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DOPSON | HAYES

FOOD AND BEVERAGE COST CONTROL

SEVENTH EDITION

WILEY

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DEDICATION

This edition is dedicated to the memory of Jack E. Miller and his devoted wife, and life-long companion, Anita Miller

CONTENTS

PREFACE

The publication of the first edition of ***Food and Beverage Cost Control*** fulfilled original lead author Professor Jack Miller's vision for a college-level text that would provide students and practicing managers the essential tools needed to effectively manage costs in food and beverage operations. This new seventh edition continues that vision.

The authors hope that the study of cost management creates in readers the same interest and excitement for the topic that the authors experience. If so, we will have been successful in our attempt to be true to this text's original vision of creating an outstanding learning tool that prepares its readers to be successful managers in the exciting hospitality industry.

It has been said that there are three kinds of managers: those who know what has happened in the past, those who know what is happening now, and those who know what will happen in the future. Clearly, the manager who possesses all three traits is best prepared to manage effectively and efficiently. This text will give the reader the tools required to maintain sales and cost histories (the past), develop systems for monitoring current activities (the present), and learn the techniques required to anticipate and forecast what is to come (the future).

Today's professional foodservice managers face myriad complex challenges. As was true in the past, the tools and information they need to properly address these challenges must be well understood if they are to be readily applied. Students will find this edition easy to read. Instructors will find the information in it easy to present. Practicing managers will find the information in it easy to apply. The authors are convinced that is exactly what Professor Miller would have wanted for the seventh edition of ***Food and Beverage Cost Control***, and we are delighted to play our part in sustaining his original vision.

TO THE STUDENT

This book will provide you with all of the cost-control-related information and tools you will need to achieve success levels that will match your highest career goals.

If you work hard and do your best, you will master all of the information in this text. When you do, you will have gained an invaluable set of management skills that will enhance both your knowledge of the hospitality management industry and your professional self-confidence.

TO THE INSTRUCTOR

Experienced managers know that effective cost control in a foodservice operation is built upon a variety of systems that depend on the skillful use of mathematics. In many cases, however, hospitality students may be unsure of their mathematical abilities. Because that is so, any textbook addressing cost control must possess two essential traits.

First, it must be accurate. The authors are grateful to the number of editors and reviewers who helped us ensure that the mathematical formulas and examples presented in this edition are as error-free as humanly possible. We are grateful, as well, to the number of students and instructors who, in editions one through six, provided feedback that helped ensure that all mathematical examples and end-of-chapter questions and answers retained in this edition are clearly presented and accurate.

Secondly, the mathematical concepts included in the text must be presented clearly. In a heightened effort to address this key concern, this edition expands the number of the popular "Here's How It's Done" features included in each chapter. This feature was expanded in direct response to instructors' desire that their students have step-by-step explanations and illustrations of some of the text's more challenging math concepts. In this unique feature, students are shown, using real work setting examples, how the math concepts presented in the chapter are applied and their results evaluated.

Instructors utilizing this text as their primary classroom teaching tool can expect to find detailed discussions of the most important new cost-control-related issues their students will face upon graduation. This is so because the authors combined years of teaching hospitality management at the undergraduate, graduate, and continuing professional education levels have helped enormously to shape this textbook's original content and this new revision. Specifically, the following became special areas of emphasis as we developed this new edition:

Simplification of Presentation. The readers of our text have always been our primary focus, and we are delighted to find that, again and again, creative graphics and clearly written narrative help to enhance the book's reader-friendliness and, as a result, present complex ideas in easily understandable ways. We took special care in this edition to review each paragraph and sentence to ensure that the content they contain was presented in the clearest possible manner.

"Test Your Skills" Expansion. Feedback indicates that the end-of-chapter "Test Your Skills" feature is extremely popular. This feature is often used for in-class assignments, class discussions, and homework assignments. As a result of this great interest, the number of "Test Your Skills" items presented in this edition has been increased by 20 percent from the number included in the previous edition.

New "For Your Consideration" Feature. In each chapter, the authors have developed a new feature titled "For Your Consideration." Each poses three conceptual/thought-provoking questions designed to assist students in further reflecting on that chapter's major concepts. For

example, in Chapter 9: Analyzing Results Using the Income Statement, one such "For Your Consideration" query is:

> "Some managers prefer to produce P&Ls that compare their operating results to those of a prior accounting period. Other managers prefer to produce P&Ls that compare their operating results to their forecasted (or budgeted) results. Which of these two ways do you think would be best? Why do you think so?"

These creative questions have been designed to be broad enough for an instructor's use in generating thought-provoking in-classroom team, small group, or individual discussions, or for making written homework assignments.

TO MANAGERS

While ***Food and Beverage Cost Control*** has always been produced in a textbook format, it has also consistently been an invaluable tool for the practicing manager. The easy, step-by-step approach used to estimate future customer counts (Chapter 2) and apply measures of labor productivity (Chapter 7) are just two examples of its very practical application. The formulas used to calculate edible portion (EP) product yields (Chapter 5) and the information utilized to properly establish prices for menu items (Chapter 6) are two more such examples.

From information needed to convert standardized recipes from the US system of weights and measures to the metric system (Chapter 3), to tips for calculating and analyzing variances on profit and loss statements (Chapter 9), to recognizing the difference between a POS system's X and Z reports (Chapter 11) managers responsible for the operation of smaller to higher-volume foodservice units will find that the information in this book is vitally important and easily applicable to their operations.

Effective foodservice managers are skilled problem solvers. The information found in the seventh edition of ***Food and Beverage Cost Control*** is designed especially to provide professional problem solvers with the tools they need to manage efficient and highly profitable foodservice operations.

NEW IN THE SEVENTH EDITION

Seventh Edition readers will be pleased to find major enhancements both in the text's content and in its structure.

NEW CONTENT

One of the ongoing strengths of ***Food and Beverage Cost Control*** has been the authors' commitment to continually and carefully monitoring the field of food and beverage cost control to identify changes that must be made to ensure that the book presents the most up-to-date and accurate information available. Significant content additions to this edition include the following:

- How to create a management spreadsheet using popular software programs.
- Using baker's math to modify bakery product formulas.
- How to set prices for limited availability products such as craft beers.

Situations in which employee scheduling can be improved using cloud-based services and smart-device applications.

How to calculate Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA).

How to calculate flow-thru in a foodservice operation.

The advantages and disadvantages of moving financial and other operational data to cloud-based servers.

Understanding the reasons for the increasing popularity of E-wallets and online payments to settle guest bills.

How to calculate allowable processing fee deductions for server tips when guests pay their bills using credit or debit cards.

The differences between X and Z reports when monitoring unit sales in operations utilizing a modern point of sales (POS) system.

Understanding the increasing importance of payment card and guest information data security.

RETAINED IN THE SEVENTH EDITION

Much of the popularity of this text has been due to the quality of the elements and features developed for it in prior editions. In this seventh edition, the authors were pleased to update and retain from the previous edition the following key text elements:

OVERVIEW: Each chapter begins with a brief overview of what the chapter contains. The overview focuses on why students will benefit from learning the information presented in the chapter. Thus, this element directly informs readers about what is to be presented in the chapter and why it is important to know it.

CHAPTER OUTLINE: One-tier outlines are presented at the beginning of each chapter to inform readers about the specific topics to be addressed. This helpful feature also makes it easier to find specific material contained in the chapter.

LEARNING OUTCOMES: Students want to know how the information they learn will be useful to them in their careers. This feature specifically identifies what readers will know and what they will know how to do when they have mastered the material in the chapter.

HERE'S HOW IT'S DONE: This math "help" feature was originally developed and introduced in the sixth edition. Its introduction was extremely well-received by students and instructors. This feature is inserted, where applicable in a chapter, to assist students with the arithmetic required to understand the cost-control-related concept being presented. Created to provide easy-to-follow instructions and a step-by-step numerical example, this popular feature has been retained and expanded to include even more mathematical illustrations in this new edition.

GREEN AND GROWING: More than ever, students and customers alike recognize that environmental consciousness is as important at work as it is at home. As a result, hospitality professionals are increasingly adopting "Green" practices and policies that aid the planet as well as their own bottom lines. In this feature, students become familiar with the "Why's" and the "How's" of responsibly growing their businesses by implementing earth-friendly business practices specific to the hospitality industry.

CONSIDER THE COSTS: One of the most exciting things about learning any new skill is the ability to directly apply what has been learned to situations the learners will actually encounter. To give students an opportunity to do just that, "Consider the Cost" micro case studies have been developed to present students with common cost-control-related challenges they will likely encounter at work. Each case study poses questions that allow readers to apply information learned in the chapter to these "real-world" work situations and problems. Instructors will also find these micro case studies are fun for their students to read and discuss in class.

FUN ON THE WEB!: This important feature of the text adds to student learning by integrating the use of the Internet to the study of cost control. This feature provides Web-based resources that can help managers more effectively do their jobs.

TECHNOLOGY TOOLS: These updated listings of real-life application examples demonstrate to students that they can utilize advanced smart device applications, sophisticated wired and wireless communication tools, and much more to help manage costs and improve operating efficiencies. While not all managers will use all of the tools suggested, it is important for students to understand the rapidly expanding technology-based resources available to them today.

APPLY WHAT YOU HAVE LEARNED: This innovative pedagogical feature allows students to draw on their own problem-solving skills, ideas, and opinions using the concepts explored within each chapter. Challenging and realistic, yet purposely brief, these industry-specific scenarios provide excellent starting points for class discussions or, if the instructor prefers, outstanding written homework assignments.

KEY TERMS AND CONCEPTS: Students often need help in identifying key terms and concepts that should be mastered after reading a section of a book. These are listed at the conclusion of each chapter and in the order in which they appeared in the chapter to make finding them easier.

TEST YOUR SKILLS: This popular feature has been retained and expanded. As was true in previous editions, predesigned Microsoft Excel spreadsheets are employed in most of the questions to allow students to practice problem solving. Doing so enhances the instructor's ability to evaluate student mastery of cost control concepts and student skill in understanding and using spreadsheets.

Excel spreadsheets are available in the instructor's website at www.wiley.com/go/dopson/foodandbeveragecostcontrol7e.

MANAGERIAL TOOLS

It is the authors' hope that all readers find the book as helpful to use as we found it exciting to develop. To that end, appendices are provided that we believe will be of great value.

Appendix A: Frequently Used Formulas for Managing Costs is available in the instructor's website (www.wiley.com/go/dopson/foodandbeveragecostcontrol7e) as an easy reference guide. This feature allows readers to look up mathematical formulas for any of the computations presented in the text.

Appendix B: Management Control Forms provides simplified cost control–related forms. This popular appendix has been retained from previous editions of this text. Included on the instructor's website at www.wiley.com/go/dopson/foodandbeveragecostcontrol7e. These forms can be used as guideposts in the development of property-specific forms. They may be implemented as-is or modified as desired by management.

COMPANION WEBSITE

To help instructors effectively manage their time and to enhance student learning opportunities, several significant educational tools have been developed specifically for this text:

Instructor's Materials

INSTRUCTOR'S MATERIALS

A password-protected online ***Instructor's Manual*** www.wiley.com/go/dopson/foodandbeveragecostcontrol7e has been meticulously developed and classroom tested for this text. The manual includes the following, each of which is presented in a stand-alone format:

- ***Lecture Outlines*** for each chapter.
- ***Power Point Presentations*** for each chapter: These easy-to-read teaching aids are excellent tools for instructors presenting their lectures in class or online.
- Suggested answers to each chapter's "***Consider the Cost***" micro case studies.
- Suggested answers for "***Apply What You Have Learned***" questions for each chapter.
- Suggested answers to each chapter's "***For Your Consideration***" conceptual queries.
- Suggested answers to chapter-ending "***Test Your Skills***" problems. Instructors will be able to access answers and formulas to the "Test Your Skills" spreadsheet exercises at the end of each chapter.
- A ***Test Bank*** including 25 multiple choice (4-alternative) and 10 True and False (2-alternative) exam questions developed for each chapter. The authors recognize the importance that instructors place on well-designed exam questions. We are convinced the questions developed for this text are among the very best in all of hospitality education.

The Test Bank for this text has been specifically formatted for ***Respondus***, an easy-to-use software for creating and managing exams that can be printed or published directly to Blackboard, WebCT, Desire2Learn, eCollege, ANGEL, and other eLearning systems. Instructors who adopt ***Food and Beverage Cost Control, Seventh Edition*** can download the Test Bank for free.

ACKNOWLEDGMENTS

The first six editions of this text have been very popular. As a result, this book continues to be one of the market leaders among hospitality cost control texts. This success has stemmed in large part from the testing of its concepts and materials in classes at the University of North Texas, Purdue University, Texas Tech University, the University of Houston, California State Polytechnic University at Pomona, and Lansing Community College, as well as from those original St. Louis Community College students who received their instruction under Jack Miller.

We are also extremely grateful to the myriad professionals in institutional, commercial, and hotel foodservice operations with whom we consulted and who so freely gave of their time and advice in this endeavor.

