it will gain popularity. Increase the price to move it to the puzzle category. Check product quality while promoting the item strongly. Change its image and perceived value to increase sales level significantly, or consider dropping the item.

The end result of menu analysis or engineering is to minimize the dogs, limit the number of puzzles, and maximize the stars. The remaining items will be plow horses, which will enhance the menu profitability. Note, however, the following caveats to the system: Because menu items are categorized relative to one another, some items must fall into less-desirable categories. Do not put energy into a never-ending battle of adjusting weak items, only to find strong items falling below average. Use common sense to maximize stronger items and profitability.

Loss leaders—items that are less profitable than others—serve a purpose, as do high- and low-ticket items. A weak item may contribute to the overall success of an operation. The operation

star A menu engineering classification of items that are both popular and profitable.

plow horse A menu engineering classification of items which are not very profitable but which are popular with customers.

puzzle A menu engineering classification of items that are particularly profitable but not very popular with guests.

dog A menu engineering classification of items which are neither profitable nor popular.

loss leader A menu item that is priced low because it is not very profitable and not popular with customers.

may be the only one in the area serving a specialty item. This may attract customers in spite of the item's lack of profitability. These customers are likely to bring in other patrons who will order more profitable items.

There are many ways to use the system outlined above. Consider these variations on the basic menu engineering approach:

- Factor in the variable cost of preparation labor, or prime cost, rather than simply the food cost. How long does it take to prepare this item?

- Factor in butcher costs, and take into consideration differing costs for precut and in-house butchering.

- Rank menu items by a combination of their food cost percentage and their contribution margin.

An Automated Approach to Menu Engineering

Many food-service owners, managers, and accountants use personal computers for accounting functions with the same ease and frequency as they use a telephone. As automated applications for menu engineering increase, so does the need for service operators to become more familiar with computers.

An NRA study titled "The Food Service Manager 2000" rated the need for greater computer proficiency as the most important priority for managers. In fact, managers and food-service operators will continue to move to comprehensive computer-based information systems. In addition to generating menu engineering reports, systems like these can help solve scheduling issues, forecast sales, compile sales reports, and manage inventory.

Because of the wide application of menu engineering in evaluating the performance of the existing menu and in future menu planning and design, we have developed an Excel worksheet, included in this book's companion CD, to aid the student and professional. A complete illustration of how to use this worksheet is provided in Figure 13-10. Please be sure to read the instructions completely before beginning these calculations.

The column descriptions are as follows:

- Column A: The item number within its menu category. This is not a ranking.

- Column B: Names of menu items.

- Column C: Number of menu items sold per guest checks or POS sales reports.

menu mix A proportion of different menu items that make up a complete restaurant menu.

- Column D: Menu mix percentages. The term **menu mix** refers to a proportion of different menu item that make up a complete restaurant menu. Arriving at the correct mix that satisfy the customer and the restaurant profit objective require analysis. The percentage for each item is derived by dividing the number of menu items sold by the total number of all menu items sold. For example, if an outlet sold 48 tuna ahi out of total sales of 429, the menu mix percentage would therefore be 48 / 429, or 11.2 percent.

- Column E: Calculated recipe cost of each item.

- Column F: Selling price of each item.

- Column G: Contribution margin for each menu item. This is the selling price minus the item cost for each item (Column F – Column E).

- Column I: Item cost percentage. The following example shows how this is calculated:

Tuna ahi

Price	$18.75 ($a$)
Cost	$2.33 ($b$)
Cost percent = $\frac{b}{a}$	= 12.43 percent

- Column I: Total cost. This is derived by multiplying Column C (number sold) by Column E (item cost).

- Column J: Total revenue. This is derived by multiplying Column C (number sold) by Column F (selling price).

- Column K: Total contribution margin. This is derived by multiplying Column C (number sold) by Column G (contribution margin).

- Column L: Contribution margin category. The amount that each menu item in Column G contributed to the total menu is compared to the average contribution in Line Q, at the bottom left of the chart. Line Q is derived by dividing the sum of column K by the sum of Column C. The entry (low or high) in Column L is made after comparing Column G and Line Q.