This edition could not have been produced without the assistance of a great many colleagues, friends, and family who supported our efforts. As always, a special thank you goes to those who have been so supportive of us throughout our careers: Loralei, Terry, and Laurie, as well as Peggy, Scott, and Trishauna. We appreciate all of you!

Special thanks goes to Allisha A. Miller, consulting author and project manager at Panda Professionals Hospitality Education and Training (www.pandapros.com) for her meticulous attention to detail in carefully reviewing each of the mathematical formulas and problem solutions presented in this edition and for her assistance in developing this text's instructor materials. This is the fourth edition for which we have retained Ms. Miller and Panda Professionals Hospitality Education and Training services and their work never fails to impress us. New to this edition, we also want to thank Joshua D. Hayes Ph.D. for his craft beer-related contributions to Chapter 6 (Managing Food and Beverage Pricing) as well as his overall insight and editorial review of the new examination questions contained in this seventh edition.

As always, we are deeply grateful to all of the staff at John Wiley for their intellect, patience, and faithfulness in helping us produce this seventh, and best ever, edition of ***Food and Beverage Cost Control.***

Lea Dopson, Ed.D. — *Pomona, CA*

David K. Hayes, Ph.D. — *Okemos, MI*

CHAPTER 1

Managing Revenue and Expense

OVERVIEW

This chapter presents the relationship among a foodservice business's revenue, expenses, and profit. As a professional foodservice manager, you must understand the relationship that exists between controlling these three areas and the resulting success of your operation. In addition, the chapter presents the mathematical foundation you must know to report your operating results and express them as a percentage of your revenue or budget. This method is a standard within the hospitality industry.

Chapter Outline

LEARNING OUTCOMES

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

- Apply the formula used to determine business profits.
- Express business expenses and profits as a percentage of revenue.
- Compare actual operating results with budgeted operating results.

PROFESSIONAL FOODSERVICE MANAGER

To be a successful foodservice manager, you must be a talented individual. Consider, for a moment, your role in the operation of a profitable foodservice facility. As a foodservice manager, you are both a manufacturer and a retailer. A professional foodservice manager is unique because all of the functions of a product's sale, from menu development to guest service, are in the hands of the same individual. As a manager, you are in charge of securing raw materials, producing a product, and selling it—all under the same roof. Few other managers are required to have the breadth of skills that effective foodservice operators must have. Because foodservice operators are in the service sector of business, many aspects of management are more challenging for them than for their manufacturing or retailing management counterparts.

A foodservice manager is one of the few types of managers who actually have contact with the ultimate consumer. This is not true for the managers of a cell phone factory or automobile production line. These individuals produce a product, but they do not sell it to the person who will actually use it. In a like manner, furniture and clothing store managers will sell products to those who use them, but they have had no role in actually producing the products they sell. The face-to-face guest contact in the hospitality industry requires that you assume the responsibility of standing behind your own work and the work of your staff, in a one-on-one situation with the ultimate consumer, or end user, of your products and services.

The management task checklist in Figure 1.1 shows some of the areas in which foodservice, manufacturing, and retailing managers differ in their responsibilities.

In addition to your role as a food factory supervisor, you must serve as a cost control manager, because, if you fail to perform this vital role, your business will perform poorly or may even cease to exist. Foodservice management provides the opportunity for creativity in a variety of settings. The control of revenue and expense is just one more area in which an effective foodservice operator can excel. In fact, in most areas of foodservice, excellence in operation is measured in terms of a manager's ability to produce and deliver quality products in a way that ensures an appropriate operating profit for the owners of the business.

PROFIT: THE REWARD FOR SERVICE

In the foodservice industry, a manager's primary responsibility is to deliver quality products and services to guests at a price mutually agreeable to both parties. In addition, the quality must be such that buyers of the product or service feel that excellent value was received for the money they spent. When they do, a business will prosper. If, however, management focuses more on reducing costs than providing value to guests, problems will inevitably occur.

FIGURE 1.1 Management Task Checklist

Task	Foodservice Manager	Manufacturing Manager	Retail Manager
1. Secure raw materials	Yes	Yes	No
2. Manufacture product	Yes	Yes	No
3. Market to end user	Yes	No	Yes
4. Sell to end user	Yes	No	Yes
5. Reconcile problems with end user	Yes	No	Yes

It is important to remember that serving guests causes businesses to incur costs. It is wrong to think that "low" costs are good and "high" costs are bad. A restaurant with $5 million in sales per year will have higher costs than the same-size restaurant achieving only $500,000 in sales per year. The reason is quite clear. The amount of products, labor, and equipment needed to sell $5 million worth of food and beverages is greater than those required to sell only $500,000. Remember, if there are fewer guests, there are likely to be lower costs, but less sales and profit as well! Because that is true, a business will suffer if management attempts to reduce costs with no regard for the impact on the balance between managing costs and maintaining high levels of guest satisfaction. In addition, efforts to reduce costs that result in unsafe physical conditions for guests or employees are never wise. Although some short-term savings may result, the expense of a lawsuit resulting from a guest or employee injury can be very high. Managers who, for example, neglect to spend the money to shovel and salt a snowy restaurant entrance area may find that they spend thousands of dollars more defending themselves in a lawsuit brought by an individual who slipped and fell on the ice than they would have spent clearing the snowy walkway.

For an effective manager, the question to be considered is not whether costs are high or low. The question is whether costs are *too high* or *too low*, given the value a business seeks to create for its guests. Managers can eliminate nearly all costs by closing their operations' doors. Obviously, however, when you close the doors to nearly all expenses, you also close the doors to sales and, more importantly, to profits. Expenses, then, must be incurred, but managed in a way that allows the operation to achieve its desired profit levels.

It is especially important for you to understand profits. Some people assume that if a business purchases an item for $1.00 and sells it for $3.00, the profit generated is $2.00. In fact, this is not true. As a business operator, you must realize that the difference between what you have paid for the goods you sell and the price at which you sell them does not represent your profit. Instead, all expenses, including advertising, the building that houses your operation, management salaries, and the labor required to generate the sale, just to name but a few, are among the many expenses that must be subtracted from your income *before* you can determine your profits accurately.

Every foodservice operator must know and understand well the profit formula given below:

Revenue – Expenses = Profit

Thus, when you manage your facility, you will receive **revenue**—the money you take in from selling your products—and you will incur **expenses**—the cost of everything required to operate the business and to generate your revenue. **Profit** is the amount of money that remains after all expenses have been paid. Because doing so is common in the industry, in this book the authors will use the following terms interchangeably: revenues and sales; expenses and costs.

The profit formula holds true even for managers in the "nonprofit" sectors of foodservice such as schools, hospitals, military bases, and businesses providing meals to their workers. For example, consider the situation of Hector Bentevina. Hector is the foodservice manager at the headquarters of a large high-tech corporation that employs many office workers. Hector supplies the foodservice to a large group of these workers, each of whom is employed by the corporation that owns the facility Hector manages. In this situation, Hector's employer may not consider generating profits from its foodservice operation as a primary goal. That is so because, in most **business dining** situations, meals are provided to the company's employees either as a no-cost (to the employee) benefit or at a greatly subsidized price. In most cases, however, even nonprofit operations will be concerned about their levels of revenue and their operating expenses.

FIGURE 1.2 Foodservice Business Flowchart

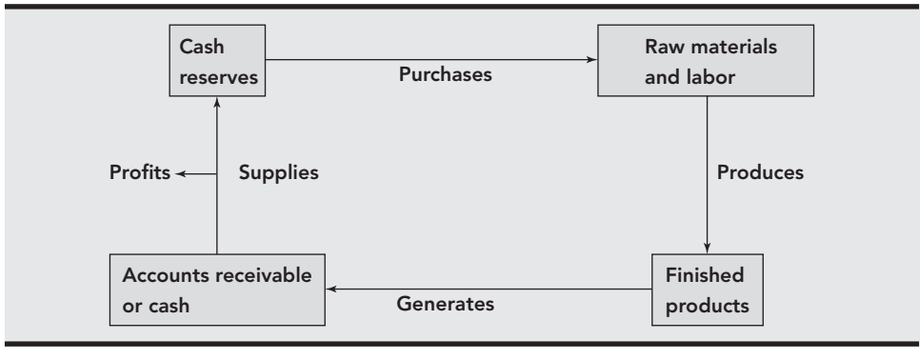


Figure 1.2 shows the flow of business for the typical foodservice operation. Note that, near the end of the flow process, profit dollars are to be taken out, or management will be in the position of simply trading equal amounts of cash for cash.

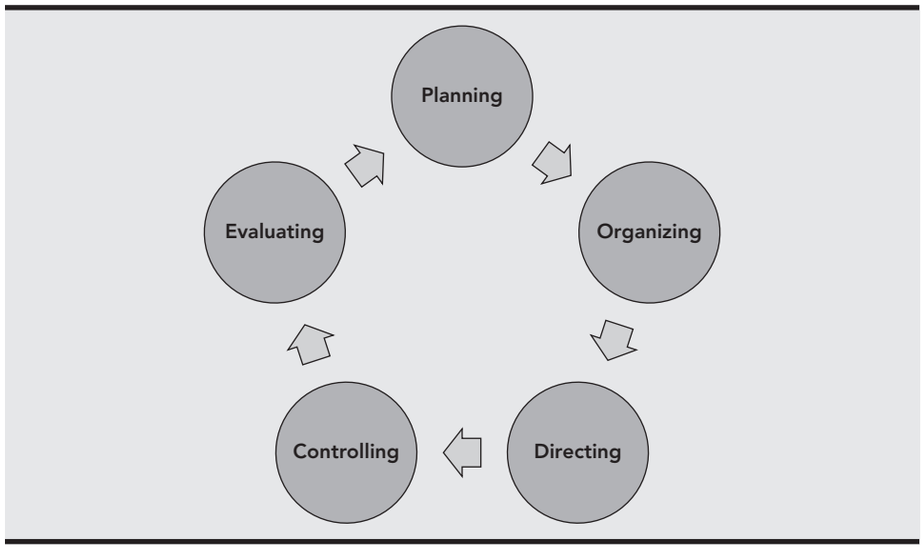
In your own operation, if you find that revenue is consistently less than your expenses, with no reserve for the future, you will also find that there is no money for new equipment; needed facility maintenance may not be performed and employee raises (including your own) may be few and far between. In addition, your facility will eventually become outdated due to a lack of funds for remodeling and upgrading. The fact is that all foodservice operations must be properly managed if they are to generate revenue in excess of expenses.

THE MANAGEMENT PROCESS

While there are a number of ways to view the management process, one good way is to consider the five functions that are essential for the effective management of any organization. These are listed in Figure 1.3.

- *Planning:* This initial step in the management process addresses the creation of goals and objectives. This is the first step in the management process because it identifies precisely what the organization wants to achieve through its efforts.
- *Organizing:* After its objectives have been identified, an organization must ensure that it has the funding, staff, equipment, and raw materials it will need to achieve its objectives. These assets must then be arranged (organized) in a way that optimizes the organization's ability to achieve its objectives.
- *Directing:* This important management function addresses the task of telling, and showing, all staff members exactly what is expected of them. When given clear directions, all staff members will know the important roles they will play in helping the organization achieve its objectives.
- *Controlling:* By continually assessing the work processes and procedures they have put place, managers can better identify situations that could prevent the organization from meeting its objectives. In the foodservice industry, important processes that must be controlled include those activities related to purchasing, receiving, storing, preparing, and serving menu items.
- *Evaluating:* This final management activity requires that an organization assess its current performance and compare the performance to planned performance. If significant differences are found to exist,

FIGURE 1.3 The Management Process



the organization must determine the reason for the differences and then either change its objectives or change the methods used to achieve them.

Although this book addresses each of the five key management processes, its primary focus is on control. Specifically, it addresses the important things food and beverage managers must know, and do, to properly control their costs. Essentially, the proper control of costs in a foodservice organization requires managers to do the following:

- Establish performance standards based on organizational objectives.
- Measure and report actual performance.
- Compare actual results to desired (planned for) results.
- Take corrective actions as needed.

GETTING STARTED

An appropriate level of business profits is always the result of solid planning, sound management, and careful decision making. The purpose of this text is to give you the information and tools you need to make good decisions about managing your operation's revenue and expenses.

It is important to understand that profit should not be viewed as what is left over after all bills are paid. In fact, careful preplanning is necessary to earn a profit. In most cases, investors will not invest in businesses that do not generate enough profit to make their investment worthwhile. The restaurant business can be very profitable; however, there is no guarantee that an individual restaurant will make a profit. Some restaurants do, and others do not. Because that is true, a modification of the profit formula, and one which recognizes and rewards the business owner for the risk associated with ownership is the following:

Revenue – Desired profit = Ideal expense

In this case, **ideal expense** is defined as management's view of the correct or appropriate amount of expense necessary to generate a given level of sales. **Desired profit** is defined as the profit that the owner wants to achieve at that level of revenue. This formula clearly places profit as a reward for providing service, not as a leftover. When foodservice managers deliver quality and value to their guests, anticipated revenue levels and desired profits can be achieved. Desired profit and ideal expense levels are not, however, easily achieved. It takes a talented foodservice operator to consistently make good decisions that will maximize revenue while holding expenses to the ideal or appropriate amount. This book will teach you how to make those good decisions.

REVENUE

Revenue dollars are the result of units sold to customers. Units may consist of individual menu items, lunches, dinners, drinks, or any other item produced by your operation. Revenue varies with both the number of guests coming to your business and the amount of money spent by each guest. You can increase revenue by increasing the number of guests you serve, by increasing the amount each guest you serve spends, or by a combination of both approaches. Adding seating or drive-through windows, extending operating hours, and building additional foodservice units are all examples of management's efforts to increase the number of guests served. Suggestive selling by service staff, creative menu pricing techniques, and discounts for very large purchases are examples of efforts to increase the amount of money each guest spends.

Green and Growing!

Good food and service will attract foodservice customers. So will other important factors customers care about, including location, unique décor, and, increasingly, how "green" an operation is perceived to be. Green is the term used to describe those foodservice operations that incorporate environmentally conscious activities into the design, construction, and operation of their businesses. These activities can be related to packaging and shipping materials reduction, energy conservation, or sustainable development, a term used to describe a variety of Earth-friendly practices and policies as "development that meets the needs of the present population without compromising the ability of future generations to meet their own needs."

The positive benefits that accrue when businesses incorporate green activities are significant and are increasing. Managers of green operations help protect the environment. For example, did you know that every ton of 100 percent post-consumer waste recycled paper saves 12 trees, 1,976 pounds of greenhouse gases, and 390 gallons of oil? Green operating is also gaining in popularity because more and more guests seek out and frequent green restaurants simply because they are committed to preserving the environment.

The Green Restaurant Association℠ (GRA) is a non-profit, national environmental organization founded to help restaurants and their customers become more "green" (environmentally sustainable) in ways that are convenient and cost-effective. The GRA's agenda includes issues related to the following:

Research

Environmental consulting

Education

Public relations and marketing

Community organizing and consumer activism

To learn more about this increasingly high-profile group, visit the GRA's website, dinegreen.com. To learn more about how your foodservice operation can increase profits by implementing sustainable activities, watch for the "Green and Growing" feature in each upcoming chapter of this book.

UN Brundtland Commission, "Report of the World Commission on Environment and Development: Our Common Future," 42nd session, Development and International Cooperation: Environment, August 4, 1987, Chapter 2 opener.

Management's primary task is to take the steps necessary to attract new and repeat guests to the foodservice operation. This is true because the profit formula begins with sales made to guests. Experienced foodservice operators know that adding guests and selling more to each guest are extremely effective ways of increasing overall profitability, but *only* if effective cost management systems are also in place.

The focus of this text is on managing and controlling costs, not on generating additional revenue. While the two topics are related, they are very different. Marketing efforts, restaurant design, site selection, employee training, and proper food preparation methods are good examples of factors that directly impact an operation's ability to increase sales levels. Effective expense control cannot solve the problems caused by inadequate revenue resulting from ineffective marketing, inferior product quality, or poor service levels. Effective cost control when coupled with management's aggressive attitude toward meeting and exceeding guests' expectations, however, can result in outstanding revenue and profit performance.

EXPENSES

Expenses are used to generate revenue. But managers must carefully control their expenses. There are four major foodservice expense categories that you must learn to control:

1. Food costs
2. Beverage costs
3. Labor costs
4. Other expenses

FOOD COSTS

Food costs are the costs associated with actually producing the menu items sold to guests. They include the expense of meats, dairy products, fruits, vegetables, and other categories of food items. When calculating their food costs, some managers include the cost of minor paper and plastic items, such as the paper wrappers used to wrap sandwiches, as well as the cups and straws used when serving drinks. In most cases, food costs will make up the largest or second-largest expense category you must learn to manage.

BEVERAGE COSTS

Beverage costs are those expenses related to the sale of alcoholic beverages. It is common practice in the hospitality industry to consider beverage costs of a nonalcoholic nature as an expense in the food cost category, not the beverage category. Thus, milk, tea, coffee, waters, carbonated beverages, and other nonalcoholic beverage items are *not* generally considered a beverage cost.

Alcoholic beverages accounted for in the beverage cost category include beer, wine, and liquor. This cost category may also include the expense of other ingredients such as cherries, lemons, olives, limes, and mixers (such as carbonated beverages), as well as the fruit and vegetable juices needed to produce alcoholic drinks. It may also include the cost of miscellaneous items such as stir sticks, straws, cocktail napkins, and coasters.

LABOR COSTS

Labor costs include the cost of all nonmanagement as well as management employees needed to run a business. This expense category includes wages, salaries, and the amount of taxes you are required to pay when you have employees on your payroll, as well as the cost of any benefits you provide them.

While labor costs is the term most managers use to refer to the expense required to staff a foodservice operation, experienced managers know that "team costs" would be an equally descriptive term. This is so because a manager's cost control success depends upon the efforts of the entire food operations team. Every employee in a food and beverage operation, from the executive chef to dishwashers, plays an important cost-related role, and it is the job of the unit manager to create a team in which all workers understand their roles. When managers are successful leaders, and are able to create such teams, their cost control efforts are enhanced. The importance of effective team management is easy to understand when you recognize that, in many foodservice operations, labor costs are actually the operation's highest cost; or they are second only to food and beverage costs in the total number of dollars spent.

Consider the Costs

"I'm feeling pretty good about our cost management efforts," said Rachel. "Our labor cost is higher than our food cost."

"I'm pleased with our efforts too," said Julie. "Our food cost is higher than our labor cost."

"That's great, Julie," said Joseph. "I just calculated our monthly costs, and our food and labor expenses are just about equal. Sounds like we are all doing well!"

Rachel, Julie, and Joseph had all attended hospitality school together. Each had taken a job in the same large city, so they often got together over coffee to talk about their businesses and their jobs. One manages "Chez Paul's," a fine dining French-style restaurant known for impeccable service. Another manages Fuby's, a family-style cafeteria known for its tasty, home-style cooking, and one had taken a job with Gardinos, a national restaurant chain that offered mid-priced Italian cuisine in a beautiful Tuscan-style decor.

1. Which foodservice operation do you think Rachel manages? Why?
2. Which foodservice operation do you think Julie manages? Why?
3. Which foodservice operation do you think Joseph manages? Why?

FUN ON THE WEB!

The foodservice industry is large and continues to grow. The trade association supporting over 500,000 foodservice operations is the National Restaurant Association (NRA).

Enter "National Restaurant Association" in your favorite browser to visit their website.

When you arrive at the site, enter "State of the Industry" in the search bar to see the association's current revenue projections for the restaurant industry, which has annual sales of over $850 billion.

OTHER EXPENSES

Other expenses are comprised of all of those expenses not included in food, beverage, or labor costs. Examples include business insurance, utilities, rent, and items such as linens, china, glassware, kitchen knives, and pots and pans.

Although this expense category is sometimes incorrectly referred to by some as "minor expenses," your ability to successfully control this expense area will be critical to the overall profitability of your foodservice operation.

Good managers must learn to understand, control, and manage their expenses. Consider the case of Tabreshia Larson, the food and beverage director of the 200-room Renaud Hotel, located in a college town and built near an interstate highway exit. Tabreshia has just received her end-of-the-year operating reports for the current year. She is interested in comparing these results to those of the prior year. The numbers she received are shown in Figure 1.4.

FIGURE 1.4 Renaud Hotel Operating Results

	This Year	Last Year
Revenue	$1,106,040	$850,100
Expenses	1,017,557	773,591
Profit	$88,483	$76,509

Tabreshia is concerned about her operation, but she is not sure if she should be. Revenue is higher than last year, so she feels her guests must like the products and services they receive. In fact, repeat business from corporate meetings and special-events meals is increasing. Her profit is greater than last year also, but Tabreshia has the uneasy feeling that things are not going as well as they could. The kitchen appears to run smoothly. The production staff, however, often runs out of needed items, and there sometimes seems to be a large amount of leftover food that must be thrown away. Also, at times, there seems to be too many employees on the property and not enough work for them to do; at other times, there seems to be too few employees and her guests have to wait too long to get served. Tabreshia also feels that employee theft may be occurring, but she certainly doesn't have the time to watch every storage area within her operation. She would really like to get a handle on the problems (if there are any), but how and where should she start?

The answer for Tabreshia, and for you, if you want to develop a serious expense control system, is very simple. You start with the basic mathematics skills that you must have to properly analyze your revenue and expenses. The mathematics required, and used in this text, are not hard. They consist of only addition, subtraction, multiplication, and division. These tools will be sufficient to build a cost control system that will help you professionally manage the expenses you incur.

To see why managers must be able to analyze their businesses, consider what it would mean to you if a fellow foodservice manager told you that yesterday he spent $500 on food. Obviously, it means very little unless you know more about his operation. Should he have spent $500 yesterday? Was that too much? Too little? Was it a "good" day or a "bad" day? These questions raise a challenging problem. How can you properly compare your revenue or expenses today, with those of yesterday, or your own foodservice unit with another, so that you can see how well you are doing?

The answer to that question becomes even more complex because we know that the value of dollars changes over time. For example, a restaurant that generated revenue of $1,000 per day in 1954 would be very different from that same restaurant with daily revenue of $1,000 today because the value of the dollar today is quite different from what it was in 1954. Generally, inflation causes the purchasing power of a dollar today to be less than that of a dollar from a previous time period. Inflation can make it challenging to answer the simple question, "Am I doing as well today as I was doing 5 years ago?"

Alternatively, consider the problem of an individual responsible for the management of several foodservice units. She owns two food trucks that sell tacos on either side of a large city. One food truck uses $500 worth of food products each day; the other uses $600 worth of food products each day. Are both units being efficiently operated? Does the second truck use an additional $100 worth of food each day because it serves more customers or because it is less efficient in utilizing its food?

The answer to all of the preceding questions, and many more, can be determined if we use percentages to relate the expenses of an operation to the revenue it generates. Percentage calculations are important for at least two major reasons. First and foremost, percentages are the most common tools used to evaluate costs in the foodservice industry. Therefore, knowledge of what a percent is and how it is calculated is vital. Second, as a manager in the foodservice industry, you will be evaluated primarily on your ability to compute, analyze, and control these percentages.

Although it is true that many basic management tools and apps such as Microsoft Excel, Apple Numbers, Google Sheets, Apache OpenOffice Calc, and others can compute percentages for you, it is important that you understand what the percentages mean and how they should be interpreted. Percent calculations are used extensively in this text and are a cornerstone of any effective cost control system.

PERCENT REVIEW

Understanding percents and how they are mathematically computed is essential for all managers. The following review may be helpful for some readers. If you already thoroughly understand the percent concept, you may skip this section and the *Computing Percent* section and proceed directly to the *Using Percent* section of this chapter.

Percent (%) means "out of each hundred." Thus, 10 percent would mean 10 out of each 100. If we asked how many guests would buy blueberry pie on a given day, and the answer is 10 percent, then 10 people out of each 100 we serve will select blueberry pie. If 52 percent of your employees are female, then 52 out of each 100 employees are female. If 15 percent of your employees will receive a raise this month, then 15 out of each 100 employees will get their raise. There are three basic ways to express a percent:

1. Common form
2. Fractional form
3. Decimal form

Figure 1.5 shows these three forms, or ways, of writing a percent.

COMMON FORM

In its common form, the % sign is used to express the percentage. If we say 10 percent, then we mean "10 out of each 100" and no further explanation is necessary. If we say 50 percent, then we mean "50 out of each 100" and no further explanation is necessary. In the common form, the percent is equivalent to the same amount expressed in either the fraction or the decimal form.

FRACTION FORM

In fraction form, the percent is expressed as the part, or a portion of 100. Thus, 10 percent is written as 10 "over" 100 (10/100). Similarly, 50 percent is written as 50 "over" 100 (50/100). When using the fraction form, the "part" is the numerator and is always placed "on top," while the "whole" is the denominator and it is always placed "on the bottom."

Despite the fact that it looks different, when writing 10 percent, or any other percent, use of the fraction form is simply another way of expressing the relationship between, in this example, the part (10) and the whole (100).

FIGURE 1.5 Forms of Expressing Percent

	Percent		
Form	**1%**	**10%**	**100%**
Common	1%	10%	100%
Fraction	1/100	10/100	100/100
Decimal	0.01	0.10	1.00

DECIMAL FORM

A decimal is a number developed directly from the counting system we use. It is based on the fact that we count to 10, then start over again. In other words, each of our major units—10s, 100s, 1,000s, and so on—is based on the use of 10s, and each number can easily be divided by 10.

Unlike the common or fraction form, the decimal form of expressing a percentage uses the decimal point (.) to present the percent relationship. Thus, 10 percent is expressed as 0.10 in decimal form. 50 percent is expressed as 0.50. When utilizing the decimal form, the numbers to the right of the decimal point express the percentage.

Each of these three methods of expressing percentages is used by professionals throughout the foodservice industry. To be successful, you must develop a clear understanding of how a percentage is computed and when it is properly used. Once you know that, you can express the percentage in any form that is required or that is useful to you.