- Column M: Menu mix category. This column evaluates each item's sales performance in the overall menu group category. Each item percentage in Column D is compared to Line P. Each menu mix percentage in Column D is then ranked as high or low in Column M, depending upon its comparison with Line P. Line P is considered the benchmark or average of the entire competing category (although it is really only 70 percent of the real average) and is derived as follows:

  Line P = 1 / number of items × 0.7

  Menu engineering assumes that an item is popular if its sales average 70 percent or more of total average sales. If you lower or increase these average percentages, you will get a different result in terms of what items appear popular.

  If there are nine items in a category, the calculation would look like this:

  $\frac{1}{9} \times 0.70 = 7.8$ percent

- Column N: Evaluation of the combination of Column L and Column M.

- Line O: Menu category total cost. This is derived by dividing the total of Column I by the total of Column J.

- Line P: See Column M above.

- Line Q: See Column L above.

- Line R: Multiply the total of Column C by Line P to get Line R. In this case, the result is 33.

This chart enables the manager to consider menu changes. The results of these calculations establish a complete picture of the bottom line for the items that are tested. From the calculations, the manager can decide the fate of various items clearly and effectively. In addition, the manager can instruct the service staff on which items to push or to sell as specials, thus making this chart a marketing tool as well.

Menu Engineering Decision Matrix Graph

Having discussed the dynamics of menu analysis, we will now focus on developing a decision matrix for all menu items. This is a useful tool for the manager to evaluate the performance of

Figure 13-10 Menu Dynamics Analysis

Date	January09			Outlet:	Fine Dinning					Competing Category:		Entrees	
(a) No.	(b) FINEDINI.WK1 Menu Item Name	(c) Number Sold	(d) Menu Mix %	(e) Item Cost	(f) Sell Price	(g) Contribution Margin	(h) Item Cost %	(i) Total Cost	(j) Total Revenue	(k) Total C.M.	(l) Total Cat.	(m) M.M. Cat.	(n) Item Class
1	Tuna Ahi	48	11.2%	$2.33	$18.75	$16.42	12.4%	$111.84	$900.00	$788.16	High	High	Star
2	Pork Chop Grilled	64	14.9%	$3.70	$16.95	$13.25	21.8%	$236.80	$1,084.80	$848.00	Low	High	Plowhorse
3	Cod grilled Atlantic	26	6.1%	$4.00	$17.50	$13.50	22.9%	$104.00	$455.00	$351.00	Low	Low	Dog
4	Tian Of Pepper & Mush.	51	11.9%	$4.81	$15.50	$10.69	31.0%	$245.31	$790.50	$545.19	Low	High	Plowhorse
5	Hunkleberry glaze Venison	54	12.6%	$6.72	$22.50	$15.78	29.9%	$362.88	$1,215.00	$852.12	High	High	Star
6	Beef Tenderloin	95	22.1%	$4.46	$22.00	$17.54	20.3%	$423.70	$2,090.00	$1,666.30	High	High	Star
7	Chicken Saute with Olive	37	8.6%	$3.40	$16.75	$13.35	20.3%	$125.80	$619.00	$493.95	Low	High	Plowhorse
8	Monkfish saddle W/Lentils	31	7.2%	$5.97	$22.00	$16.03	27.1%	$185.07	$682.00	$496.93	High	Low	Puzzle
9	Tomato - Garlic Fettuccin	23	5.4%	$2.04	$15.95	$13.91	12.8%	$366.92	$366.85	$319.93	Low	Low	Dog
	Totals	429	100%					$1,842.32	$8,203.90	$6,361.58	Report Printed:		19-Jul 09

% Total Item Cost: 22.5% (o)
Menu Mix Percentage: 7.8% (p)
Ave. Contribution: $14.83 (q)
Ave. Achievement # : 33 (r)

each competing menu item within a category. Not all items will share the same characteristics within their groups; therefore, it may be appropriate to conduct this analysis frequently. Further, it is wise to emphasize improving the position of each new item through up-selling, menu design, and reviewing competitors' selling prices.