COMPUTING PERCENT

To determine what percent one number is of another number, you divide the number that is the part by the number that is the whole. Usually, but not always, this means dividing the smaller number by the larger number. For example, assume that 840 guests were served during a banquet at your hotel and that 420 of them asked for coffee with their meal. To find what percent of your guests ordered coffee, divide the part of the group ordered coffee (420) by the size of the whole group (840).

The process looks like the following:

$$\frac{\text{Part}}{\text{Whole}} = \text{Percent or } \frac{420}{840} = 0.50$$

Recall that a percent can be expressed in three ways. Thus, 50 percent (common form), 50/100 (fraction form), and 0.50 (decimal form) all represent the proportion of people at the banquet who ordered coffee.

Some new foodservice managers have difficulty computing percent figures. That's because sometimes it is easy to forget which number goes "on the top" and which number goes "on the bottom." In general, if you attempt to compute a percentage and get a whole number (a number larger than 1.0), either a mistake has been made or revenue is extremely low and/or costs are extremely high!

Some people also become confused when converting from one form of percent to another. If that is a problem for you, remember the following conversion rules:

1. To convert from common form to decimal form, move the decimal two places to the left; and drop the percent sign; that is, 50.00% = 0.50.
2. To convert from decimal form to common form, move the decimal two places to the right and add the percent sign; that is, 0.40 = 40.00%.

In a restaurant, the "whole" is most often a revenue (sales) figure. Expenses and profits are the "parts," which are usually expressed in terms of a percent.

It is interesting to note that, in the United States, the same system in use for our numbers is in use for our money. Each dime contains 10 pennies; each dollar contains 10 dimes, and so on. Thus, in discussions of money, it is true that a percent refers to "cents out of each dollar" as well as "out of each 100 dollars." When we say 10 percent of a dollar, we mean 10 cents, or "10 cents out of each dollar." Likewise, 25 percent of a dollar represents 25 cents, 50 percent of a dollar represents 50 cents, and 100 percent of a dollar represents $1.00.

Sometimes, when using percent to express the relationship between portions of a dollar and the whole dollar, we can find that the part is indeed larger than the whole. Figure 1.6 demonstrates the three possible outcomes that can occur when

FIGURE 1.6 Percent Computation

Possibilities	Examples	Results
Part is smaller than the whole	$\frac{61}{100} = 61\%$	Always less than 100%
Part is equal to the whole	$\frac{35}{35} = 100\%$	Always equals 100%
Part is larger than the whole	$\frac{125}{50} = 250\%$	Always greater than 100%

computing a percentage. Great care must always be taken when computing percents, so that the percent arrived at is of help to you in your work and does not represent an error in mathematics. In turn, the mathematical errors could cause you to make poor foodservice decisions.

HERE'S HOW IT'S DONE *1.1*

When a manager calculates a food expense percentage, labor expense percentage, or any other expense percentage, the mathematical result is usually a number less than 1. In most cases, the mathematical formula you will use to calculate a percent will result in the percentage being expressed in decimal form.

For example, if the cost of food required to make a menu item is $3.60 and the menu item sells for $12.00, the percentage that represents the cost of food is calculated as follows:

$$\frac{\$3.60 \text{ Cost of food}}{\$12.00 \text{ Selling price}} = 0.30$$

In this example, the menu item's food cost is expressed in decimal form (0.30).

When a percent is expressed in decimal form, the numbers to the right of the decimal represent the size of the percentage. To convert the percentage from decimal form to common form, simply multiply the decimal form amount times 100 and add the percent sign.

In this example, the conversion from decimal form percent to common form percent would be:

$$0.30 \times 100 = 30\%$$

In this example, the menu item's food cost percentage, when expressed in common form, is 30 percent.

If the percent in this example is to be expressed in fraction form, the part (30) is the numerator and would be placed on top of the whole (100). 100 is the whole and thus is the denominator. The denominator is always placed on the bottom. In this example, the result would be expressed as 30/100.

USING PERCENT

The ability to calculate a percent is important because percentages are useful tools. To illustrate, consider a restaurant that you are operating. Imagine that your revenue for a week is $1,600. Expenses for that same week are $1,200. Given these facts and the information presented earlier in this chapter, your profit formula for the week would be as follows:

Revenue – Expenses = Profit
or
$1,600 – $1,200 = $400

If you had planned for a $500 profit for the week, you would have been "short" of your profit goal by $100. Using the alternative profit formula that identifies desired profit and presented earlier, you would find the following:

$$\text{Revenue} - \text{Desired profit} = \text{Ideal expense}$$

or

$$\$1{,}600 - \$500 = \$1{,}100$$

Note that your expense in this example ($1,200) exceeded your ideal expense ($1,100), and as a result, too little profit was achieved.

These numbers can also be expressed in terms of percent. If we want to know what percent of our revenue went to pay for our expenses, we would compute it as follows:

$$\frac{\text{Expense}}{\text{Revenue}} = \text{Expense \%}$$

or

$$\frac{\$1{,}200}{\$1{,}600} = 0.75, \text{ or } 75\%$$

In this example, expenses are 75 percent of revenue. Another way to state this relationship is to say that each dollar of revenue costs 75 cents to produce. As a result, each revenue dollar taken in results in 25 cents profit:

$$\$1.00 \text{ revenue} - \$0.75 \text{ expense} = \$0.25 \text{ profit}$$

As long as your business's expenses are smaller than its revenues, some profit will be generated, even if it is not as much as you had planned.

Managers can calculate their expense percentages, and they can also calculate their profit percentages. You can compute profit percent using the following formula:

$$\frac{\text{Profit}}{\text{Revenue}} = \text{Profit \%}$$

In our example:

$$\frac{\$400 \text{ Profit}}{\$1{,}600 \text{ Revenue}} = 25\% \text{ profit}$$

We can compute what we had planned our profit percent to be by dividing desired profit ($500) by revenue ($1,600):

$$\frac{\$500 \text{ Desired Profit}}{\$1{,}600 \text{ Revenue}} = 31.25\% \text{ desired profit}$$

In simple terms, we had planned to make 31.25 percent profit, but instead made only a 25 percent profit. Excess costs account for the difference. If these costs could be identified and then corrected, we could perhaps achieve the desired profit percentage in the future.

Expenses expressed as cost percentages are important to manage and most foodservice operators compute many cost percentages, not just one. As you have learned, the major cost divisions used in foodservice are:

1. Food cost
2. **Beverage cost**
3. Labor cost
4. Other expenses

Because these are the major cost categories, in foodservice operations, a modified profit formula can be developed as follows:

Revenue – (Food cost + Beverage cost + Labor cost + Other expenses) = Profit

Put in another format, the equation for the profit formula would look like the following:

	Revenue (100%)
Minus (–)	Food Cost %
Minus (–)	Beverage Cost %
Minus (–)	Labor Cost %
Minus (–)	Other Expenses %
Equals (=)	Profit %

This expression of the profit formula makes sense because it clearly shows that managers start with 100 percent of their revenue, subtract their expense percentages, and the amount that remains represents the operation's profit percentage. Regardless of the form in which percentages are reported, professional foodservice managers carefully evaluate their revenue and expenses, and they use percents to do so.

UNDERSTANDING THE INCOME (PROFIT AND LOSS) STATEMENT

Foodservice operations generate revenue and incur expenses whenever they are open for business. Periodically, these operations will want to report their income and expense activity. To see how this is typically done, consider Figure 1.7, a summary of the revenue, expenses, and profits generated by Dan's Steakhouse.

All of Dan's expenses and profits can be computed as percents by using the revenue figure of $400,000 as the whole and the combined food and beverage cost, labor cost, other expenses, and profit representing the parts as follows:

$$\frac{\text{Food and beverage cost}}{\text{Revenue}} = \text{Food and beverage cost \%}$$

or

$$\frac{\$150{,}000}{\$400{,}000} = 37.50\%$$

FIGURE 1.7 Dan's Steakhouse

Revenue		$400,000
Expenses		
Food and beverage cost	$150,000	
Labor cost	175,000	
Other expenses	25,000	
Total expenses		$350,000
Profit		**$50,000**

$$\frac{\text{Labor cost}}{\text{Revenue}} = \text{Laber cost \%}$$

or

$$\frac{\$175{,}000}{\$400{,}000} = 43.75\%$$

$$\frac{\text{Other expenses}}{\text{Revenue}} = \text{Other expenses \%}$$

or

$$\frac{\$25{,}000}{\$400{,}000} = 6.25\%$$

$$\frac{\text{Total expense}}{\text{Revenue}} = \text{Total expense \%}$$

or

$$\frac{\$350{,}000}{\$400{,}000} = 87.50\%$$

$$\frac{\text{Profit}}{\text{Revenue}} = \text{Profit \%}$$

or

$$\frac{\$50{,}000}{\$400{,}000} = 12.50\%$$

The accounting tool managers use to report their operations' revenue, expenses, and profit for a specific time period is called the **statement of income and expense**. The statement of income and expense is also commonly known as the **Income Statement** or the **profit and loss statement**, which is very often shortened by foodservice managers to the **P&L**.

The P&L lists all of an operations' revenue, food and beverage cost, labor cost, and other expense. The P&L also identifies profits by using the profit formula. Recall that the profit formula is:

$$\text{Revenue} - \text{Expenses} = \text{Profit}$$

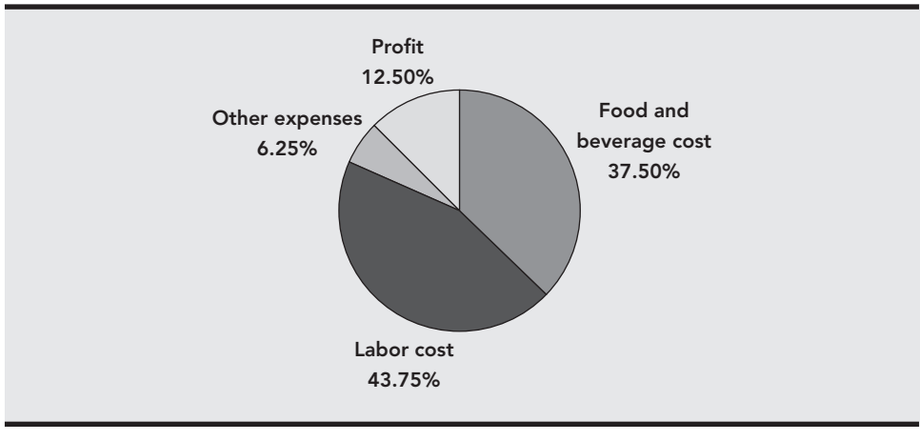
Figure 1.8 is a very simplified P&L statement for Dan's Steakhouse (note: detailed information on properly preparing and analyzing an income statement will be addressed in Chapter 9: Analyzing the Income Statement). Notice the similarity of Figure 1.8 to Figure 1.7. In Figure 1.8, expenses and profits are expressed in terms of both dollar amounts and percentages of revenue.

Another way of looking at Dan's simplified P&L is shown in Figure 1.9. The pieces of the pie represent Dan's cost and profit categories. Costs and profit total 100 percent, which is equal to Dan's total revenues. Put another way, out of every sales dollar Dan generates, 100 percent is designated as either costs or profit.

FIGURE 1.8 Dan's Steakhouse P&L

Revenue		**$400,000**	**100%**
Food and beverage cost	$150,000		37.5%
Labor cost	175,000		43.75%
Other expenses	25,000		6.25%
Total Expenses		**$350,000**	**87.5%**
Profit		**$50,000**	**12.5%**

FIGURE 1.9 Dan's Steakhouse Costs and Profit as a Percentage of Revenues



Dan knows from the P&L that revenues represent 100 percent of the total dollars available to cover his expenses and provide for a profit. In this example, combined food and beverage cost is 37.50 percent, and labor cost percentage equals 43.75 percent. Other expenses percentage equals 6.25 percent, and the total expense percent is 87.50 percent (37.50 + 43.75 + 6.25 = 87.50 percent). The steakhouse profit equals 12.50 percent. Thus, for each dollar in revenue, Dan earns a profit of 12.50 cents.

In restaurants that serve alcohol, food revenues and beverage revenues are most often reported separately. Likewise, in these types of operations, food costs and beverage costs are most often separated into two categories in the P&L. This is done so that food costs can easily be compared to food revenues, and beverage costs can be easily compared to beverage revenues. This is helpful when, for example, one manager is responsible for controlling food costs in the restaurant and another manager is responsible for controlling beverage costs in the bar.

The P&L is an important management tool because it indicates the efficiency and profitability of a business. It is essential that this financial report is accurate and easily understood. Because so many individuals and groups are interested in a facility's performance, it is also important that the P&L and other financial statements are prepared in a manner that is consistent with other facilities. If, for example, you own two Italian restaurants, it would be very confusing if the units' two managers used different methods for preparing and reporting their P&Ls. You, your investors, accountants, governmental taxing entities, and your creditors will all be interested in your operational results, and unless you report and account for these in a manner that is consistent and that can be easily understood, confusion is likely to result.

To avoid such confusion, a **Uniform System of Accounts for Restaurants (USAR)** is used to report financial results in many foodservice units. This system was created to ensure uniform reporting of financial results. A uniform system of accounts exists for restaurants, another for hotels, and another for clubs. These uniform accounting systems are continually reviewed and periodically revised. This text was prepared using reporting principles contained in the eighth edition of the USAR, which was released in 2012. Important specific recommendations of the USAR will be addressed in detail in the appropriate portions of this text.

The use of the USAR when producing a P&L is not mandatory, but use of the USAR is highly recommended. This is so because the primary purpose of preparing a P&L is to clearly identify revenue, expenses, and profits for a specific time period, and good managers want their operations' financial records to accurately reflect their efforts.

As a manager, your individual efforts will greatly influence your operation's profitability. Good managers want to provide excellent value to their guests, which will cause guests to return. When they do, sales will increase. In addition, good managers know how to analyze, manage, and control their costs. When costs are controlled well, an operation's expenses are held to the amounts that were preplanned by its manager. The final result is the desired profit level.

The best managers influence the success of their units and their own employees. The results for them personally are promotions, added responsibilities, and salary increases. If you wish to succeed in the hospitality industry, it is important to remember that your performance will be evaluated primarily on your ability to achieve the profit levels your operation has planned for.

In addition to your own efforts, many factors influence profit dollars and profit percent, and you must be aware, and in control, of all of them. All of the factors that make up professional food and beverage cost control and, as a result, will impact your profits, are directly addressed in later chapters of this text.

HERE'S HOW IT'S DONE *1.2*

Managers can use spreadsheet programs to speed up their work when calculating percentages or performing other calculations needed to assess their cost control efforts. Microsoft Excel, Apple Numbers, Google Sheets, and Apache OpenOffice Calc are examples of software programs that allow managers to enter text, a numeric value, or a formula to help meet their unique information needs.

Essentially, a spreadsheet program presents users with easily identifiable cells designated by a column letter and a row number. In the following example, cell "A1" refers to the 1st cell in column A. Cell "D5" refers to the 5th cell in column D.

	A	B	C	E	D
1					
2					
3					
4					
5					

Using a spreadsheet is easy. To do so, first click on the cell in which you wish to enter a number or formula. Then, for example, when using the Excel spreadsheet program, a manager would enter the = sign to begin. The following are examples of how managers would use Microsoft Excel spreadsheets to perform basic adding, subtracting, multiplying, and dividing tasks.

For Adding

Enter: = 15+20+35	Adds the entered numbers 15, 20, and 35 in the selected cell
Enter: = A1+A2+A3	Adds the current values in cells A1, A2, and A3
Enter: = Sum(A1:A5)	Adds the current values in cell range A1 through A5

For Subtracting

Enter: = 35–15	Subtracts 15 from 35 in the selected cell
Enter: = A1–A2	Subtracts the current value in cell A2, from the current value in cell A1

For Multiplying

Enter: = 15*10	Multiplies 15 times 10 in the selected cell
Enter: = A1*A2	Multiplies the current value in cell A1 times the current value in cell A2
Enter: = A1*10	Multiplies the current value in cell A1 times 10

For Dividing

Enter: = 15/10	Divides 15 by 10 in the selected cell
Enter: = A1/A2	Divides the current value in cell A1 by the current value in cell A2
Enter: = A1/10	Divides the current value in cell A1 by 10

From simple formulas to more complex, multifunction formulas, the use of computer-based software and apps currently available in the industry can help make a manager's cost control efforts faster and more accurate.

FUN ON THE WEB!

For restaurant managers, learning is an ongoing process. Fortunately, there are a large number of sources of important information readily available to managers who seek to better understand trends in their industry. To examine some of these resources, enter "restaurant industry financial results" in your favorite search engine and review current data about how the restaurant industry is performing.

UNDERSTANDING THE BUDGET

Some foodservice managers do not generate revenue on a daily basis. Consider, for example, the individual who manages the foodservice operation at Camp Eureka, a children's summer camp. In this case, parents pay a fixed fee to cover their children's housing, activities, and meals for a set period of time. The foodservice manager, in this situation, will be just one of several camp managers who must share this revenue. If too many dollars are spent on providing housing or play activities, too few dollars may be available to provide an adequate quantity or quality of meals. On the other hand, if too many dollars are spent on providing foodservice, there may not be enough left to cover needed expenses in other areas of the camp. In a case like this, as in many other cases, foodservice operators must prepare a budget.

A **budget** is simply an estimate of projected revenue, expense, and profit. In some hospitality companies, the budget is known as the forecast, or the **plan**, referring to the fact that the budget details the operation's estimated, or "planned for," revenue and expense for a given accounting period. An **accounting period** is any specific hour, day, week, month, or other specified period of time in which an operator wishes to report and analyze an operation's revenue and expenses.

All effective managers, whether in the commercial (for-profit) or nonprofit sector, should use budgets. Budgeting is simply planning for an operation's revenue, expenses, and profit. If these items are planned for, you can determine how close your actual performance is to your plan or budget.

To illustrate the importance of a budget using the Eureka summer camp example, assume that the following information is known:

1. Number of campers to be served each day is 180.
2. Number of meals served to each camper per day is 3.
3. Length of each camper's stay is 7 days.

With 180 campers eating 3 meals each day for 7 days, 3,780 meals will be served (180 campers × 3 meals per day × 7 days = 3,780 meals).

Generally, in a case such as the summer camp, the foodservice manager is given a dollar amount that represents the allowed expense for each meal to be served. For example, if $1.85 per meal is the amount budgeted for this foodservice manager, the total revenue budget would equal $6,993 ($1.85 per meal × 3,780 meals = $6,993).

From this figure, we can begin to develop an expense budget. In this case, we would be interested in the amount of expenses budgeted and the amount actually spent on those expenses. Equally important, we are interested in the percent of the budget we actually used, a concept known as comparing **performance to budget**.

A simple example may help to explain the idea of budget and performance to budget. Assume that a child has $1.00 per day to spend on candy. On Monday morning, the child's parents give the child $1.00 for each day of the week, or $7.00 total ($1.00 × 7 days = $7.00).

If the child spends exactly $1.00 per day, he or she will be able to buy candy all week. If, however, too much is spent on any one day, there may not be any money

left at the end of the week. To ensure a full week of candy eating, a good "candy purchasing" budget could be created, such as the one shown in Figure 1.10.

To prepare this budget, the "% of Total" column is computed by dividing $1.00 (the part) by $7.00 (the whole). Notice that we can determine the percent of total that should have been spent by any given day; that is, each day equals 14.28 percent, or 1/7 of the total.

This very same logic applies to a foodservice operation. Managers determine how much of their total budgets can be spent in any specific time period. Figure 1.11 represents commonly used budget periods and their accompanying proportional amounts.

In the foodservice industry, the use of monthly budgets is very popular. Some foodservice operations, however, recognize that different months include different numbers of days. As a result, many operators are changing from "one month" budget periods to budget periods of 28 days. The **28-day-period** method divides a year into 13 equal periods of 28 days each. Therefore, each period has four Mondays, four Tuesdays, four Wednesdays, and so on. This helps the manager compare performance from one period to the next without having to compensate for "extra days" in any one month, or unequal number of specific weekdays (e.g., unequal numbers of Mondays, Saturdays, or Sundays in the same period).

The disadvantage of the 28-day period approach is that managers can no longer talk about the month of "March," because, if a budget began at the first of the year

FIGURE 1.10 Candy Purchases

Weekday	Budgeted Amount	% of Total
Monday	$1.00	14.28%
Tuesday	1.00	14.28%
Wednesday	1.00	14.28%
Thursday	1.00	14.28%
Friday	1.00	14.28%
Saturday	1.00	14.28%
Sunday	1.00	14.28%
Total	$7.00	100.00%

FIGURE 1.11 Common Foodservice Budget Periods

Budget Period	Portion	% of Total
One week	One day	1/7 or 14.28%
Two-week period	One day	1/14 or 7.14%
	One week	1/2 or 50.0%
One month	One week	1/4 or 25.0%
28 days	One day	1/28 or 3.6%
30 days	One day	1/30 or 3.3%
31 days	One day	1/31 or 3.2%
Six months	One month	1/6 or 16.7%
One year (365 days)	One day	1/365 or 0.3%
	One week	1/52 or 1.9%
	One month	1/12 or 8.3%

"Period 3" would occur during part of February and part of March. Although using the 28-day-period approach takes a while to get used to, it is often an effective way to measure performance and plan from period to period.

Managers are interested in comparing actual performance to budgeted performance. At Camp Eureka, after 1 week's camping was completed, we calculated the results shown in Figure 1.12.

We used the expense records from the previous summer as well as our solid industry knowledge and experience to develop initial budget amounts. Detailed information about this budgeting process is addressed in this text in Chapter 10: Planning for Profits. When, as in this case, an accurate budget has been developed, we can directly compare our budgeted (planned) performance to our actual performance.

Figure 1.13 shows a performance-to-budget summary with revenue and expenses presented in terms of both the budget amount and the actual amount. In all cases, percentages are used to compare actual expense with the budgeted amount, using the following formula:

$$\frac{\text{Actual}}{\text{Budget}} = \%\ \text{of budget}$$

Note that, in this example, fewer meals were actually served than were originally budgeted. In this example, revenue remained the same although some campers skipped (or slept through!) some of their meals. This is often the case when one fee or price buys a number of meals, whether they are eaten or not. In some other cases, managers will receive revenue only for meals actually served. This, of course, is true in a traditional restaurant setting. In either case, budgeted amount, actual

FIGURE 1.12 Camp Eureka One-Week Budget

Item	Budget	Actual
Meals served	3,780	3,700
Revenue		$6,993
Food expense	$2,600	$2,400
Labor expense	$2,800	$2,900
Other expenses	$700	$965
Total Expenses	$6,100	$6,265
Profit	$893	$728

FIGURE 1.13 Camp Eureka Performance to Budget Summary

Item	Budget	Actual	% of Budget
Meals served	3,780	3,700	97.9%
Revenue	$6,993	$6,993	100.0%
Food expense	$2,600	$2,400	92.3%
Labor expense	$2,800	$2,900	103.6%
Other expenses	$700	$965	137.9%
Total expenses	$6,100	$6,265	102.7%
Profit	$893	$728	81.5%

expense, and the concept of percent of budget, or performance to budget, are important management tools.

In looking at the Camp Eureka's performance-to-budget summary, we can see that the manager served fewer meals than planned and, thus, spent less on food than estimated, but spent more on labor than originally thought necessary. In addition, much more was spent than estimated for other expenses (137.9 percent of the budgeted amount). As a result, profit dollars were lower than planned. This manager has some problems, but note that there are not problems everywhere in the operation.

How do we know that? If our budget is accurate and we are within reasonable limits of our budget, we are said to be "in line," or in compliance, with our budget. It is difficult to budget exact revenue and expenses, so if we determine that plus (more than) or minus (less than) 10 percent of budget in each category is considered in line, or acceptable, then a close examination of Figure 1.13 shows we are in line with regard to meals served, food expense, labor expense, and total expense. We are not in line with other expenses, however, because they were 137.9 percent of the amount originally planned. Thus, they far exceed the 10 percent variation that we have established as a reasonable allowance.

Profit was also outside the acceptable boundary we established because it was only 81.5 percent of the amount budgeted. Note that, in this illustration, figures over 100 percent mean too much (other expense), and figures below 100 percent mean too little (profit).

Many operators use the concept of "significant" variation to determine whether a cost control problem exists. In this case, a significant variation is any variation in expected costs that management feels is an area of concern. This variation can be caused by costs that were either higher or lower than the amount originally budgeted or planned for.

In the foodservice industry, the essence of good cost control is identifying actual costs, comparing them to planned costs, and then taking corrective action when necessary. When you manage a foodservice operation and you find that significant variations from your planned results occur, you must do the following:

1. Identify the problem.
2. Determine the cause.
3. Take corrective action.

It is crucial to know the nature of the problem you have if you are to be an effective problem solver. Management's attention must be focused on the proper area of concern. In the summer camp example, the proper areas for management's concern are **other expense** and **profit**. If, in the future, food expense became *too* low, it too would be an area of concern. Why? Remember that expenses create revenue; thus, it is not your goal to eliminate expense. In fact, managers who focus too much on eliminating expense, instead of building revenue, often find that their expenses are completely eliminated when they are forced to close their operation's doors permanently because guests did not feel they received good value for the money spent at that restaurant! Control and management of revenue and expense are important. Elimination of either is not desired.

As you have learned, revenue and expenses directly impact profit. Your important role as a hospitality manager is to analyze, manage, and control your costs so that you achieve planned results. It can be done, and it can be fun.

The remainder of this text discusses how you can best manage and account for foodservice revenue and expenses. With a good understanding of the relationship among revenue, expenses, and profit, and your ability to analyze these areas using percentages, you are ready to begin the cost control and cost management process.

Technology Tools

Most hospitality managers would agree that an accurate and timely income statement (P&L) is an invaluable aid to their management efforts. There are a variety of software programs on the market that can be used to develop this statement for you. You simply fill in the revenue and expense portions of the program, and a P&L is produced. Variations include programs that compare your actual results to budgeted figures or forecasts, to prior-month performance, or to prior-year performance. In addition, P&Ls can be produced for any time period, including days, weeks, months, quarters, or years. Most income statement programs will have a budgeting feature and the ability to maintain historical sales and cost records. Some of these have been developed specifically for restaurants, but cost-effective generic products are also available.