On the matrix graph shown in Figure 13-11, each menu item is positioned according to its contribution margin and menu mix coordination. The horizontal axis depicts contribution margin, and the vertical axis reflects popularity or menu mix.
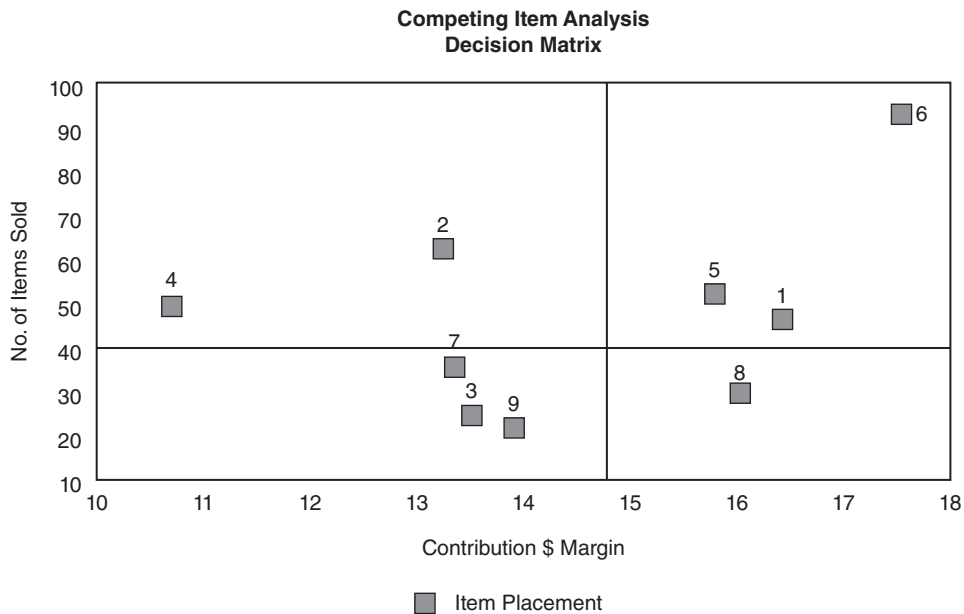
**Competing Item Analysis
Decision Matrix**

Figure 13-11 Competing Item Analysis

Launching Revised Menu Items

The decision to launch a revised menu item is similar to the decision to launch a new item, as discussed above. The only difference is that management has usually undertaken extensive analysis before making this decision. The menu has been repriced, recosted, and repositioned, and employees' comments considered and documented. For the restaurant to succeed financially, the process of menu development and analysis must start all over again.

Summary

Several methods are used to set menu prices. Menu engineering is the most scientific approach, providing a quantitative method of evaluating a menu. In this approach, both the profitability and popularity of items are evaluated and ranked. Items are categorized as stars, dogs, plow horses, or puzzles, and treated accordingly. To assist in performing this analysis, computers are extremely helpful. A sample spreadsheet has been included in the online companion to this book.

CHAPTER QUESTIONS

Critical Thinking Questions

1. What impact do your potential customers have on the item selections and pricing of the menu?

2. What are the advantages of using menu engineering?

3. What is price elasticity, and why should it be considered when setting menu prices?

4. What is the danger of focusing too heavily on food cost percentages?

Objective Questions

1. As the contribution margin of an item increases, the food cost percentage decreases. True or False?

2. Menu engineering should be used to help determine the placement of items on the menu. True or False?

For Questions 3 and 4: Given the following sales mix, what should the potential food cost (in dollars and percentage) have been?

Item	Number Sold	Selling Price	Potential Food Cost Percent
Rib-eye steaks	1,000	$23.75	25
Fish	2,000	$28.00	32
Chicken	1,500	$21.50	20

3. Potential food cost: $_____

4. Potential food cost: _____ percent

For Questions 5 and 6: Given the following sales mix, what should the potential food cost (in dollars and percentage) have been?

Item	Number Sold	Selling Price	Potential Food Cost Percent
Rib-eye steaks	2,000	$23.75	25
Fish	1,000	$28.00	32
Chicken	1,500	$21.50	20

5. Potential food cost: $_____

6. Potential food cost: _____ percent

Multiple Choice Questions

1. Typical menu pricing strategies include all of the following EXCEPT
   A. Intuition
   B. Competitive pricing
   C. Menu engineering pricing
   D. Quantum analysis pricing

2. Higher contribution margins will generate higher profitability
   A. if the number of items sold does not decrease.
   B. all the time.
   C. under no circumstances.
   D. if price elasticity is great.

3. Which menu category refers to items that are highly popular but less than average in contribution margin?
   A. Star
   B. Plow horse
   C. Puzzle
   D. Dog

4. Which menu category refers to items that are high in both popularly and contribution margin?
   A. Star
   B. Plow horse
   C. Puzzle
   D. Dog