A second issue, and one that must be kept foremost in mind, is that of information accessibility. For example, an executive chef would certainly need to have information readily available on food cost; however, it may not be wise to allow servers or cooks access to payroll information. While labor expense certainly affects costs, individual worker pay should be shared only with those who need to know. Thus, as you examine (in this chapter and others) the cost control technology tools available to you, keep in mind that not all information should be accessible to all parties, and that security of your cost and customer information can be just as critical as its accuracy.

FUN ON THE WEB!

Intuit is the company that produces the popular "QuickBooks" line of accounting software. QuickBooks can help you create a monthly income statement (P&L) and do much more. To view QuickBooks product offerings, go to the Intuit company website and review the features available in their newest versions of QuickBooks for small businesses.

Cost Control Around the World

Food and beverage cost control is truly a topic of international importance. Consider that there are now over 33,500 McDonald's restaurants operating in 119 countries. The operations serve over 69 million customers per day. While there are over 13,500 McDonald's located in the United States, nearly twice that number of McDonald stores are located outside the United States.

Although McDonald's is among the best known, many other hospitality companies operate in the international market and the number of those doing so increases each year. Burger King, KFC, Wendy's, Hilton, Hyatt, Marriott, Aramark, Subway, Dunkin Donuts, Baskin Robbins, Pizza Hut, Taco Bell, and Rainforest Cafe are just a few examples of the increasingly large number of US-based companies expanding their international presence. As a result, more and more foodservice professionals working in restaurants, hotels, and contract foodservice businesses are being given cost control–related assignments in their companies' rapidly expanding international divisions.

Apply What You Have Learned

Jennifer Caratini has recently accepted the job as the foodservice director for Techmar Industries, a corporation with 1,000 employees. As their foodservice director, Jennifer's role is to operate a company cafeteria, serving 800 to 900 meals per day,

as well as an executive dining room, serving 100 to 200 meals per day. All of the meals are provided "free of charge" to the employees of Techmar. One of Jennifer's first jobs is to prepare a budget for next year's operations.

1. In addition to the cost of food products and foodservice employees, what other expenses will Techmar incur by providing free meals to its employees?
2. Since employees do not pay for their food directly, what will Jennifer likely use as the "revenue" portion of her budget? How do you think this number should be determined?
3. In addition to her know-how as a foodservice director, what skills will Jennifer likely need as she interacts with the executives at Techmar who must approve her operating budget?

For Your Consideration

1. Effective cost control requires foodservice managers to know the specific revenues achieved, and expenses incurred, in their own operations. What will be the likely result if they do not know this key information?
2. In addition to financial management skills, leadership skills are important for foodservice professionals who seek to control their operating costs. Why is that?
3. In most cases, a foodservice manager's performance will be evaluated in terms of the manager's ability to achieve budgeted, or planned for, financial results. Why do you think that is so?

Key Terms and Concepts

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

Revenue
Expenses
Profit
Business dining
Ideal expense
Desired profit
Food costs
Beverage costs
Labor costs
Other expenses
Percent
Statement of income and expense
Income statement
Profit and loss statement
P&L
Uniform System of Accounts for Restaurants (USAR)
Budget
Plan
Accounting period
Performance to budget
28-day-period

Test Your Skills

You may download the Excel spreadsheets for the Test Your Skills exercises from the student companion website at www.wiley.com/go/dopson/foodandbeverage-costcontrol7e.

Complete the exercises by placing your answers in the shaded boxes and answering the questions as indicated.

1. Last month Lani's Pizza Parlor generated $77,000 in revenues. Her total expenses last month were $64,000. How much profit did she make?

Lani's Pizza Parlor	
Revenue	
Expenses	
Profit	

2. At the conclusion of her first month of operating Val's Donut Shop, Val computed the following revenue and expense figures:

Week	Revenue	Expense	Profit/Loss
1	$935.50	$771.80	
2	1,177.60	571.46	
3	1,461.80	933.33	
4	1,545.11	1,510.20	
Month			
To Receive $1,400 Profit for the Month			
Month			

Prepare both weekly and monthly profit formulas so that Val has a good idea about her current profit situation. Also, given her sales for the month, tell her how much her ideal expense should have been to realize her desired profit of $1,400.

3. Last year Isabella's sub shop generated $455,500 in revenues. Her food cost for the year was $143,500. Her labor cost was $122,400, and her other costs were $81,750.

Complete the spreadsheet Isabela needs to calculate the amount of profit she made last year. How much profit did she make? What was her profit percentage? Calculate your percentage answer to two decimal places.

Isabella's Sub Shop: Last Year Results		
	$	%
Revenue	455,500	100
Food cost		
Labor cost		
Other costs		
Total costs		
Profit		

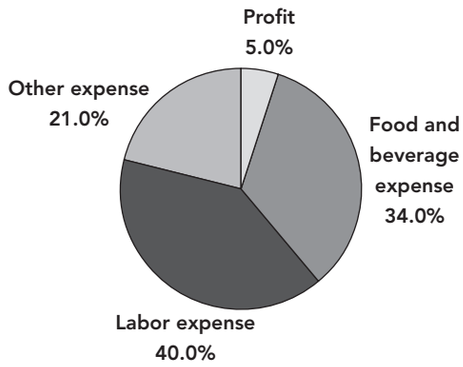
4. Su Chan manages a popular restaurant called the Bungalow. Her P&L for the month of March is as follows:

The Bungalow's March P&L		
Revenue	$100,000.00	100.0%
F&B expense	34,000.00	34.0%
Labor expense	40,000.00	40.0%
Other expenses	21,000.00	21.0%

(*continued*)

The Bungalow's March P&L		
Total expenses	95,000.00	95.0%
Profit	5,000.00	5.0%

Su has a meeting with the owner of the Bungalow next week, so she decided to create a pie chart showing the percentage of her costs in relation to her total sales (see the following diagram).



At the meeting with the owner, Su is asked to change the information on the pie chart to reflect the next month's projections. The owner suggests that April revenues and costs should be as follows:

April revenues = $120,000
Food and beverage expense = $44,000
Labor and other expenses remain constant.

Using these numbers, is the owner's profit percentage going to be higher or lower than that in March? By how much?

After looking at the owner's projections, she thinks it might be too difficult (and not so good for her guests) if she cannot increase labor costs along with sales. She proposes a compromise and tells the owner that if he will agree to increase labor costs, she will try to decrease other expenses. So Su proposes the following:

April revenues = $120,000
Food and beverage expense = $44,000
Labor expense = $50,000
Other expense = $19,000

Using these numbers, is the owner's profit percentage going to be higher or lower than that in March? By how much?

Which set of projections has more reasonable goals?

Note: If you are using the Excel spreadsheets from this book's student resources site, the changes you make to the numbers should be reflected on the pie charts as well.

5. The dining room at the Roadrock Inn is extremely popular. Terry Ray, the food and beverage director, is pleased to see that his revenue is higher than last year's. Of course, expenses are higher also. Express Terry's expenses and profit as a percentage of total revenue, for both this year and last year (fill in all empty blanks).

	This Year	%	Last Year	%
Revenue	$963,971		$875,421	
F&B expense	367,069		347,168	

(*continued*)

	This Year	%	Last Year	%
Labor expense	338,090		316,151	
Other expenses	147,896		142,068	
Total expenses				
Profit				

How is Terry doing in managing his expenses this year compared to last year? How do changes in revenue affect his performance?

6. Pamela Cantu operates a school foodservice department in a small, rural community. She feeds approximately 1,000 students per day in three different locations. She receives an average of $1.20 in revenues per meal. Her budget, set at the beginning of the school year by the superintendent, is developed in such a way that a small amount is to be reserved for future equipment purchases and dining-room renovation. These funds are available, however, only if Pamela meets her budget. She hopes to use this year's reserve (profit) to buy a $5,000 refrigerated salad bar for the high school. Because it is the midpoint of her school year, help her determine her "performance to budget" thus far (fill in all blanks).

Item	Budget	Actual	% of Budget
Meals served	300,000	149,800	
Revenue			
Food expense	$170,000	$84,961	
Labor expense	125,000	63,752	
Other expense	60,000	31,460	
Total expenses	355,000		
Reserve	5,000		

Assuming that the year is 50 percent completed and Pamela continues doing what she is doing, is she likely to meet the reserve requirement and thus be able to purchase the salad bar by the end of the year? If not, what changes should she make over the next 6 months to ensure that she will have the $5,000 in reserve?

7. Sam Guild operates a dining room reserved for doctors in a large hospital in the Northeast. Sam's boss has given Sam a target of a 33 percent food cost but has indicated that the target may be adjusted. Currently, the doctors' meals sell for $16.00. Sam knows he currently can spend $5.33 for the food required to produce each meal. Fill out the chart below to help Sam find out how much he will be able to spend on each meal at various food cost percent levels if his boss adjusts his target.

Meal Selling Price	Food Cost %	Amount That Can Be Spent for Food
$16.00	20%	
$16.00	25%	
$16.00	30%	
$16.00	33%	$5.33
$16.00	35%	
$16.00	40%	

How will the doctors' meals likely be affected if the target cost percentage is reduced? What if the target cost percentage is increased?

8. Dawne Juan is the food and beverage director for a mid-size hotel in a beach destination area. The general manager of the hotel has given Dawne a target of 10 percent profit for this year. Dawne's staff is predominantly composed of her beach buddies. Although she is good at controlling most of her costs, she has a hard time telling her friends to go home when business slows down and she needs to reduce her staff. If she doesn't make her profit goal, her general manager will likely reprimand her, and she could possibly lose her job. Express Dawne's expenses and profit as a percentage of total revenue, both this year and last year, to determine if she met her profit goal.

	This Year	%	Last Year	%
Revenue	$1,448,956		$1,094,276	
F&B expense	463,666			35%
Labor expense	652,030			40%
Other expenses		15%	186,027	
Total expenses				
Profit				8%

Was Dawne effective at controlling all of her expenses? Did she meet the profit goal set by the general manager? If not, what could Dawne do in the future to help her make her target profit?

9. Lee Ray operates the Champs Steak and Seafood restaurant. Last month, Lee budgeted $3,500 for food, in the specific categories listed below. It was a busy month, but Lee thought he did a good job managing his costs. Imagine his surprise when, at the end of the month, Lee calculated his actual expenses and entered them in the chart below. He found he was way over budget! Calculate Lee's % of budget in each category listed on the chart, as well as the total.

	Budget	Actual	% of Budget
Meats and poultry	$1,500	$1,675	
Seafood	1,200	1,550	
Fruits and vegetables	350	370	
Dairy products	200	210	
Groceries	250	270	
Total			

By how much money was Lee over his total budget? In which categories did Lee's costs vary more than 10 percent from the amount he had originally budgeted? Lee said it was a busy month. Would the number of customers he served affect his actual costs? What would you recommend he do next to further analyze the reasons for his restaurant's budget performance last month?

10. Daudi owns and manages a restaurant featuring Middle Eastern cuisine. His operating results for this year are listed below. For next year, Daudi expects that his revenue will increase 5 percent. He also expects that the percentage of revenue he spends on food will remain unchanged, but that employee raises and rising health-care costs will mean he will spend 10 percent more

for the cost of labor next year than he spent this year. Because of new cost control measures he plans to implement, Daudi expects the total amount that he will spend for other expenses next year will be unchanged from this year.

Help Daudi prepare a budget for next year that will show the amount of revenue, expense, and profit his operation will likely experience. Show each amount in dollars and as a percentage of revenue. Should Daudi's profits next year be greater or lesser than this year? By how much?

	This Year Actual	Percent	Next Year Budget	Next Year Percent
Revenue	$1,650,000	100%		
Cost of food		35%		
Cost of labor		30%		
Other expenses		20%		
Total expenses		85%		
Profit	$247,500	15%		

11. Richard Shaul owns and operates four Rapid Richard's food trucks in a large city. He identifies the trucks as Northside, Southside, Eastside, and Westside because those are the general locations in which each truck is assigned to operate.

Richard is developing simplified profit and loss statements and a combined profit and loss statement that summarizes last year's financial performance for his four trucks. Help Richard complete the financial summaries, and then answer the questions that follow.

	Northside	%	Southside	%	Eastside	%	Westside	%	All Units	%
Revenue	$320,000	100.0%		100.0%	$295,000	100.0%	$375,000	100.0%	$1,415,000	100.0%
Food expense	93,750		$128,750		85,500		106,250		414,250	29.3%
Labor expense	96,250		128,500		102,750		129,800			
Other expenses	67,500	21.1%	87,500		72,750	24.7%	71,750	19.1%	299,500	21.2%
Total expenses						88.5%			1,171,050	
Profit	62,500	19.5%	80,250			11.5%				

Which of Richard's trucks achieved the highest amount of sales last year? Which truck achieved the lowest food expense percentage? Which truck achieved the lowest labor expense percentage? Which truck achieved the highest dollar amount of profit? Which truck(s) achieved a higher than average profit percentage?

12. Some foodservice professionals feel the best way to improve profits is to reduce costs. Others feel that increasing revenue is the best way to increase profits. Name three specific steps a manager can take to reduce current costs. Name three specific steps a manager can take to increase revenues. Which approach do you feel would be best for the type of foodservice operation you want to manage in the future?

CHAPTER 2

Creating Sales Forecasts

OVERVIEW

This chapter presents the methods and procedures you must learn to create accurate records of what you have sold in the past as well as forecasts of how much business you will do in the future. This includes predicting the total amount of revenue you will generate, the number of guests you will serve, and the amount of money each guest will spend. Knowledge of these management techniques will provide the information you must have to analyze your historical sales and to serve your future guests professionally.

Chapter Outline

- Importance of Forecasting Sales
- Sales Histories
- Maintaining Sales Histories
- Sales Variances
- Predicting Future Sales
- Technology Tools
- Apply What You Have Learned
- For Your Consideration
- Key Terms and Concepts
- Test Your Skills

LEARNING OUTCOMES

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

- Develop a procedure to record current sales.
- Compute percentage increases or decreases in sales over time.
- Develop a procedure to predict future sales.

IMPORTANCE OF FORECASTING SALES

When they open their facility's doors at the beginning of the day, the questions most foodservice managers must ask themselves are very simple: "How many guests will I serve today?—This week?—This year?"

The answers to these questions are critical because the guests you will serve provide the revenue to pay your operating expenses and create a profit. Simply put, if too few guests are served, total revenue may not be enough to equal your costs, even if these costs are well managed. In addition, decisions regarding the type and quantity of food and beverage products to purchase depend on knowing the number of guests who will be coming to buy those products.

The labor required to serve guests is also determined based on a manager's "best guess" of the projected number of customers to be served, as well as what these guests will buy. In an ongoing operation, it is often true that future sales estimates, or projected sales, will be heavily based on sales history. This is true because what has happened in the past in your operation is often a good predictor of what will happen in the future. Those managers who can best predict the future are those who are most prepared to control how it will affect them.

In the hospitality industry, we have many ways of counting or defining sales. In the simplest case, sales can be defined as the dollar (or other currency) amount of revenue collected during a predetermined time period. The time period may be defined as an hour, a shift, a day, a week, a month, or a year. When used this way, sales and revenue are considered interchangeable terms.

When you predict the future number of guests you will serve and the revenue they will generate in a given time period, you have created a **sales forecast**. You can calculate your actual sales for a current time period in several ways. Most foodservice managers utilize a computerized system called a **point of sales (POS) system**, which, among other tasks, is programmed to record sales and payment information. Alternatively, manually produced guest checks or head counts are other methods foodservice managers could use to help identify how many sales were completed. Today, however, even the smallest of foodservice operations should take advantage of the speed and accuracy provided by modern POS systems when recording their operations' sales.

FUN ON THE WEB!

A large number of companies sell hospitality industry-specific POS systems used to record sales information and do much more. Some of the most popular companies include the following:

Revel Systems
Toast
Squirrel Systems
Touch Bistro
Oracle

To review their product offerings, enter the company name followed by "POS" into your favorite search engine.

It is important to remember that a distinction is made in the hospitality industry between actual sales (revenue) and **sales volume**. Sales volume is the number of units sold. Consider Manuel, a bagel shop manager, whose Monday business consists of

$2,000 in sales (revenue) because he sold 1,000 bagels (sales volume). It is important for Manuel to know how much revenue was taken in, so he can evaluate the expenses required to generate his revenue and the number of units that have been sold. With this information, he can be better prepared to serve additional guests the next day.

In many areas of the hospitality industry such as in retirement centers and college and university residence halls, it is customary that no cash actually changes hands during a particular meal period. However, the manager of such a facility still created sales during that meal period and would be interested in sales volume or how much food was actually consumed by the residents or students on any particular day. This is critical information because, all foodservice managers must be prepared to answer the questions, "How many individuals did I serve today, and how many should I expect tomorrow?" In some cases, a food and beverage operation may be a blend of cash and noncash sales.

Consider Tonya Brown, a hospital foodservice director. It is very likely that Tonya will be involved in serving both cash-paying guests (in an open-to-the-public cafeteria) and noncash patients (with tray-line-assembled meals that are then delivered to patients' rooms). In addition, meals for hospital employees may be made as cash sales, but at a reduced or subsidized rate. Clearly, Tonya's operation will create sales each day, and it will be important for her and her staff to know, as accurately as possible, how many of each type of guest she will serve and the menu items these guests will be served.

An understanding of anticipated sales, in terms of revenue dollars, guest counts, or both, will help you have the right number of staff members working, with the right amounts of products available to them, at the right time. In this way, you can begin to effectively manage your costs. In addition to the importance of accurate sales records for purchasing and staffing, sales records are valuable to an operator developing labor standards to improve efficiency.

Consider, for example, managing a large restaurant with 400 seats. If an individual server can serve 25 guests at lunch, you would need 400/25, or 8, servers per lunch shift if all your seats were filled. If management keeps no accurate sales histories and makes no sales forecasts, too few or too many servers might be scheduled to work.

With accurate sales records, a sales history can be developed for each foodservice outlet you operate, and better decisions can be made with regard to planning for each unit's operation. Figure 2.1 lists some of the advantages that you gain when you can accurately predict the number of people you will serve in any future time period.

FIGURE 2.1 Advantages of Accurate Sales Forecasts

- Accurate revenue estimates
- Improved ability to predict expenses
- Greater efficiency in scheduling needed workers
- Greater efficiency in scheduling menu item production schedules
- Better accuracy in purchasing the correct amount of food for immediate use
- Improved ability to maintain proper levels of perishable and nonperishable food inventories
- Improved budgeting ability
- Lower selling prices for guests because of increased operational efficiencies
- Increased dollars available for current facility maintenance and future growth
- Increased profit levels and stockholder value

SALES HISTORIES

A **sales history** is the systematic recording of all sales achieved during a predetermined time period. It is an accurate record of what and how much your operation has sold. Before you can develop a sales history, however, you must think about the definition of sales that is most helpful to you and your understanding of how your own operation functions.

The simplest type of sales history records revenue only. The sales history format used by Rae's Restaurant and shown in Figure 2.2 is a typical one for an operation recording its sales revenue on a daily and weekly basis.

Notice that, if you managed Rae's Restaurant, you would determine daily sales either from your POS system or from manually adding the information recorded on paper guest checks. You then transfer that number on a daily basis to your sales history by entering the amount of your daily sales in the column titled Daily Sales.

Sales to date is the cumulative total of sales reported in the unit. **Sales to date** is the number you will get when you add today's daily sales to the sales of all prior days in the **reporting period**—the time period for which sales records are being maintained.

To illustrate, sales to date on Tuesday, January 2, is computed by adding Tuesday's sales to those of Monday (the prior day) to arrive at a sales to date total of $1,826.27 ($851.90 + $974.37 = $1,826.27). As a result, the Sales to Date column is a running total of the sales achieved by Rae's Restaurant for the week.

Should Rae's manager prefer it, the reporting period could be defined in time blocks other than 1 week. Common alternatives are meal periods (breakfast, lunch, dinner, and so forth), days, weeks, 2-week periods, 4-week (28-day) periods, months, quarters (3-month periods), or any other unit of time that helps managers better understand their business. Most modern POS systems allow you to choose the specific reporting period of most interest to you.

In some foodservice operations, you will not have the ability to consider your sales in terms of revenue generated. Figure 2.3 is the type of sales history you can use when no cash sales are typically reported. In this case, the manager of the Eureka summer camp is interested in recording sales based on serving periods rather than an alternative time frame, such as a 24-hour (1-day) period. This approach is often used in such settings as all-inclusive hotels and resorts, extended care facilities, retirement homes, college residence halls, correctional facilities, military bases, hospitals, summer camps, or any other situation where knowledge of the number of actual guests served during a given period is critical for planning purposes.

FIGURE 2.2 Sales History

Rae's Restaurant			
Sales Period	**Date**	**Daily Sales**	**Sales to Date**
Monday	1/1	$851.90	$851.90
Tuesday	1/2	974.37	1,826.27
Wednesday	1/3	1,004.22	2,830.49
Thursday	1/4	976.01	3,806.50
Friday	1/5	856.54	4,663.04
Saturday	1/6	1,428.22	6,091.26
Sunday	1/7	1,241.70	7,332.96
Week's Total			$7,332.96

FIGURE 2.3 Sales History

Camp Eureka								
	Guests Served							
Serving Period	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
7:00–9:00 A.M.	121							
9:00–11:00 A.M.	40							
11:00–1:00 P.M.	131							
1:00–3:00 P.M.	11							
3:00–5:00 P.M.	42							
5:00–7:00 P.M.	161							
Total Served	506							

Given the data in Figure 2.3, the implications for the Tuesday staffing of food servers at the camp are evident. Fewer servers will likely be needed from 9:00 to 11:00 A.M. than from 7:00 to 9:00 A.M. The reason is obvious. On Monday, fewer campers ate between 9:00 and 11:00 A.M. (40) than between 7:00 and 9:00 A.M. (121). As a knowledgeable manager, if you were operating this camp, you could either reduce serving staff during the slower service period or move those workers to some other necessary task.

You might also decide not to produce as many menu items for consumption during the 9:00 to 11:00 A.M. period. In that way you could make more efficient use of both your labor and food products. It is simply easier to manage well when you know the answer to the question "How many guests will I serve?"

Sales histories can be created to record revenue, guests served, or both. In all cases, however, it is important that you keep good records of how much you have sold in the past because doing so is one key to accurately predicting the amount of sales you will likely achieve in the future.

COMPUTING AVERAGES FOR SALES HISTORIES

In some cases, knowing the average number of revenue dollars generated in a past time period, or the average number of guests served in that period, may be a real benefit to you. This is because in many operations, future guest activity will often be very similar to past guest activity. As a result, using historical sales averages from your operation can be useful as you project future guest sales and counts.

The two major types of averages you are likely to encounter as a foodservice manager are as follows:

- Fixed average
- Rolling average

FIXED AVERAGE

A **fixed average** is an average for a specific (fixed) time period, for example, the first 14 days of a given month. In this case, you would compute the average amount of sales or guest activity for this 14-day period. Note that this average is called fixed because the first 14 days of the month will always consist of the same days (the 1st through the 14th) as shown in Figure 2.4.

HERE'S HOW IT'S DONE 2.1

An **average**, which is also called an arithmetic "mean," is simply a value computed by identifying the number of items in a series, adding the quantities of each item in that series, and then dividing the total of the quantities by the number of items in the series. It's easy.

The first and most important thing to do when you calculate an average is to identify exactly how many items will be included in the series. The number of items in the series you are examining is important because it will be the denominator in the calculation of the average. The sum of the assigned values of these items will be the numerator.

For example, if a manager wants to calculate her operation's average electric bill last year, she must first determine that the number of items in the series will be 12; the number of months in last year and, as a result, the number of electric bills to be added.

Similarly, if a manager wants to calculate the average sales per day last week, the number of items in the series will be the number of days the restaurant operated last week. After the number of items in the series is identified, the quantity of each item in the series must be totaled.

To illustrate how managers calculate an average, assume that a manager buys three different knives. One knife costs $6.00, another costs $9.00, and the third costs $18.00. To calculate the average cost of a knife, the manager first recognizes that there are three quantities (knives purchased) in the series of items. Then the sum of the quantities (the cost of the three knives) is calculated.

In this example, the sum of the quantities equals $33.00 ($6.00 + $9.00 + $18.00 = $33.00).

Next, the manager divides the arrived at sum by 3, which is the number of items in this series:

$$\frac{\$33.00 \text{ sum of the knives' cost}}{3 \text{ knives purchased}} = \$11.00 \text{ average price per knife}$$

Thus, $11 is the average of $6 + $9 + $18. The number of items in the series is 3, that is, they are 6, 9, and 18.

The sum of the quantities in this case equals 33 (6 + 9 + 18 = 33). Thus, in this example, $33.00 ÷ 3 = $11.00; the average price paid by the manager for knives.

FIGURE 2.4 14-Day Fixed Average

Lauraina's Take-Out Coffee	
Day	**Daily Sales**
1	$ 350.00
2	322.00
3	388.00
4	441.00
5	419.00
6	458.00
7	452.00
8	458.00
9	410.00
10	434.00
11	476.00
12	460.00
13	418.00
14	494.00
14-Day Total	$5,980.00
$\frac{\$5,980}{14} = \$427.14$ sales per day	

Figure 2.4 details the sales activity of Lauraina's Take-Out Coffee. The calculation of this average (total revenue/number of days) is fixed, or constant, because Lauraina's management has identified the 14 specific days used to make up the average. The number $427.14 may be very useful because it might, if management wishes, be used as a good predictor of the revenue volume that should be expected for the first 14 days of next month.

ROLLING AVERAGE

A **rolling average** is the average amount of sales or volume over a changing time period. A fixed average is computed using a specific or constant set of data, but a rolling average is computed using data that will change. To illustrate, consider the case of Ubalda Salas, who operates a sports bar. Ubalda is interested in knowing what the average revenue dollars were in her operation for each prior 7-day period.

In this case, the prior 7-day period changes, or rolls forward by 1 day, as each day passes. It is important to note that Ubalda could have been interested in her average daily revenue last week (fixed average), but she prefers to know her average sales for the last 7 days. This means that she will, at times, be using data from both last week and this week to compute the last 7-day average.

Using the sales data recorded in Figure 2.5, the 7-day rolling average for Ubalda's Sports Bar is computed as shown in Figure 2.6.

Note that each 7-day period is made up of a group of daily revenue numbers that changes over time. The first 7-day rolling average is computed by summing the first 7 days' revenue (revenue on days 1–7 = $28,280) and dividing that number by 7 to arrive at a 7-day rolling average of $4,040 ($28,280 revenue ÷ 7 days = $4,040 average).

Each day, Ubalda adds her daily revenue to that of the prior 7-day total and drops the day that is now 8 days past. This gives her the effect of continually "rolling" the most current 7 days' data forward. The rolling average, although more complex and time-consuming to calculate than a fixed average, can be extremely useful in recording data to help you make effective predictions about the sales levels

FIGURE 2.5 14-Day Sales Levels

Ubalda's Sports Bar	
Day	**Sales**
1	$3,500.00
2	$3,200.00
3	$3,900.00
4	$4,400.00
5	$4,200.00
6	$4,580.00
7	$4,500.00
8	$4,600.00
9	$4,100.00
10	$4,400.00
11	$4,700.00
12	$4,600.00
13	$4,180.00
14	$4,940.00

FIGURE 2.6 Seven-Day Rolling Average

Ubalda's Sports Bar								
Day	**1–7**	**2–8**	**3–9**	**4–10**	**5–11**	**6–12**	**7–13**	**8–14**
1	$3,500	—						
2	3,200	$3,200	—					
3	3,900	3,900	$3,900	—				
4	4,400	4,400	4,400	$4,400	—			
5	4,200	4,200	4,200	4,200	$4,200	—		
6	4,580	4,580	4,580	4,580	4,580	$4,580	—	
7	4,500	4,500	4,500	4,500	4,500	4,500	$4,500	—
8		4,600	4,600	4,600	4,600	4,600	4,600	$4,600
9			4,100	4,100	4,100	4,100	4,100	4,100
10				4,400	4,400	4,400	4,400	4,400
11					4,700	4,700	4,700	4,700
12						4,600	4,600	4,600
13							4,180	4,180
14								4,940
Total	**$28,280**	**$29,380**	**$30,280**	**$30,780**	**$31,080**	**$31,480**	**$31,080**	**$31,520**
7-Day	**$4,040.00**	**$4,197.14**	**$4,325.71**	**$4,397.14**	**$4,440.00**	**$4,497.14**	**$4,440.00**	**$4,502.86**

you can expect in the future. This is true because, in many cases, rolling data are more current and, thus, more relevant than some fixed historical averages.

To best predict future sales in operations you manage, you may choose to compute fixed averages for some time periods and rolling averages for others. For example, it may be helpful to know your average daily sales for the first 14 days of last month as well as your average sales for the most recently past 14 days. If, for example, these two numbers are very different, you will know whether the number of sales you can expect in the future is increasing or declining. Regardless of the type of average you feel is best for your operation, you should always document your sales history because it is from your sales history that you will be better able to predict future sales levels.

RECORDING REVENUE, GUEST COUNTS, OR BOTH

Some foodservice operations do not record revenue as the primary measure of their sales activity. For them, developing sales histories by recording the number of individuals they serve each day makes the most sense. Thus, **guest count**, the term used in the hospitality industry to indicate the number of people served, is recorded on a regular basis.

You may decide that your operation is best managed by tracking both generated revenue and guest counts. In fact, if you do decide to record both revenue and guest counts, you have the information you need to compute **average sales per guest**, a term sometimes referred to as "**check average**."

Average sales per guest is determined by the following formula:

$$\frac{\text{Total sales}}{\text{Number of guests served}} = \text{Average sales per guest}$$

HERE'S HOW IT'S DONE 2.2

The average sales per guest, or check average, is one of a foodservice manager's most commonly utilized formulas. And it's not hard to calculate it. To compute an operation's check average, managers use these steps:

Step 1. Identify the amount of sales achieved in a specific time period.

Step 2. Identify the number of guests served in the same time period.

Step 3. Apply the average sales per guest formula.

For example, assume that a manager recorded that the amount of sales achieved last week was $18,750 (Step 1). Further, assume that 1,500 guests were served last week (Step 2). Applying the average sales per guest formula (Step 3), the manager would find that last week's check average was $12.50.

$$\frac{\$18{,}750 \text{ total sales last week}}{1{,}500 \text{ guest served last week}} = \$12.50 \text{ average sales per guest}$$

One reason why the ability to accurately calculate the average sales per guest, or check average, is so important is that managers are often evaluated on the success of their efforts to maintain, or to increase, the average amount spent by each guest visiting their operations.

FIGURE 2.7 Sales History

Sales Period	Date	Day	Sales	Guests Served	Average Sales per Guest
Monday	Jan 1	Monday	$1,365.00	190	$7.18
Tuesday	Jan 2	Tuesday	$2,750.00	314	$8.76
Two-Day Average			$2,057.50	252	$8.16

Consider the information in Figure 2.7 in which the manager of Brothers' Family Restaurant has decided to monitor and record the following:

1. Sales
2. Guests served
3. Average sales per guest

Most POS systems are programmed to report the amount of revenue generated in a selected time period, the number of guests served, and the average sales per guest. In the case of Brothers' Family Restaurant, Monday's revenue was $1,365; they served 190 guests, and thus, the average sales per guest that day was $7.18 ($1,365/190 = $7.18). On Tuesday, the average sales per guest was $8.76 ($2,750/314 = $8.76).

To compute the 2-day revenue average, the Brothers' manager would add Monday's revenue and Tuesday's revenue and then divide by 2, yielding a 2-day revenue average of $2,057.50 [($1,365 + $2,750)/2 = $2,057.50].

In a similar manner, the 2-day average for the number of guests served is computed by adding the number of guests served on Monday to the number served on Tuesday and then dividing by 2, yielding a 2-day average of guests served of 252 [(190 + 314)/2 = 252].

It might be logical to think that the manager of Brothers' could compute the Monday and Tuesday combined average sales per guest by adding the averages from each day and then dividing by 2. It is important to understand that this would *not* be correct.

A formula consisting of Monday's average sales per guest plus Tuesday's average sales per guest divided by 2 [($7.18 + $8.76)/2] yields $7.97. In fact, the actual 2-day average sales per guest is $8.16 [($1,365 + $2,750)/(190 + 314) = ($4,115/504) = $8.16].

FIGURE 2.8 Weighted Average

	Sales	Guests Served	Average Sales per Guest
Day 1	$100.00	20	$5.00
Day 2	$4,000.00	400	$10.00
Two-Day Average	$2,050.00	210	???

Although the difference of $0.19 might, at first glance, appear to be an inconsequential amount, assume that you are the president of a restaurant chain with 4,000 units worldwide. If each unit served 1,000 guests per day and you miscalculated average sales per guest by $0.19, your daily revenue calculation would be "off" by $760,000 per day [(4,000 units × 1,000 guests × $0.19) = $760,000]!

Returning to the Brothers' Family Restaurant example, the correct procedure for computing the 2-day average sales per guest is as follows:

$$\frac{(\text{Monday sales} + \text{Tuesday sales})}{(\text{Monday guests} + \text{Tuesday guests})} = \text{2-day average sales per guest}$$

or

$$(\$1{,}365 + \$2{,}750) / (190 + 314) = \$8.16$$

The correct computation in this example is a **weighted average**, that is, an average that weighs the number of guests served in different time periods with how much they spend in those same time periods.

To demonstrate further the importance of weighted averages, consider the data in Figure 2.8 and assume that you want to answer the question "What is the combined average sales per guest?"

From the data in Figure 2.8, it is easy to see that the 2-day average would not be $7.50 [($5.00 + $10.00)/2 = $7.50] because many more guests were served on the day the average sales per guest was $10.00 than on the day the average sales per guest was $5.00. With so many guests spending an average of $10.00, and so few spending an average of $5.00, the overall average should be much closer to $10.00 than t $5.00.

In fact, utilizing the average sales per guest formula, the correct weighted average sales per guest would be $9.76, as follows:

$$\frac{(\text{Day 1 sales} + \text{Day 2 sales})}{(\text{Day 1 guests} + \text{Day 2 guests})} = \text{2-day average sales per guest}$$

or

$$\frac{\$100 + \$4{,}000}{20 + 400 \text{ guests}} = \$9.76 \text{ per guest}$$

MAINTAINING SALES HISTORIES

Although a sales history may consist of revenue, number of guests served, and average sales per guest, depending upon the type of operation you manage, you may want to know even more detailed information about your sales. This may include information such as the number of guests served in a specific meal or time period

(e.g., breakfast, lunch, or dinner), the method of meal delivery (e.g., drive-through sales vs. carry out or dine-in sales), or the method used to order (online vs. on-site).

The important concept to remember is that you have the power to develop the sales history information that best suits your operation. That information should be updated at least daily, and a cumulative total for the appropriate time periods should also be maintained. In most cases, your sales histories should be kept for a period of at least 2 years. This allows you to have a good sense of what has happened to your business in the recent past.

Of course, if you are the manager of a new operation, or one that has recently undergone a major concept change, you may not have the advantage of reviewing meaningful sales histories because they simply do not exist. If you find yourself in such a situation, it is imperative that you begin to build and maintain your sales histories as soon as possible so you will, as quickly as possible, have good sales information on which to base your future managerial decisions.

SALES VARIANCES

After an accurate sales history system has been established, you may begin to see that your operation experiences some **sales variance** or differences from previous sales levels. These sales variances are normal and will give you an indication of whether your sales are increasing, declining, or staying the same. Because that information is so important to predicting future sales levels, many foodservice managers improve their sales history information by including sales variance as an additional component of the history.

Figure 2.9 details a portion of a sales history that has been modified to include a sales Variance column, which allows the manager to see how sales are different from a prior period. In this case, the manager of Quick Wok wants to compare sales for the first 3 months of this year to sales for the first 3 months of last year, as recorded in that period's sales history report.

The variance in Figure 2.9 is determined by subtracting sales last year from sales this year. In January, the variance figure is obtained as follows:

Sales this year – Sales last year = Variance
or
$54,000 – $51,200 = $2,800

Thus, the manager of Quick Wok can see that the sales for the first quarter are greater than last year's first quarter. In fact, all 3 months in the first quarter of the year showed revenue increases over the prior year.

FIGURE 2.9 Sales History and Variance

Quick Wok			
Month	**Sales This Year**	**Sales Last Year**	**Variance**
January	$54,000	$51,200	$2,800
February	57,500	50,750	6,750
March	61,200	57,500	3,700
First-Quarter Total	$172,700	$159,450	$13,250

FIGURE 2.10 Sales History, Variance, and Percentage Variance

Quick Wok				
Month	Sales This Year	Sales Last Year	Variance	Percentage Variance (%)
January	$54,000	$51,200	$2,800	5.5%
February	57,500	50,750	6,750	13.3%
March	61,200	57,500	3,700	6.4%
First-Quarter Total	$172,700	$159,450	$13,250	8.3%

The total sales improvement for the first quarter was $13,250 ($172,700 – $159,450 = $13,250). The sales history and variance format used in Figure 2.9 lets a manager know the dollar value of revenue variance. But many good managers want to know even more because simply knowing the dollar value of a variance has limitations.

To illustrate, consider two restaurant managers. One manager's restaurant had revenue of $1,000,000 last year. The second manager's restaurant generated one-half as much revenue, or $500,000. This year both managers had sales increases of $50,000. But it is clear that while both experienced a $50,000 sales increase, that increase represents a much greater proportional change in the second restaurant than in the first. Because that is true, effective managers are often interested in the **percentage variance**, or percentage change, in their sales in one time period when compared to a different time period.

Figure 2.10 shows how the sales history data at the Quick Wok can be expanded to include percentage variance as part of that operation's complete sales history.

Percentage variance is obtained by subtracting sales last year from sales this year and then dividing the resulting number by sales last year. Thus, in the month of January, the percentage variance is calculated as follows:

$$\frac{\text{Sales this year} - \text{Sales last year}}{\text{Sales last year}} = \text{Percentage variance}$$

or

$$\frac{\$54{,}000 - \$51{,}200}{\$51{,}200} = 0.055 \text{ (in common decimal form; 5.5\%)}$$

Note that the resulting decimal form percentage can be converted to the more frequently used common form explained in Chapter 1 by moving the decimal point two places to the right, or through multiplying it by 100.

Note that when a sales history includes a variance column, an alternative, and shorter, formula for computing the percentage variance for January is as follows:

$$\frac{\text{January variance}}{\text{January sales last year}} = \text{January percentage variance}$$

or

$$\frac{\$2{,}800}{\$51{,}200} = 0.055 \text{ (in common decimal form; 5.5\%)}$$

Yet another way to compute the sales percentage variance for January is to use a math shortcut, as follows: