OPERATIONS BUDGETING

INTRODUCTION

This chapter begins by defining budgeting and its purposes. Then it describes various kinds of budgets, such as capital, operating, department, master, fixed, and flexible.

We will examine the responsibility for budget preparation and the advantages and disadvantages of budgeting. We will then go through a five-step cycle of the budgeting process:

1. Establish attainable goals or objectives.
2. Plan to achieve these goals or objectives.
3. Compare actual results with those planned and analyzing the differences (variances).
4. Take any corrective action required.
5. Improve the effectiveness of budgeting.

The steps in the preparation of a departmental operating budget are then explained since it is from these budgets that most of the other kinds of budgets are derived. Budgeting in a new operation, which has no information from the past on which to base budgets, is then discussed.

Zero-base budgeting (ZBB) is covered with reference to its value in controlling some types of undistributed cost. The two major aspects of ZBB (decision unit analysis and ranking) are discussed in some detail.

Variance analysis is discussed in this chapter and the chapter concludes with a section on forecasting methods using techniques such as moving averages and regression analysis.

CHAPTER OBJECTIVES

After studying this chapter, the reader should be able to

1 Explain the concept of budgeting.

2 Define the three purposes of budgeting.

3 Describe some of the types of budgets, such as departmental, capital, fixed, and flexible.

4 Briefly discuss some of the advantages and disadvantages of budgeting.

5 List and briefly discuss each of the five steps in the budget cycle.

6 Briefly explain some of the limiting factors to keep in mind when budgeting.

7 Define the term derived demand.

8 Explain what information is required to determine budgeted revenue in a restaurant operation and budgeted revenue in the rooms department of a hotel or motel.

9 Prepare budgeted (pro forma) income statements, given appropriate information about estimated revenue and costs.

10 Discuss ZBB with reference to decision units and the ranking process.

11 Briefly discuss the pros and cons of ZBB.

12 Use variance analysis to compare budgeted figures with actual results.

13 Use mathematical techniques, such as moving averages and regression analysis, in forecasting.

BUDGETING

A **budget** is a business plan, usually expressed in monetary terms. To make meaningful decisions about the future, a manager must look ahead. One way to look ahead is to prepare budgets or forecasts. A forecast may be very simple. For a restaurant owner/operator, the budget might be no more than looking ahead to tomorrow, estimating how many customers will eat in the restaurant, and purchasing food and supplies to accommodate this need. By contrast, in a large organization a budget might entail forecasts up to five years (such as for furniture and equipment purchases), as well as requiring day-to-day budgets (such as staff scheduling). Budgets not expressed in monetary terms could involve numbers of customers to be served, number of rooms to be occupied, number of employees required, or some other unit, as opposed to dollars. The three main purposes of budgeting can be summarized as follows:

1. To provide organized estimates of future unit sales, sales revenues, expenses, net income, staffing requirements, or equipment needs, broken down by operating period and department.
2. To provide management with long-term and short-term goals. These goals can be used to plan future activities.
3. To provide a method of control so that actual results can be evaluated against budget plans and adjustments, if necessary, can be made.

TYPES OF BUDGETS

There are a number of different kinds of budgets. This section describes long-term and short-term budgets, capital budgets, operating budgets, department budgets, and master budgets.

LONG–TERM VERSUS SHORT–TERM BUDGETS

Budgets can generally be considered to be either long-term or short-term. A **long-term budget** would be anywhere from one year to five years ahead. Such a budget concerns the major plans for the organization (expansion, creation of a new market, financing, and other related matters) and are often called **strategic budgets.** From such long-term plans evolve the policies concerning the day-to-day operations of the business, and thus the short-term budgets.

Short-term budgets could be for a day, a week, a quarter, or a year. Such budgets involve middle management in using its resources to meet the objectives of the long-term plans.

FIXED VERSUS FLEXIBLE BUDGETS

A **fixed budget** is based on a certain level of activity or sales revenue. Expense estimates are based on this level of sales. No attempt is made to introduce greater or lesser levels of sales revenue, and thus, different expense amounts in the budget. The disadvantage of such a budget is that, if the actual sales level differs from the budgeted sales level, there is no plan covering this possibility and expenses can only then be adjusted in the short run by guesswork. For example, suppose the rooms department budget in a hotel is based on the average year-round rooms occupancy of 70 percent. Operating costs (e.g., payroll, supplies, linen, and laundry) are based on this level of occupancy. If actual occupancy dropped to 60 percent because of unforeseen economic conditions, it might be difficult for the rooms department manager to know, in the short run, what the new payroll level should be. The same is true for all other expenses.

A **flexible** (or **variable**) **budget** is prepared based on several levels of activity. In our rooms department example, sales revenue could be forecast for 60 percent, 70 percent, and 80 percent occupancy levels (or as many levels as are appropriate). As the actual year progresses, it can be determined at which level the operation is going to fit best, and the appropriate expense levels will have already been determined for this level. In other words, adjustment is easier. The question could be raised, using the rooms department example, as to whether it is truly flexible (variable) budgeting or whether it is three (or more, if more occupancy levels are used) fixed budgets at three different occupancy levels. The question is valid, but the practical result is that management is prepared to adjust to the actual situation when adjustment is required.

With flexible budgeting, variable expenses will change with the volume of sales but fixed expenses will remain the same. For example, a budget might be prepared for a restaurant based on a number of levels of sales revenue. Expenses are calculated based on each different revenue level. Variable expenses might be expressed as a percentage of sales revenue or as a dollar amount per unit sold. However, advertising expense might be a fixed expense and will be left the same, regardless of the actual level of sales revenue. In other words, regardless of the volume of sales, a definite, fixed amount is budgeted for this expense. A really flexible budget would show expenses that are truly variable, with expenses as a percentage of that sales revenue and fixed costs as a dollar amount.

CAPITAL BUDGETS

A **capital budget** is a plan for the acquisition of new or replacement of existing fixed assets. A five-year replacement schedule for hotel room furnishings is a capital budget.

OPERATING BUDGETS

An **operating budget** concerns the ongoing projections of revenue and expense items that affect the income statement. For example, a forecast of sales revenue for a restaurant for a month is in an operating budget. Similarly, in a multidepartment hotel the forecast of total payroll expense for the year is an operating budget.

DEPARTMENT BUDGETS

A **department budget** would only be of concern to a restaurant complex (with, for example, dining room, bar, and banquet areas) where departmental income statements are prepared, or to a hotel that has a number of departments. A department budget would therefore be for a specific department and would show the forecast revenue less operating expenses for that department. Alternatively,

if a department does not directly generate any revenue (e.g., the maintenance department of a hotel), a department budget could be prepared showing anticipated expenses in detail for an operating period. Generally, such department budgets are prepared annually and broken down month by month.

MASTER BUDGETS

A **master budget** is the most comprehensive of all budgets. Generally, a master budget is prepared for a year and includes a balance sheet for a year hence and all the departmental income and expense statements for the next year.

BUDGET PREPARATION

Who prepares budgets and how often they are prepared varies with the size of the organization and the type of budget being prepared.

WHO PREPARES BUDGETS?

In a small, owner-operated restaurant or motel, the owner would prepare the budget. If it were a formal or written budget, the help of an accountant might be useful. If the budget were an informal one, there might be no written supporting figures. The owner might just have a mental plan about where he or she wants to go and operates from day to day to achieve the objective, or to come as close to it as possible. Budgets are also a record for future budgeting and other planning.

In a larger organization, many individuals might be involved in budget preparation. In such organizations, budgets are prepared from the bottom up. At the very least, the department heads or managers must be involved. If their subsequent performance is evaluated on the plans included in the budget, then they should be involved in preparing their own departmental budgets. They, in turn, might discuss the budget figures with employees in their own departments.

Above the department heads would be a budget committee. Department managers might be members of this committee. Such a committee is required to coordinate the budget to ensure that the final budget package is meaningful. For example, the rooms occupancy of a hotel determines, to a great extent, the breakfast revenue for the food department. The budget committee must ensure that the breakfast food sales are not based on an occupancy that differs from the rooms department figure.

The formal preparation of the budget is a function of the accounting department. The organization's comptroller would probably be a member of the budget committee, and his or her task is to prepare final budget information for submission to the general manager for approval.

The worst form of budget preparation is to have budgets imposed from the top down through the accounting department to the operating and other departments. Coordination might be present, but the cooperation of the employees where the activity takes place will be minimal.

WHEN ARE BUDGETS PREPARED?

Each year, top-level management generally prepares long-range budgets for up to five years. They may or may not involve department managers. Each year such budgets are revised for the next period (up to five years) forward. For coordination, the budget committee would be involved.

Short-term budgets are prepared annually, for the most part, with monthly projections. Each month, budgets for the remaining months of the year should be revised to adjust for any changed circumstances. Department managers should be involved in such revisions and the budget committee should be involved for overall coordination.

The department managers or other supervisory staff usually handle weekly or daily short-range budgets internally. For example, the housekeeping supervisor would schedule housekeepers (which affects the payroll budget) on a daily basis based on anticipated rooms occupancy.

WHAT ARE THE ADVANTAGES OF BUDGETING?

A number of advantages accrue to an organization that uses a budget planning process:

- Since the budgeting process involves department heads and possibly other staff within the department, it encourages their participation and thus improves communication and motivation. Therefore, these operating personnel can better identify with the plans or objectives of the organization.
- In preparing the budget, those involved are required to consider alternative courses of action. For example, should the advertising budget be spent to promote the organization as a whole, or would better results be obtained if emphasis were placed more on a particular department? At the department level, a restaurant manager might consider increasing the number of customers to be served per meal period per server (increased productivity per server) against the possible effects of slower service, reduced seat turnover, and perhaps lower total sales revenue.
- Budgets outline, in advance, the sales revenue to be achieved and the costs involved in achieving these revenues. After each budget period the actual results can be compared with the budget. In other words, a standard for comparison is predetermined, and subsequent evaluation of all those involved in the operation is possible.
- In the case of flexible budgets, the organization as a whole and each department within it are prepared for adjustments to any level of activity between the high and low (minimum and maximum) sales levels.

- Budgeting forces those involved to be forward-looking. For example, do our menu item selling prices need to be changed to take care of anticipated future increases in food, labor, and other operating costs? However, this is not to suggest that what happened in the past is not important and not to be considered in budget preparation.
- Budgeting requires those involved to consider both internal and external factors. Internal factors include such matters as seating capacity, seat turnover, and menu prices in a restaurant; and rooms available, rooms occupancy, and room rates in a hotel. External factors include such matters as the competition, the local economic environment in which the business operates, and the general inflation rate trend.

WHAT ARE THE DISADVANTAGES OF BUDGETING?

Obviously, just as there are advantages to budgeting, so, too, are there disadvantages:

- The time and cost to prepare budgets can be considerable. Usually, the larger the organization the greater is the amount of time, and thus the cost, of preparing budgets.
- Budgets are based on unknown factors (as well as some known factors) that can have a major impact on what does actually happen. It could be argued that this is not a disadvantage because it forces those involved to look ahead and prepare for the unknown.
- Budget preparation may require that confidential information be included in the budget. However, if confidential information is included, it may not remain confidential.
- The "spending to the budget" approach can be a problem. If an expense budget is overestimated, there can be a tendency to find ways to spend the money still in the budget as the end of the budget period arrives. This tendency can be provoked by a desire to demonstrate that the budget forecast was correct to begin with and to protect the budget from being cut for the next period.

In most cases the advantages far outweigh the disadvantages.

THE BUDGET CYCLE

The **budget cycle** is a five-part process that can be summarized as follows:

1. Establish attainable goals or objectives.
2. Plan to achieve these goals or objectives.

3. Compare actual results with those planned, and analyze the differences (variances).
4. Take corrective action required.
5. Improve the effectiveness of budgeting.

Each of these five steps will be discussed in turn.

ESTABLISHING ATTAINABLE GOALS OR OBJECTIVES

In setting goals, the most desirable situation must be tempered with realism. In other words, if any factors limit sales revenue to a certain maximum level, these factors must be considered. An obvious example is that a hotel cannot achieve more than 100 percent room occupancy. In the short run, if a hotel achieves 100 percent occupancy every night, room rates would have to be increased for sales revenue to increase. But since very few hotels achieve 100 percent occupancy year-round, it would be unwise, desirable as it might be, to use 100 percent as the budgeted occupancy on an annual basis.

Similarly, a restaurant is limited to a specific number of seats. If it is running at capacity, sales revenue can only be increased, again in the short run, by increasing menu prices or seat turnover (seat occupancy). But, again, there is a limit to increasing meal prices since customer resistance and competition often dictate upper pricing levels. However, if seat turnover is increased by giving customers rushed service, the end result may be declining sales.

Other limiting factors might be a lack of skilled labor or skilled supervisory personnel. Increased productivity by serving more customers per server would be desirable and would decrease our payroll cost per customer, but well-trained employees, or employees who could be trained, are often not available. Similarly, supervisory personnel who could train others are not always available.

A shortage of capital could limit expansion plans. If financing is not available to add guest rooms or expand dining areas, it would be a useless exercise to include expansion in our long-term budget.

Management's policy concerning the market in which the organization will operate might also limit budgets. For example, a coffee shop department head might propose that catering to bus tour groups would help increase sales revenue. On the other hand, the general manager may believe that catering to such large transient groups is too disruptive to the regular clientele.

Another limiting factor might be in the area of increasing costs. An operation might find that it is restricted in its ability to pass on increasing costs by way of higher prices to its customers.

Finally, customer demand and competition must always be kept in mind when budgeting. In the short run, there is usually only so much business to go around. Adding more rooms to a hotel does not automatically increase the demand for rooms in the area. It takes time for demand to catch up with supply, and new hotels or an additional block of rooms added to an existing hotel will

usually operate at a lower occupancy than normal until demand increases. A new restaurant or additional facilities to an existing restaurant must compete for its share of business.

PLANNING TO ACHIEVE GOALS OR OBJECTIVES

Once objectives have been determined, plans must be created to achieve them. At the departmental level, a restaurant manager must staff with employees skilled enough to handle the anticipated volume of business. A chef or purchaser must purchase food both in the quantities required to take care of anticipated demand and of a quality that meets the required standards expected by the customers. Purchases must allow the food operation to match as closely as possible its budgeted food cost. Over the long term, the need to expand the facilities might require top management to make plans for financing and might seek the best terms for repayment to achieve the budgeted additional profit required from the expansion.

COMPARING ACTUAL RESULTS WITH THOSE PLANNED AND ANALYZING THE DIFFERENCES

This is probably the most important and advantageous step in the budget cycle. Comparing actual results with the budget allows one to ask questions:

- Our actual dining room revenue for the month of April was $60,000 instead of the budgeted $63,000. Was the $3,000 difference caused by a reduction in number of customers? If so, is there an explanation (e.g., are higher prices keeping customers away, or did a competitive restaurant open nearby)? Is the $3,000 difference a result of reduced seat turnover (is service slowing down)? Are customers spending less (a reduced average check, or customer spending, because of belt tightening by the customer)?
- Yesterday the housekeeping supervisor brought in two more housekeepers than were required to handle the actual number of rooms occupied. Is there a communication problem between the front office and the housekeeping supervisor? Did the front office fail to notify the housekeeping supervisor of reservation cancellations, or did the housekeeping supervisor err in calculating the number of housekeepers actually required?
- The annual cocktail lounge departmental income was greater than the previous year, but still fell short of budgeted income. Did the sales revenue increase reach the budgeted level? Or did costs increase over the year more than in proportion to revenue? If so, which costs? Was there a change in what we sold (change in the sales mix)? In other words, are we now selling less profitable items (such as more beer and wine than liquor) in proportion to total sales revenue?

These are just a few examples of the types of questions that can be asked, and for which answers should be sought, in analyzing differences between budgeted performance and actual performance. Analysis of such differences will be commented upon further in the section on variance analysis later in this chapter. It should be noted that the variances themselves do not offer solutions to possible problems. They only point out that problems may exist.

IF REQUIRED, TAKING CORRECTIVE ACTION

Step 3 in the budget process points to differences and possible causes of the differences. The next step in the budget cycle necessitates deciding if corrective action is required and then acting on the decision. The cause of a difference could be the result of a circumstance that no one could foresee or predict (e.g., weather, a sudden change in economic conditions, or a fire in part of the premises). On the other hand, a difference could be caused because selling prices were not increased sufficiently to compensate for an inflationary cost increase; or that the budgeted forecast in occupancy of guest rooms was not sufficiently reduced to compensate for the construction of a new, nearby hotel; or that staff were not as productive in the number of customers served or rooms cleaned as they should have been according to predetermined standards. Whatever the reason, it should be corrected if it can be so that future budgets can more realistically predict planned operations.

Variances between budget and actual figures should not be an argument in favor of not budgeting. Without a budget, it would not even be apparent that the operation is not running as effectively as it should and could be. If the variance was favorable (e.g., guest room occupancy was higher than budgeted), the cause should also be determined because that information could help in making future budgets more accurate.

Once you have taken corrective action, you should determine the effectiveness of that action in solving the problem. If the corrective action did not solve the problem, the situation needs to be reassessed and a different technique tried to solve the problem.

IMPROVING THE EFFECTIVENESS OF BUDGETING

This is the final step in the five-step budget cycle. All those involved in budgeting should be made aware of the constant need to improve the budgeting process. The information provided from past budgeting cycles and particularly the information provided from analyzing variances between actual and budgeted figures will be helpful. By improving accuracy in budgeting, the effectiveness of the entire organization is increased.

DEPARTMENTAL BUDGETS

The starting point in any complete budgeting process is the departmental income statement. The rest of the budgeting process hinges on the results of these operating departments. For example, a budgeted balance sheet cannot be made up without the budgeted income statements; a cash budget cannot be prepared without knowledge of departmental revenue and expenses; long-term budgets for equipment and furniture replacement, for dividend payments, or for future financing arrangements cannot be prepared without a budget showing what income (or funds) is (are) going to be generated from the operation.

The budgeted income statements for each department and the entire operation are probably the most difficult to prepare. However, once this has been done, the preparation of the cash budget and budgeted balance sheet is relatively straightforward. This chapter will therefore only deal with income statement budgets, since they are the prime concern of day-to-day management of a hotel or restaurant. In summary, the procedure is as follows:

1. Estimate sales revenue levels by department.
2. Deduct estimated direct operating expenses for each department.
3. Combine estimated departmental operating incomes and deduct estimated undistributed expenses to arrive at net income.

ESTIMATING SALES REVENUE LEVELS BY DEPARTMENT

Even though departmental income statements are prepared for a year at a time, they should be initially prepared month by month (with revisions, if necessary, during the budget year in question). Monthly income statements are necessary so that comparisons with actual results can be made each month. If the comparison between budget and actual were only made on a yearly basis, any required corrective action might be 11 months too late. The following should be considered when making monthly revenue projections:

■ Past actual sales revenue figures and trends
■ Current anticipated trends
■ Economic factors
■ Competitive factors
■ Limiting factors

Information about how top management views these trends and factors must be communicated to those who prepare departmental budgets. This information must also be put into language that the department managers understand, that

is, in specific numeric terms rather than in vague, general language. For example, if an anticipated competitor is due to open nearby during the budget period, top management must state in specific percentage terms how that may influence the operation's sales.

For example, the dining room revenue for the past three years for the month of January was

Year 1	$60,000
Year 2	$65,000
Year 3	$67,000

It is now December in year 3, and we are finalizing our budget for year 4, commencing with January. The increase in volume for year 2 over year 1 was about 8 percent ($5,000 divided by $60,000). Year 3 increase over year 2 was approximately 3 percent. These increases were caused entirely by increases in number of customers. The size of the restaurant has not changed and no change in size will occur in year 4. Because a new restaurant is opening a block away, we do not anticipate our customer count will increase in January, but neither do we expect to lose any of our current customers. Because of economic trends, we are going to be forced to meet rising costs by increasing our menu prices by 10 percent commencing in January year 4. Our budgeted sales revenue for January year 4 would be:

$$\$67,000 + (10\% \times \$67,000) = \underline{\underline{\$73,700}}$$

The same type of reasoning would be applied for each of the 11 other months of year 4, and for each of the other operating departments. One other factor that in some situations might need to be considered in sales revenue projections is that of derived demand. In other words, what happens in one department might affect what happens to the sales revenue of another. For example, a cocktail bar might generate sales revenue from customers in the bar area as well as from customers in the dining room. In budgeting the bar total sales revenue, the sales revenue would have to be broken down into sales revenue within the lounge area and sales revenue derived from dining room customers. Similarly, in a hotel the occupancy of the guest rooms will affect the sales revenue in the food and beverage areas. The interdependence of departments must, therefore, be kept in mind in the budgeting process.

DEDUCTING ESTIMATED DIRECT OPERATING EXPENSES FOR EACH DEPARTMENT

Since most departmental direct operating costs are specifically related to sales revenue levels, once the sales revenue has been calculated, the major part of the budget has been accomplished. Historic accounting records will generally show

that each direct expense varies within narrow limits as a percentage of sales revenue. The appropriate percentage of expense to sales revenue can therefore be applied to the budgeted sales revenue to calculate the dollar amount of the expense. For example, if laundry expense for the rooms department of a hotel varies between 4.5 percent and 5.5 percent of sales revenue, and sales revenue in the rooms department for a particular month is expected to be $100,000, then the laundry expense for that same month would be 5 percent × $100,000, or $5,000. The same is true for all other direct expenses for which cost to revenue percentages are obvious. While this is a convenient method of budgeting, using historical cost percentages assumes that the costs were appropriate. However, this may not be true.

In certain cases, however, the problem might not be as simple. A good example of this is labor, where much of the cost is fixed and does not vary as sales revenue goes up or down. In a restaurant the wages of the restaurant manager, the cashier, and the host or hostess are generally fixed. Such people receive a fixed salary regardless of the volume of business. Only the wages of servers and bus help vary in the short run. In such cases, a month-by-month staffing schedule must be prepared, listing the number of variable staff of each category required for the budgeted sales revenue level, calculating the total variable cost, and adding this to the fixed cost element to arrive at total labor cost for that month. It is true that this requires some detailed calculations, but without it the budget might not be as accurate as it could be for effective budgetary control.

Staffing schedules for each department for various levels of sales could be developed. These schedules would be based on past experience and the standards of performance required by the establishment. Then when sales levels are forecast, the appropriate number of labor-hours or staff required for each type of job can be read directly from the staffing schedule. The number of hours of staffing required or the number of employees can then be multiplied by the appropriate rates of pay for each job category. A typical staffing schedule is illustrated in Exhibit 9.1.

| Covers | Monthly Volume in | |
	Waitstaff Hours	Bus Help Hours
Up to 5,500	970	485
5,550 to 6,500	1,040	485
6,500 to 7,500	1,210	485
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21,500 to 22,500	3,890	990
Over 22,500	4,160	1,040

EXHIBIT 9.1

Staffing Schedule—Coffee Shop

Alternatively, if labor (and other costs) have been broken down for use with CVP analysis (see Chapter 8) into their fixed and variable elements, then this information is already available for use in budgeting.

Once all costs have been determined, they can be deducted from total sales revenue to determine each department's operating income.

COMBINING ESTIMATED DEPARTMENTAL OPERATING INCOMES AND DEDUCTING ESTIMATED UNDISTRIBUTED EXPENSES TO ARRIVE AT NET INCOME

The departmental operating incomes determined in steps one and two can now be added together. At this point, certain undistributed expenses must be calculated and deducted. These expenses are not distributed to the departments because an appropriate allocation is difficult to arrive at. Nor are they, for the most part, controllable by or the responsibility of the department managers.

These unallocated expenses (including fixed charges) usually include the following:

- Administrative and general
- Marketing
- Property operation and maintenance
- Utilities expense
- Property or municipal taxes
- Rent
- Insurance
- Interest
- Depreciation
- Income taxes

Since these expenses are usually primarily fixed, they vary little with sales revenue; historic records will generally indicate the narrow dollar range within which they vary.

Sometimes these expenses will vary at the discretion of the general manager. For example, it may be decided that an extra allocation will be added to the advertising and promotion budget during the coming year or that a particular item of expensive maintenance can be deferred for a year. In such cases, the adjustment to the budget figures can be made at the general manager's level. Usually, these undistributed expenses are calculated initially on an annual basis (unlike departmental sales revenue and direct operating expenses, which are initially calculated monthly). If an overall pro forma (projected or budgeted) income statement, including undistributed expenses, is prepared monthly, then the simplest method is to divide each undistributed expense by 12 and show

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Totals
Sales revenue	$300,000	$600,000	$800,000	$300,000	$2,000,000
Direct costs*	(250,000)	(450,000)	(550,000)	(250,000)	(1,500,000)
Operating income	$ 50,000	$150,000	$250,000	$ 50,000	$ 500,000
Undistributed expenses	(75,000)	(75,000)	(75,000)	(75,000)	(300,000)
Net income (loss)	($ 25,000)	$ 75,000	$175,000	($ 25,000)	$ 200,000

*Direct costs might include fixed costs.

EXHIBIT 9.2

Net Income When Undistributed Costs Are Allocated Based on Time

one-twelfth of the expense for each month of the year. A three-month budget would show one-fourth of the total annual expense. However, only the undistributed expenses are handled this way. Sales revenue and direct expenses (variable and semivariable) should be calculated correctly month by month to take care of monthly or seasonal variations in sales revenue.

For example, Exhibit 9.2 shows how the undistributed expenses could be allocated in a budget prepared on a quarterly basis. Exhibit 9.2 also indicates a budgeted loss in two of the quarters. We would argue that such budgeted losses are misleading, because the quarters with low sales revenue are unfairly burdened with undistributed costs. However, many of the fixed expenses such as the general manager's salary, rent, property taxes, utilities, insurance, and interest will be paid monthly regardless of sales. Another way to distribute such costs would be in ratio to budgeted sales revenue. Such a distribution is calculated in Exhibit 9.3.

The revised budget, prepared with the new method of allocating undistributed expenses to the various quarters, is shown in Exhibit 9.4. The method illustrated in Exhibit 9.4 may, as it does in our case, ensure that no period has a budgeted loss. Over the year, however, there is no change in total net income.

Qtr.	Sales Revenue	Sales Revenue (%)	Undistributed Costs Share
1	$ 300,000	15%	15% × $300,000 = $ 45,000
2	600,000	30	30% × $300,000 = 90,000
3	800,000	40	40% × $300,000 = 120,000
4	300,000	15	15% × $300,000 = 45,000
Totals	$2,000,000	100%	$300,000

EXHIBIT 9.3

Calculation of Allocation of Undistributed Costs Using Sales Revenue Volume

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Totals
Sales revenue	$300,000	$600,000	$800,000	$300,000	$2,000,000
Direct operating costs	(250,000)	(450,000)	(550,000)	(250,000)	(1,500,000)
Operating income	$ 50,000	$150,000	$250,000	$ 50,000	$ 500,000
Undistributed costs	(45,000)	(90,000)	(120,000)	(45,000)	(300,000)
Net income (loss)	$ 5,000	$ 60,000	$130,000	$ 5,000	$ 200,000

EXHIBIT 9.4

Operating Income When Undistributed Costs Are Allocated Using Sales Revenue Volume

BUDGETING IN A NEW OPERATION

New hotels and restaurants will find it more difficult to budget in their early years because they have no internal historic information to serve as a base. If a feasibility study had been prepared prior to opening, it should be used as a base for budgeting. Alternatively, forecasts must be based on a combination of known facts and industry or market averages for the type and size of operation. For example, a restaurant could use the following equation for calculating its breakfast revenue:

$$\begin{array}{c}\text{Number} \\ \text{of seats} \\ \text{available}\end{array} \times \begin{array}{c}\text{Seat} \\ \text{turnover} \\ \text{expected}\end{array} \times \begin{array}{c}\text{Average} \\ \text{check per} \\ \text{meal period}\end{array} \times \begin{array}{c}\text{Operating} \\ \text{days}\end{array} = \begin{array}{c}\text{Breakfast} \\ \text{total sales} \\ \text{revenue}\end{array}$$

This same equation could be used for lunch, dinner, and even for coffee breaks. Meal periods should be separated because seat turnover rates and average check figures can vary considerably from meal period to meal period. The number of seats and days open in the month are known. The seat turnover rates and average check figures can be obtained from published information or by observing at competitive restaurants.

In a rooms department, a similar type of equation might look like this:

$$\begin{array}{c}\text{Forecasted} \\ \text{occupancy} \\ \text{percentage}\end{array} \times \begin{array}{c}\text{Average} \\ \text{room} \\ \text{rate}\end{array} \times \begin{array}{c}\text{Number} \\ \text{of rooms} \\ \text{available}\end{array} \times \begin{array}{c}\text{Operating} \\ \text{days} \\ \text{available}\end{array} = \begin{array}{c}\text{Total} \\ \text{rooms sales} \\ \text{revenue}\end{array}$$

Once monthly sales revenue figures have been calculated for each meal period, they can be added together to give total sales revenue. Direct operating expenses can then be deducted, by applying industry average percentage figures or other projected percentages for each expense to the calculated budgeted sales revenue.

Again, direct operating expenses can then be budgeted using industry percentages for the type of hotel. Note that, to arrive at the average room rate to be used in the equation, one must consider the rooms' sales mix including the rates for different types of rooms, for different market segments, and for discounted rates for weekends and off seasons. Please see Chapter 6 for a comprehensive discussion of room-rate pricing.

Beverage figures are a little more difficult to calculate. There are some industry guidelines, in that a coffee shop serving beer and wine generates alcoholic beverage revenue approximating 5 to 15 percent of food revenue. In a dining room, the alcoholic beverage revenue (beer, wine, and liquor) approximates 25 to 30 percent of food revenue. For example, a dining room with $100,000 a month of food revenue could expect about $25,000 to $30,000 of total liquor revenue. These are only approximate figures, but they might be the only ones that can be used until the operation has its own accounting records.

There is no simple equation for beverage figures in a cocktail lounge. An average check figure can be misleading. On the one hand, one customer could occupy a seat and spend $4 on five drinks; average spending for that customer is $20. On the other hand, five different customers could occupy the same seat and each spend $4 over the same period: average spending, $4. Therefore, the equation used for calculating food revenue may be difficult to apply in a bar setting. One alternative is to use the current industry average revenue per seat per year in a cocktail bar.

$$\begin{array}{ccc} \textbf{Average annual} & \textbf{Number} & \textbf{Total} \\ \textbf{sales revenue} \;\times\; & \textbf{of seats} \;=\; & \textbf{annual sales} \\ \textbf{per seat} & \textbf{available} & \textbf{revenue} \end{array}$$

To convert to a monthly figure for budget purposes, this figure can then be divided by 12 and added to the already-calculated monthly beverage revenue generated from the food departments. Direct operating expenses can then be allocated by using industry average percentage guidelines.

Although these equations do not cover all possible approaches, they should give the reader some idea of the methods that can be used when budgeting for a new operation.

However, the equations illustrated are not limited to a new operation. They could also be used in an ongoing organization. For example, instead of applying an estimated percentage of sales revenue increase to last year's figure for the current year's budget, it might be better to break down last year's sales revenue figure into its various elements and adjust each of them individually to develop the new budget amount. For example, last year room's revenue was $100,200 for June. This year we want a 5 percent increase; therefore budgeting sales revenue will be

$$\$100{,}200 \times 105\% = \underline{\underline{\$105{,}210}}$$

A more comprehensive approach would be to analyze last year's figure in the following way:

Actual rooms occupancy percentage		*Average room rate*		*Number of rooms available*		*Operating days available*		*Total rooms sales revenue*
83.5%	×	$80.00	×	50	×	30	=	$100,200

We can then apply the budget year trends and information to last year's detailed figures. In the budget period, because of a new hotel in the area, we expect a slight drop in occupancy—down to 80 percent. This will be compensated for by an increase in our average room rate by 5 percent to $84.00 ($80.00 × 105%). The new budgeted sales revenue is computed as follows:

Budgeted occupancy percentage		*Budgeted average room rate*		*Number of rooms available*		*Operating days available*		*Budgeted total rooms sales revenue*
80%	×	$84.00	×	50	×	30	=	$100,800

This approach to budgeting might require a little more work but will probably give budgeted figures that are more accurate and can be analyzed more meaningfully than would otherwise be the case.

ZERO–BASE BUDGETING

Zero-base budgeting (ZBB) is a useful technique for controlling costs. As its name implies, no expenses can be budgeted for or incurred unless they are justified in advance. ZBB requires each department head to justify in advance the entire annual budget from a zero base. While ZBB can be used for any cost, this chapter will use an indirect cost as an example.

Since most costs (food, beverage, labor, supplies, and others) are linked to sales revenue levels in a fairly direct way, budgeting for them is relatively easy. However, there are several expenses in the hospitality industry not related as directly to sales revenue levels. These indirect or **undistributed expenses** include

- Administrative and general
- Marketing
- Property operation and maintenance
- Utilities

These undistributed costs are not normally charged to the operating departments but are kept separate. An operation might also have other fixed costs (e.g., property taxes, insurance, interest, and rent) that are not charged to the operating departments. However, the level of these costs is usually partially imposed from outside the operation. Since they are not subject to day-to-day control, or even to monthly or annual control, they will not be included in this discussion of ZBB.

Traditionally, these four undistributed costs have been budgeted for, and are presumably controlled by, incremental budgeting. With incremental budgeting, the assumption is made that the level of the last period's cost was correct. For the new period's budget, one adjusts last period's figure upward or downward to take care of the current situation. Management monitors only the changes to the budgeted amounts. Whether last period's total cost was justified is not an issue. The amount of cost is assumed to have been essential to the company's objectives. It is also frequently assumed that, even with no management guidance, the department heads responsible for controlling the undistributed costs are practicing effective cost control, that they are keeping costs in line, and are preventing overspending. No doubt many of the expenses incurred in this category do meet these criteria. But it is likely that the reverse is also true in many establishments that use incremental budgeting.

ZBB can be used by hospitality industry managers to control these undistributed expenses. ZBB, properly implemented, cannot only control costs, but may lead to costs reduction from previous levels. The main reason for this is that it puts previously unjustified expenses on the same basis as requests for increases to the budget—increases that must also be justified.

DECISION UNITS

One of the key elements in successful implementation of ZBB is the decision unit. The number of decision units will vary with the size of each establishment. For example, a small operation with only one employee in its marketing department would probably have only one decision unit for marketing expenses. A larger organization might have several decision units for marketing. These units might be labeled sales, advertising, merchandising, public relations, and research. A very large organization might further break down these units into decision units covering different activities. For example, advertising might be broken down into a print decision unit and a radio and television decision unit.

Each decision unit is competing for the same limited resource dollars. While it is not mandatory that each decision unit contain only one or two employees and related costs and have about the same total cost, it is easier for the general manager to evaluate each decision unit and to rank it against all other decision units. Once decision units have been established, the next step is for each department head to prepare an analysis of each separate unit that is his or her responsibility. This analysis is carried out each year before the new budget period begins. A properly designed form should be used so that each department head

will present the data in a standard format. For each decision unit, the department head will document the following:

1. The unit's objective
2. The unit's current activities
3. Justification for continuation of unit's activities
4. Alternate ways to carry out activities
5. Recommended alternatives
6. Required budget

Unit's Objective

Each decision unit's objective must obviously relate to the organization's overall objectives. For example, the objective of a hotel marketing department's print-advertising decision unit might read as follows:

> To seek out the most appropriate magazines, journals, newspapers, and other periodicals that can be used for advertising in the most effective way at the lowest cost to increase the number of guests using the hotel's facilities.

Current Activities

This statement would include the number of employees, their positions, a description of how the work is carried out, and the resources used. For example, a resource used by the print-advertising decision unit might be an external advertising agency.

The total cost of current activities would be included in this section. Also included would be a statement of how the unit's activities are measured. For example, this might be the number of guests using the hotel's facilities versus the cost of print advertising.

Justification for Continuation of Unit's Activities

In the case of our print-advertising unit, this might include a statement that it would be advantageous for the unit to continue because the employees are familiar with the marketing strategy of the hotel and with the various operating departments and their special features. They know what special attractions to promote in the advertisements. The explanation should also include a statement of the disadvantages that would accrue if the decision unit's activities were discontinued.

Alternative Ways to Carry Out the Activities

In the example of the print-advertising decision unit, the alternatives might include taking over some of the work now given to the advertising agency, having the agency take over more of the unit's activities, having more of the work

centralized in the head office (assuming the hotel is one of a chain), doing more head office work at the local level, or combining the print decision unit's activities with those of the radio and television advertising unit. The list should not be overly long, but it should include as many alternatives as would be practical that differ from current activities.

Included with the list of alternatives would be the advantages and disadvantages of each alternative, and an estimate of the total annual cost.

Recommended Alternative

The department head responsible must then recommend the alternative that he or she would select for each unit. One alternative would be to stay with the current activities rather than make a change. The selection is based on a consideration of the pros, cons, practicality, and cost of each alternative.

Required Budget

The department head's final responsibility is to state the funding required for each decision unit for the next budget, based on the alternative recommended. This request starts out with a base, or minimum level. This minimum level may be established at a level below which the unit's activities would no longer exist or be worthwhile. Alternatively, the general manager might set the minimum level arbitrarily at, say, 60 percent of the current budget. Whatever the minimum level is set at becomes the established level; each activity above that level is to be shown as an incremental cost. These incremental activities may or may not be subsequently approved.

RANKING PROCESS

Once the decision unit activities have been documented, the general manager begins the review process. To determine how much money will be spent, and in what areas or departments, the general manager must rank all activities in order of importance to the organization. Once this order is established, the activities would be accepted up to the total predetermined budget for all activities.

The major difficulty in ranking is to determine the order of priority for all the operation's activities under review. In a small organization, with the aid of a committee if necessary, this might not be too difficult. In larger operations, each department head might be asked to rank all activities that come within his or her authority. This procedure can then continue through successive levels of middle management until they reach the general manager.

Another approach might be for the general manager to approve automatically, say, the first 50 or 60 percent of all activities ranked within each department. The next 10 or 20 percent might then be ranked by middle management

and also be automatically approved. Top management might subsequently review all these rankings, then rank the remainder and decide how many of them will be funded, along with any proposed new programs not adopted at lower levels.

The completed ranking process and approved expenditures constitute the new budgets for those areas or departments. This information can then be incorporated into the regular budget process. Theoretically, as a result of ZBB, the activities of that part of the organization have been examined, evaluated, modified, discontinued, or continued as before. This should produce the most effective budget possible. At the least, it should produce a budget that one can have more confidence in than one produced solely on an incremental basis.

ADVANTAGES OF ZBB

There are several advantages of ZBB:

- It concentrates on the dollar cost of each department's activities and budget and not on broad percentage increases.
- Funds can be reallocated to the departments or areas providing the greatest benefit to the organization.
- It provides a quality of information about the organization (because all activities are documented in detail) that would otherwise not be available.
- All levels of management are involved in the budgeting process, which encourages these employees to become familiar with activities that might not normally be under their control.
- Managers are obliged to identify inefficient or obsolete functions within their areas of responsibility.
- It can identify areas of overlap or duplication.

DISADVANTAGES OF ZBB

ZBB also has some possible disadvantages:

- It implies that the budgeting method in use is not adequate. This may or may not be true.
- It requires a great deal more time, effort, paperwork, and cost than traditional budgeting methods.
- It may be unfair to some department heads who, even though they may be very cost-effective in managing their departments, are not as capable as others in documentation and defense of their budgets. They might thus find themselves outranked by other more vocal, but less cost-effective, department heads.

VARIANCES

As each period goes by (day, week, month, quarter), budgeted figures should be compared with actual figures. This can best be done by summarizing the figures on a report by department or by type of cost. For example, one of the major and most difficult costs to control in a hotel or food operation is labor, and an ongoing comparison of actual with budgeted labor cost is useful in controlling this cost. An illustration of a type of report summarizing payroll costs is shown in Exhibit 9.5. The variances each day would require an explanation.

VARIANCE ANALYSIS

When we compare budget figures and actual results, it is useful to analyze any difference for sales revenue and each expense item. This is called **variance analysis.** Let us consider the following situation:

Banquet Sales Revenue, March

Budget	*Actual*	*Difference*	
$50,000	$47,250	$2,750	(unfavorable)

							Date: September 3		
	Number of Hours Today		*Labor Cost Today*		*Labor Cost to Date*		*Labor Cost Variance*	
Department	*Budget*	*Actual*	*Budget*	*Actual*	*Budget*	*Actual*	*Today*	*To Date*
Rooms								
Front office	10	10	$ 440	$ 440	$1,320	$1,320		
Housekeeping	42	43	1,280	1,310	3,840	3,900	$+30	$+60
Service	8	8	320	320	960	930		−30
Switchboard	6	6	274	274	822	822		
Food								
Dining room	13	14	$ 456	$ 487	$1,368	$1,399	$+31	$+31
Coffee shop	7	6	245	217	735	707	−28	−28
Banquet	11	11	440	440	1,674	1,674		

EXHIBIT 9.5

Sample Payroll Costs Summary and Analysis

In determining the amount of the variance, take the absolute value of the difference and then ask the question "Does this variance increase or decrease operating income?" If it increases operating income, the variance is favorable. If it decreases operating income, the variance is unfavorable. Favorable is often indicated by using F and an unfavorable variance is often indicated by using U.

In this example, the difference is unfavorable because our actual total sales revenue was less than the amount budgeted and, therefore, will reduce operating income. If we analyze the budget and actual figures, we might get the following additional information in the form of an overall budget variance:

> **Budget 5,000 guests × $10.00 average check = $50,000**
> **Actual 4,500 guests × $10.50 average check = 47,250**
> **Variance (unfavorable) $ 2,750**

This variance amount is actually composed of two separate figures—a price variance that is the difference between the budgeted and the actual selling price, and a sales volume variance that is the difference between the budgeted number of guests and the actual volume of guests. The sales volume variance is calculated using the standard selling price per guest. These two types of variances are calculated as shown in the following subsections.

Price Variance

The price variance is the difference between the budgeted average check of $10.00 and the actual average check of $10.50. The average price achieved was $0.50 greater than the budgeted price per guest and is considered to be favorable since it will increase operating income.

> **4,500 guests × $0.50 = $2,250 (favorable)**

Sales Volume Variance

When the budgeted number of guests is less than anticipated, the sales revenue inflow is also less than anticipated. The 500 fewer guests than was budgeted for is considered unfavorable since it will decrease operating income.
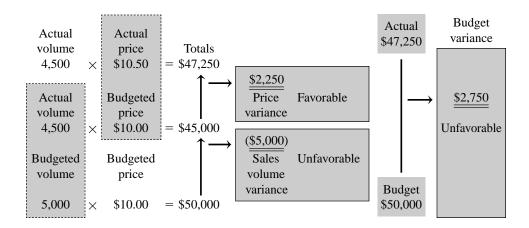
> **500 guests × $10.00 = $5,000 (unfavorable)**

If we combine these results, our total budget variance is verified by showing the price and sales volume variances together:

Price variance	**$2,250**	**(favorable)**
Sales volume variance	**5,000**	**(unfavorable)**
Total variance	**$2,750**	**(unfavorable)**

Note that when you add a favorable and unfavorable variance, it is similar to adding a positive and negative number.

A variance analysis matrix can be used to show the budget variance and price and sales volume variances in a simple table format. Actual price and the budgeted or standard price are compared to determine if there is a price variance. As well, the budgeted volume and the actual volume are to determine if there is compared a sales volume variance.

To determine the amount of the variance, begin at the bottom of the total column and subtract each total from the total shown above. If the product is negative such as ($5,000) below, the variance is unfavorable when dealing with sales revenue inflows since it reduces revenue and, therefore, net income.

We now have information that tells us that the major reason for our difference between budget and actual sales revenue is a reduction in sales revenue of $5,000 due to serving fewer customers. This has been partly compensated for by $2,250 since the average banquet customer paid $0.50 more than the standard selling price. This tells us that our banquet sales department is probably doing an effective job in selling higher priced menus to banquet groups, but is failing to bring in as many banquets or guests as anticipated.

Costs can be analyzed in the same way. Let us examine the following situation for the rooms department in a hotel:

Laundry Expense, June

Budget	Actual	Difference	
$6,000	$6,510	$510	(unfavorable)

The difference is unfavorable because we spent more than we budgeted for and, therefore, reduced net income. With the following additional information, we can analyze this variance.

Budget 3,000 rooms sold at $2.00 per room = $6,000
Actual 3,100 rooms sold at $2.10 per room = 6,510
Budget variance (unfavorable) = $ 510

The $510 total variance is made up of two items: a cost variance and a sales volume variance.

Cost Variance

The cost variance is similar to the price variance discussed earlier in this chapter. The cost variance is $0.10 over budget for each room sold. This is an unfavorable trend.

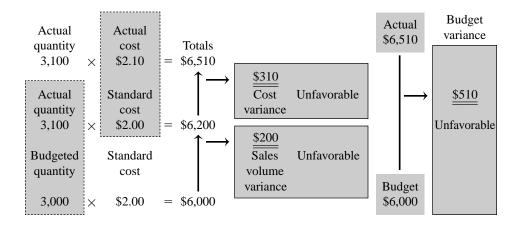**3,100 rooms × $0.10 = $310.00 (unfavorable)**

Sales Volume Variance

The sales volume variance is 100 rooms (or units) over budget, at a budgeted cost of $2.00 per room. From a cost point of view, this is considered unfavorable since it decreases net income.

100 rooms × $2.00 = $200.00 (unfavorable)

If we combine these results, our total variance looks like this:

Cost variance	**$310.00**	**(unfavorable)**
Sales volume variance	**200.00**	**(unfavorable)**
Total variance	**$510.00**	**(unfavorable)**

The variance analysis matrix shows the cost budget variance and cost and sales volume variances. Actual cost and the budgeted or standard cost are compared to determine the cost variance. The budgeted sales volume, and the actual sales volume are compared to find the amount of the sales volume variance. To determine if the cost variance is favorable or unfavorable, determine if it increases or decreases net income. Since the cost variance decreases net income in our example, it is unfavorable.

This tells us that, although our total variance was $510, or 8.5 percent over budget ($510 divided by $6,000 × 100), only $310 is of concern to us. The remaining $200 was inevitable. If we sell more rooms, as we did, we would obviously have to pay the extra $200 for laundry. Even though this is considered unfavorable as a cost increase, we would not worry about it since it would be more than offset by the extra revenue obtained from selling the extra rooms. Whether the other $310 overspending is serious would depend on the cause. The cause could be a supplier cost increase that we may, or may not, be able to do something about; or it could be that we actually sold more twin rooms than budgeted for (which would mean more sheets to be laundered and therefore cause our average laundry cost per room occupied to go up). In the latter case, the additional cost would be more than offset by the extra charge made for double occupancy of a room.

As illustrated, the detailed variance analysis is useful in understanding differences between budgeted and actual sales revenue or cost outflows.
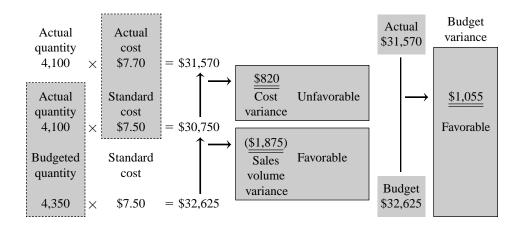
Let us look at another example:

Coffee Shop Variable Wages, for May

Budget 4,350 hr × $7.50 per hr =	$32,625	
Actual 4,100 hr × $7.70 per hr =	31,570	
Buget variance	$ 1,055	(favorable)

Note that the net variance is $1,055 favorable. Variance analysis shows that there was a $1,875 saving on labor due to a reduced number of hours paid, perhaps as a result of less business than budgeted for. However, the saving was reduced by $820 because the actual average hourly rate was $0.20 higher than budgeted for. Was there an increase in the hourly rate paid, or did unanticipated

overtime occur because of poor scheduling, which would increase the average hourly rate paid? This would need to be investigated.

Therefore, variance analysis can provide additional information that is helpful in identifying causes of differences between actual and budgeted figures.

The final step in variance analysis is taking corrective action to ensure that procedures are in place to prevent undesirable situations from recurring. For example, investigation of the coffee shop example's increase in actual hourly pay rate may show that it was caused by too much overtime having been paid. To correct this situation, management might initiate new procedures that require the coffee shop manager to have the written approval of his or her supervisor before any overtime is paid.

Note that in this section differences or variances are labeled as favorable or unfavorable only as a matter of accounting convention. In this context, favorable is used for a variance that increases net income. Therfore, this is either an increase in sales revenue or a reduction in costs. Unfavorable is used for a variance that decreases net income and, therefore, it is either a reduction in sales revenue or an increase in costs.

The words *favorable* and *unfavorable* should not be equated with good or bad, respectively. Indeed, there may be situations in which an unfavorable variance reflects a positive situation, such as a cost increase that is labeled as unfavorable even though it is caused entirely by an increase in sales revenue that automatically necessitates an increase in costs. For example, to produce more food sales without changing prices, there will normally have to be an increase in food sold and, therefore, an increase in food used. In such a case, as long as the cost increase is in proportion to the sales revenue increase, the food cost percentage remains as budgeted, the "unfavorable" dollar food cost increase would be perfectly normal and acceptable.

Thus, the word *unfavorable* should not necessarily be interpreted as having a negative connotation. That judgment cannot be made until the *cause* of the change has been investigated.

PERCENTAGE VARIANCES

In analyzing variances, it may be useful to calculate percentage variances. Percentage variances are calculated by dividing the dollar variance by the budgeted figure for that item and multiplying by 100. For example, if the budgeted figure were $200, and the variance $15, the percentage variance would be as follows:

$$\left(\frac{\textbf{Variance}}{\textbf{Budgeted figure}} \right) \times 100 = \frac{\$15}{\$200} \times 100 = \underline{\underline{7.5\%}}$$

It is unlikely that any sales revenue or controllable expense item will not have a variance because, even with comprehensive information available during the budgeting process, budgeted figures are still estimates. The variances to be analyzed are those that show significant differences from budgeted amounts. What is important in this significance test is the amount of the variance in both dollar and percentage terms, not just in one of them. If only one is used, it might not provide information that the other provides. For example, using dollar differences alone does not consider the magnitude of the base or budgeted figure, and the dollar difference might not be significant when compared to the base figure. To illustrate, if the dollar difference in revenue is $5,000 (which seems significant) but the budgeted revenue is $5,000,000, the percentage variance is

$$\frac{\$5,000}{\$5,000,000} \times 100 = \underline{\underline{0.1\%}}$$

This percentage variance is insignificant. If the actual sales revenue can be this close to the budget sales revenue in percentage terms, this would indicate remarkably effective budgeting. But this is not disclosed if only the dollar difference is considered. If a cost has 0.1 percent variance, this variance must be considered along with the sales revenue. If sales revenue was different from budgeted sales revenue but a cost had a 0.1 percent variance, it is unlikely that the cost was well controlled.

Similarly, considering the percentage difference alone might not be useful. For example, if a particular expense for this same property were budgeted at $500, and the actual expense as $550, the variance of $50 represents 10 percent of the budget figure. Ten percent seems a large variance but is insignificant when the dollar figure is also considered. In other words, a variance of $50 is insignificant in a business with revenue of $5,000,000, and investigating it would not be worth anybody's time.

What is significant as a dollar and percentage variance depends entirely on the type and size of the establishment. Those responsible for budgets need to establish in advance the acceptable variances in both dollar figures and percentages for each sales revenue and expense item. At the end of each budget

period, only those variances that exceed what is allowed in both dollar and percentage terms will be further analyzed and investigated.

FORECASTING

The methods for creating a budget have thus far been somewhat simplistic. However, many hospitality operations use more advanced, quantitatively oriented forecasting techniques, both in budgeting and where other forecasts are required. The ability to accurately forecast is an important aspect of any operation's management. Reliable methods are necessary to help operating department heads forecast sales and plan for the use of resources (for example, labor and supplies to meet anticipated demand).

Two of the more commonly used techniques are moving averages and regression analysis. Moving averages is sometimes referred to as time-series methods, because it looks at the numbers for a series of past periods to see what patterns and/or relationships may be occurring. Regression analysis is an attempt to find a relation between one event and another.

The number of periods used depends on the forecast you are creating. You need to use enough periods of data so you have reduced the random variation that occurs. However, if you use too many periods of data, you will be using old data that might make the forecast inaccurate. Therefore, the manager must use judgment in deciding how many periods to use. If you want to forecast Sunday's sales, you need to use Sunday's data to create the relationship. Similarly, if you want to forecast November's sales, you need to use November's data. If you use 12 months of data, all the annual cyclical increases and decreases in demand, month-to-month variances, seasonal variations, and unusual external factors that affect such matters as room occupancy or restaurant volume will be included in the numbers. What has happened during the time series is then assumed to be likely to occur in the future and can thus be the basis of the forecast as long as that forecast is adjusted for the current situation by using good judgment.

MOVING AVERAGES

Most forecasts take into consideration past trends. Some trends can be daily ones used for a weekly projection. For example, most transient hotels have high occupancies at the beginning of each week, with a trend to reduced occupancies on Friday, Saturday, or Sunday.

Other trends may be seasonal ones where major changes in demand patterns occur as the climate changes or cyclical or long-run ones caused by economic events, such as a recession. Cyclical patterns are difficult to determine because historic figures are unreliable in indicating when these events are likely to occur again.

Nevertheless, by observation of past trends, a future trend can usually be built into the forecast figures. However, some variables are unpredictable (e.g., events that occur for no particular or observable reason, or sudden and drastic decreases in demand caused by severe and unusual weather conditions), and such random variables are difficult or even impossible to include in forecasts.

Moving averages attempt to remove the random variations that can occur from period to period in the operation of the typical hospitality business. Note that the larger the number of periods used, the less likely it is that any random causes will affect the moving average. To take care of those random variations for a monthly forecast, we can calculate a 12-month moving average. The 12 monthly figures for the past year are added together and then divided by 12. For example, suppose for the past year a restaurant's monthly guest counts were as follows:

Month	Guest Count
1	2,406
2	2,502
3	1,986
4	1,829
5	2,312
6	2,587
7	2,804
8	3,009
9	3,102
10	2,748
11	2,406
12	2,312
Total	30,003

Rounded, the moving average is

$$\frac{30,003}{12} = \underline{\underline{2,500}}$$

This figure can be used (modified for the current situation and other variables) as the forecast for the thirteenth month. At the end of the thirteenth month, a new moving average is calculated for the fourteenth month by deleting from the total guest count the first month and including in it the guest count for the immediately past thirteenth month. As a result, the average is constantly recalculated (thus, the term *moving average*) by including only the most up-to-date figures for the number of periods used.

In calculating the moving average total, it is only necessary to list each of the figures for the number of periods under review when the method is first used. After that, deducting the figure for the earlier period in the series, and

adding the figure for the most recent period, will update the total figure. Therefore, keeping the moving average up to date is a simple task.

For example, if the actual guest count in the thirteenth month was 2,296, the new 12-month total is:

$$30,003 - 2,406 + 2,296 = \underline{\underline{29,893}}$$

and the forecast for the fourteenth month, rounded, is:

$$\frac{29,893}{12} = \underline{\underline{2,491}}$$

In general, the moving average can be expressed by the following equation:

$$\frac{\textbf{Total for each of the previous } \textit{n} \textbf{ periods}}{\textit{n}}$$

where n is the number of periods being used; in our case, 12.

One minor problem with the moving average is that it gives equal weight to each of the periods used in the calculation. For example, in the case of monthly periods, each month is treated like any other. This can be risky in forecasting for the month of February, because the average is based on the typical month having 30.42 days (365 / 12), whereas February has only 28 (or 29) days. However, this is where individual adjustments can be made to the raw moving average produced, using the general equation. As well, if the operation is located in an area with high summer sales, sales in February can be low compared to the rest of the year.

An important question with regard to a moving average is the best number of periods (n) to include. With a large number, the forecast tends to react slowly to changes in sales volume. On the other hand, a small number provides a forecast that more quickly reflects more recent changes in the time series. A small number of periods might also not reduce the random variation enough to provide an accurate forecast. One solution is to try moving averages of different lengths to determine which one seems to provide the most accurate forecast.

Also, in using a time series of 12 months, the average is influenced by what happened up to a year ago, and the current operating environment might have changed considerably from that time. Again, this is where personal judgment must be used in refining the raw moving average figure to adjust it to today's reality.

REGRESSION ANALYSIS

In some large hospitality operations, the forecast for one department may depend on what happens in another. For example, as the number of guests in a hotel's rooms increases or decreases, there are similar increases and decreases in the sales volume of the restaurants and bars. This is known as a causal

relationship (or derived demand) because what happens in the rooms department causes changes in the food and beverage department. Accurate forecasting in the rooms and the food and beverage departments is important because, in many hospitality operations, they provide as much as 80 to 90 percent of total food and beverage sales revenue.

A forecasting technique that allows a restaurant to forecast its sales revenue based on the forecast of rooms occupancy is *regression analysis*. We have already seen it used in Chapter 7 for separating fixed and variable costs. In our new situation, regression analysis simply uses the independent variable to forecast the numbers for the dependent variable. In regression analysis, restaurant sales in terms of meals served are the dependent variable Y (because food sales depend on the rooms occupancy) and the room sales in terms of number of guest nights are the independent variable X.

Suppose that the following summarizes the room guests and restaurant meals served each month last year:

	Guest Nights (X)	Meals Served (Y)
January	6,102	7,822
February	6,309	7,544
March	6,384	8,021
April	6,501	8,299
May	6,498	8,344
June	6,382	8,245
July	6,450	8,311
August	6,522	8,274
September	6,608	8,328
October	6,502	8,188
November	6,274	7,985
December	5,811	7,502

Even though we intuitively know that there is a strong relationship between room occupancy and restaurant meals served, we also know that some people who are not hotel guests eat in the restaurant. The regression analysis formula used in Chapter 7 effectively handles the determination of variable and fixed elements of sales revenue. In this situation we will use another regression formula that determines variable and fixed elements on a unit basis. Therefore, we must determine a and b for the following equation:

$$Y = a + bX$$

Where: Y = number of restaurant meals (breakfast, lunch, or dinner)
   a = meals served to customers not registered in the hotel
   b = average number of meals each hotel guest has per day
   X = number of guest nights

The values for *a* and *b* are calculated using the following two equations:

$$b = \frac{n\sum XY - \sum X \sum Y}{n(\sum X^2) - (\sum X)^2}$$

$$a = \textbf{average of } Y - (b \times \textbf{average of } X)$$

Using information provided from Exhibit 9.6, the solution to *b* is calculated as follows:

$$\frac{12(616{,}852{,}495) - (76{,}343)(96{,}863)}{12(486{,}221{,}719) - (76{,}343)(76{,}343)}$$

$$= \frac{7{,}402{,}229{,}940 - 7{,}394{,}812{,}009}{5{,}834{,}660{,}628 - 5{,}828{,}253{,}649}$$

$$= \frac{7{,}417{,}931}{6{,}406{,}979} = \underline{\underline{1.16}}$$

To calculate *a*, we must first calculate the average of *Y* and the average of *X*:

$$\textbf{Average of } Y = \frac{96{,}863}{12} = \underline{\underline{8{,}072}}$$

$$\textbf{Average of } X = \frac{76{,}343}{12} = \underline{\underline{6{,}362}}$$

$$a = 8{,}072 - (1.16 \times 6{,}362)$$

$$a = 8{,}072 - 7{,}380 = \underline{\underline{692}}$$

Our result, thus, shows us the following:

$$Y = 692 + 1.16 \, (X)$$

This means that there are, on average, 692 customers who are not registered as hotel guests who eat in the restaurant each month and that each registered guest room occupant on average eats 1.16 meals each day in the restaurant. We can use this equation to forecast the restaurant's sales volume based on the guest night forecast.

For example, suppose in January the forecast guest night count is 6,200. The restaurant's forecast of meals served will be

$$692 + (1.16 \times 6{,}200)$$

$$692 + 7{,}192 = \underline{\underline{7{,}884}}$$

Month	Guest Nights X	Meals Served Y	XY (X × Y)	X² (X × X)
1	6,102	7,822	47,729,844	37,234,404
2	6,309	7,544	47,595,096	39,803,481
3	6,384	8,021	51,206,064	40,755,456
4	6,501	8,299	53,951,799	42,263,001
5	6,498	8,344	54,219,312	42,224,004
6	6,382	8,245	52,619,590	40,729,924
7	6,450	8,311	53,605,950	41,602,500
8	6,522	8,274	53,963,028	42,536,484
9	6,608	8,328	55,031,424	43,665,664
10	6,502	8,188	53,238,376	42,276,004
11	6,274	7,985	50,097,890	39,363,076
12	5,811	7,502	43,594,122	33,767,721
Total	76,343	96,863	616,852,495	486,221,719

EXHIBIT 9.6

Calculation of Regression Analysis Data

Finally, note that regression analysis forecasting relies on the assumption that the past relationship between X and Y remains the same during the forecast period.

LIMITATIONS OF FORECASTING

Limitations of forecasting techniques, such as those illustrated in this section, include:

■ Their use provides precise mathematical results that are only as good as the data used. For example, if the guest night forecasts are not very good, then the forecast for restaurant meals served will not be very good.

■ The mathematical approaches used in forecasting do not consider variables that can be controlled by management. For example, a forecast of restaurant volume based on historic sales would need to be adjusted for an anticipated increase in demand resulting from an increased advertising campaign that the restaurant manager is planning to implement.

■ No mathematical forecasting technique can substitute for experience and individual judgment. Indeed, in some cases (such as opening a new property or expanding an existing one) there may be only limited data available on which to base mathematical forecasting techniques, such as moving averages or regression analysis. In such cases, judgment and other qualitative considerations have to play a greater role.

- ■ Forecasting involves the future, which is always unpredictable. The longer the time between the date the forecast is made and the period of the forecast, the more likely it is that unpredictable events are going to affect the forecasts. As a result, forecasts are bound to be less accurate than the manager would like. However, forecasts can always be revised as time goes by to adjust to changed circumstances.
- ■ Because forecasting deals with the future, it also deals with uncertainty. This should not be a problem for most managers because managers in the hospitality industry typically face many daily uncertainties.
- ■ Most forecasting methods are based on data from the past and use historic information adjusted for the future. Unfortunately, historic data are often not good indicators of the future. Again, a manager can adapt to this by using common sense and good judgment to adjust forecasts based solely on historic information.
- ■ Because of all of the above, most operations know that forecasts are likely to deviate from the actual and automatically build in a variance factor of as much as 10 percent. The actual deviation percentage used can be based on experience. For example, if an analysis of the past shows that actual results invariably differed by 5 percent from those forecast, then a 5 percent variance can be built into future forecasts.

CHOOSING A FORECASTING METHOD

Studies show that the lowest forecasting errors result from the use of trend projections, moving averages, and regression analysis rather than judgmental methods. What is important is not the actual forecasting method used, but how effective the forecasts are and their practical value in the operation.

In a small hospitality operation that can adapt quickly to changing circumstances, most forecasting will be done using simple methods, such as adjusting the sales for the coming month by a certain percentage increase or decrease over last year's or last month's, or by using the fairly simple moving average method. Larger enterprises will probably use more complex methods, such as regression analysis.

Even though the regression analysis method requires more work, it does not require tedious manual calculations because most calculators are programmed to perform the arithmetic once each series of X and Y variables have been entered. Spreadsheets can be used for budgeting, forecasting, and variance analysis. Once sales forecasts have been completed, they can be used to help determine the quantities of items such as food and beverages to be purchased and when they should be purchased.

COMPUTER APPLICATIONS

Computer software, such as a spreadsheet program, makes the budgeting process much easier. Although there are forecasting computer packages available, a spreadsheet can perform the necessary moving average and regression analysis calculations. Spreadsheets can build in regression analysis formulas. For example, the calculations required in Exhibit 9.6 and all the subsequent calculations were produced using a spreadsheet. A spreadsheet can also compare budgeted figures with actual ones and produce the variances. They can be used to produce graphs that present the forecast, actual, and variance information.

S U M M A R Y

Budgeting is part of the planning process. It can involve decisions concerning the day-to-day management of an operation or involve plans for as far ahead as five years.

The various types of budgets include capital, operating, departmental, master, fixed, and flexible.

Budgeting has three main purposes:

- To provide estimates of future sales revenues and expenses
- To provide short- and long-term coordinated management policy
- To provide control by comparing actual results with budgeted plans and to take corrective action, if necessary

In a small operation, budgets can be prepared by an individual or by a committee in a large organization. In all cases, whether for a day, a year, or some other period, budgets should be prepared in advance of the start of the period. There are several advantages of budgets:

- They involve participation of employees in the planning process, thus improving motivation and communication.
- They necessitate, in budget preparation, consideration of alternative courses of action.
- They provide a goal, and a standard of performance to be accomplished, with subsequent comparison of actual results with that standard.
- If flexible budgets are used, they permit quick adaptation to unforeseen, changed conditions.
- They require those involved to be forward-looking, rather than looking only at past events.

The budgeting cycle is a five-part process:

1. Establish attainable goals (remember the limiting factors).
2. Plan to achieve these goals.
3. Analyze differences between planned and actual results.
4. Take any necessary corrective action.
5. Improve the effectiveness of budgeting.

The starting point in budgeting is to forecast sales revenue. In a large company, department managers would make such forecasts. In forecasting, one must consider past actual sales revenue and trends, current anticipated trends, and the economic, competitive, and limiting factors.

Once sales revenue has been forecast, direct operating expenses can be calculated based on anticipated sales revenue, and, finally, undistributed expenses can be deducted to arrive at the net income for the operation. Once the departmental and general income statement budgets have been prepared, other required budgets such as balance sheets and capital budgets can be made, if required.

If there is no historic information available, which would be the case in a new venture, then forecasting sales revenue and expenses is more difficult. Quite a bit more educated estimating is required.

Zero-base budgeting (ZBB) is another method of forecasting and controlling. With ZBB each category of cost is broken down into decision units that are then analyzed. The department head responsible for the cost prepares the analysis. After each decision unit is analyzed, management ranks all decision units, and the final budget is allocated according to this ranking.

Variance analysis is a useful technique for isolating the causes of differences between budgeted and actual figures. These differences are broken down into price and sales volume variances when analyzing sales revenue figures or cost and quantity variances when analyzing expense figures.

The chapter concluded with a section on forecasting techniques. The moving average and regression analysis methods were illustrated. The limitations of using mathematical techniques in forecasting were summarized.

D I S C U S S I O N   Q U E S T I O N S

1. Explain the concept of budgeting?

2. What are some of the purposes of budgeting?

3. List and discuss three advantages of budgeting.

4. Explain the difference between long- and short-term budgeting.

5. Give an example of:

    a. A hotel departmental budget

    b. A capital budget for a restaurant

6. Explain the difference between a fixed and a flexible budget.

7. Two of the steps in the budgeting cycle are:

    a. Establishing attainable goals

    b. Planning to achieve these goals

    What are the other three steps?

8. Discuss three possible limiting factors to consider in preparing a budget for a hotel or restaurant.

9. A cocktail lounge had sales revenue in May of $40,000. Budgeted revenue was $42,000. List three possible questions that could be asked, the answers to which might explain the $2,000 difference.

10. In projecting sales revenue for breakfast in the coffee shop of a hotel, what factors need to be considered?

11. What is derived demand?

12. List the four items that must be multiplied by each other to forecast total annual food revenue for the dinner period of a restaurant.

13. What is a pro forma income statement?

14. List three types of cost that are controllable with ZBB.

15. Give an example of a decision unit in a hotel's accounting office and write a one-sentence objective for that decision unit.

16. Briefly describe the ranking process under ZBB.

17. Give two advantages and two disadvantages of ZBB.

18. Briefly explain how the use of a moving average works as a forecasting method.

19. Using an example, explain what an unfavorable cost variance is.

20. Using an example, explain what a favorable sales volume variance is.

21. Explain the difference between a sales volume variance and a quantity variance.

E T H I C S   S I T U A T I O N

After the hotel general manager and his department heads have produced the budget for next year, the general manager decides to change some of the figures to produce a $10,000 higher profit. The general manager plans to use this changed budget to convince the hotel's owner that the manager's request for a $5,000 increase in salary is justified. Discuss the ethics of this situation.

E X E R C I S E S

E9.1 A restaurant has 100 seats with an average turnover of 2.25, with an average check of $12.00. The restaurant is open 312 days a year. What is the estimated sales revenue for the year?

E9.2 A motel operation has 70 rooms, an occupancy rate of 80 percent, and an average room rate of $68.00. The owner wants you to give an estimate of sales revenue for the month of April. What is the estimated sales revenue?

E9.3 A motel had budgeted an occupancy of 6,000 rooms with a selling price of $80 per room and a variable housekeeping cost of $3.70 per room. Actual data indicated that a total of 6,240 rooms were sold at an average selling price of $76 per room and the actual cost of housekeeping per room was $4.20 per room. Answer the following about the housekeeping costs:

a. What is the budget variance? Is it favorable or unfavorable?

b. What is the cost variance? Is it favorable or unfavorable?

c. What is the sales volume variance? Is it favorable or unfavorable?

E9.4 Using the same information in Exercise 9.3, answer the following about the sales revenue:

a. What is the budget variance? Is it favorable or unfavorable?

b. What is the price variance? Is it favorable or unfavorable?

c. What is the sales volume variance? Is it favorable or unfavorable?

E9.5 Assume you had a guest count for the first three months of the year: in January the count was 1,480, in February the count was 1,880, and in March the count was 2,400. What was the moving average guest count for the first quarter of the year?

E9.6 You manage a small motel, which has 40 rooms, with an average room rate of $64 on a 70 percent occupancy rate. Fixed costs are $480,000 and the VC per room sold is $6. What do you anticipate your annual operating income (before tax) to be in the coming year?

E9.7 An 80-seat coffee shop is open for all three meals every day of the year. Calculate sales revenue for the coming year. Seat turnover and average check figures are as follows:

	Turnover	*Average Check*
Breakfast	2.25	$ 7.60
Lunch	1.75	8.00
Dinner	2.75	11.60

E9.8 Calculate the room revenue for a 60-room motel for the first three months of the year. Assume February is not in a leap year and has 28 days. The following information is given:

	Room Rate	*Occupancy*
January	$ 84	60%
February	$ 96	70%
March	$108	78%

E9.9 A 70-room motel's average room rate is $150. Its average occupancy is 72 percent. Fixed costs are $1,360,000 a year and variable costs are $222,222 a year. Calculate the motel's operating income for the year.

E9.10 A restaurant has budgeted sales revenue of $880,000 for the next year. Variable costs are 70 percent of sales revenue and fixed cost is $244,000. Answer the following questions:

    a. What are the total variable costs in dollars?

    b. What is the restaurant's gross margin expected to be?

    c. What is the amount of operating income (before tax)?

P R O B L E M S

P9.1 A motel has 30 units. During the month of June, its average room rate is expected to be $90, and its room occupancy 75 percent. In July the owner is planning to raise room rates by 10 percent, and occupancy is expected to be 80 percent. In August no further room rate raises are contemplated, but occupancy is expected to be up to 90 percent. For each of the three months of June, July, and August, calculate the budgeted rooms revenue.

P9.2 As the manager of the 80-room motel, you have the responsibility of preparing next year's budget from the following information:

    ■ Annual occupancy: 70 percent
    ■ Average room rate: $88
    ■ Variable costs per room occupied: $8
    ■ Annual fixed costs: $880,000

Prepare the Motorway Motel's budget for next year. Assume a 365-day year.

P9.3 A dining room has 75 seats. It is open only for lunch and dinner six days a week (closed Sundays). This particular August has four Sundays. Round your calculations to the nearest dollar. Management has forecast the following:

	Seat Turnover	*Average Food Check*
Lunch	1.5	$10.50
Dinner	2.0	$15.50

Beverage revenue normally averages 15 percent of lunch food sales revenue and 30 percent of dinner food sales revenue. Calculate total budgeted food sales revenue and beverage sales revenue for the month.

P9.4 A hotel coffee shop has 130 seats and is open seven days a week for all three-meal periods. During the month of January, it anticipates the following seat turnovers and average food checks:

	Turnover	*Average Check*
Breakfast	1.50	$ 4.00
Lunch	1.75	$ 7.50
Dinner	1.25	$12.50

Calculate the budgeted sales revenue for the coffee shop for January.

P9.5 The manager of Buff's Buffet is preparing next year's budget. She wants to prepare a flexible budget for three different annual revenue levels using a contribution margin income statement. Three levels of sales revenue are to be used: $800,000, $900,000, $1,000,000. The following information is available to help in preparing the flexible budget.

- Food cost averages 40% of sales revenue.
- Variable labor costs average 25% of sales revenue.
- Fixed labor cost is $60,000 annually, and other fixed costs are $120,000.
- Other variable costs average 12% of sales revenue.
- Income tax rate is estimated to be 30% on operating income (before tax).

From this information, prepare Buff's flexible three-level budget using the contribution margin method. Also calculate the breakeven sales. Comment on the results of each budget level with particular reference to the effect of higher sales on net income (after tax).

P9.6 A resort hotel has a dining room that has no business from street trade; it is dependent solely on the occupancy of its rooms for its sales revenue. It has 150 rooms. During the month of June it expects 80 percent occupancy of those rooms. Because the resort caters to the family trade, there are on average three people per occupied room per night.

From experience, management knows that 95 percent of the people occupying rooms eat breakfast, 25 percent eat lunch, and 75 percent eat

dinner in the hotel dining room (some of the units have kitchen facilities, which is why some of the resort's guests do not use the dining room). The dining room is open seven days a week for all three meals. Its average meal prices are

Breakfast:	$ 7.50
Lunch:	$12.50
Dinner:	$25.20

Calculate the budgeted dining room revenue for the month of June.

P9.7 A 120-seat family restaurant is open Mondays to Saturdays only for lunch and dinner. On Sundays and holidays, totaling 60 days annually, the restaurant is open for dinner only. During the coming year, the owner anticipates the following:

	Seat Turnover	*Average Check*
Weekday lunch	1.50	$ 8.50
Weekday dinner	1.25	$18.50
Sunday and holiday dinner	2.00	$21.00

In addition, the restaurant has a small private party room and estimates its food revenue to be $144,000 next year. Beverage revenue is 12 percent of lunch food sales revenue and 25 percent of weekday dinner food sales revenue (no beverages are served Sundays and holidays). In addition, beverage sales revenue for private party room averages 40 percent of its total food sales revenue. Food cost averages 37 percent of total food revenue, and beverage cost averages 33 percent of total beverage revenue. Fixed salaries are estimated to be $284,000. The variable wage cost averages 15 percent of total restaurant revenue. Employee benefits average 12 percent of total fixed and variable wage cost. Other operating costs are expressed as percentages of total sales revenue from all food and beverage sales:

Cost	*Percentage*
China, glass, silver, linen	1.7%
Laundry	1.5
Supplies	3.2
Menus and beverage lists	0.8
Advertising	2.0
Repairs and maintenance	1.5
Miscellaneous expense	1.0
Total variable operating costs	11.7%

Fixed Operating Overhead Costs

Administration and general	$48,000
Licenses	15,000
Rent	90,000
Equipment depreciation	73,400

Prepare the restaurant's budgeted income statement for next year using the preceding information. For purposes of this problem, ignore income tax. Also, round figures to the nearest whole dollar where necessary.

P9.8 A restaurant's average monthly income statement is as follows:

Sales Revenue:		
Food sales revenue	$40,000	
Beverage sales revenue	10,000	
Total sales revenue		$50,000
Cost of sales:		
Food [45% of food revenue]	$18,000	
Beverage [30% of beverage revenue]	3,000	
Total cost of sales		(21,000)
Gross margin:		$29,000
Operating expense:		
Wages expense	$13,600	
Operating supplies expense	4,000	
Administration & general expense	2,600	
Advertising & promotion expense	1,800	
Repairs and maintenance expense	900	
Utilities expense	1,300	
Depreciation expense	700	
Interest expense	600	
Total Operating Expenses		(25,500)
Operating income		$ 3,500

The owner is considering two possible alternatives for the coming year:

■ By improving purchasing and reducing portions, cutting the food cost from 45 percent to 40 percent of food sales revenue. There would be no other changes.

■ Cutting the food costs from 45 percent to 40 percent of food sales revenue and spending an additional $2,000 a month on advertising. It is estimated that the advertising would bring in extra customers and increase the volume of both food and beverage revenue by 20 percent over current levels. The extra customers would also incur extra costs over current levels as follows:

Wages	=	$2,000
Supplies	=	800
Administration	=	200
Repairs	=	300
Utilities costs	=	100

Prepare budgeted average monthly income statements for both alternatives and advise the owner which alternative you consider the best, and why.

P9.9 **a.** Budgeted liquor sales at a banquet were 1,500 drinks at $3.15 each. Actual sales were 1,550 drinks at $2.85 each. Determine the price and sales volume variances.

b. Banquet food sales for a month were estimated to be 20,000 covers at $10.80 each. Actual sales were 21,000 customers at $11.25 each. Determine the price and sales volume variances.

c. Budgeted banquet food cost for a week was 1,000 covers at $6.00 each. Actual covers were 980 at $6.20 each. Determine the cost and sales volume variances.

d. A snack bar budgets 12,000 covers with an average check of $5.45, and an average cost per customer of $2.05. Actual results were 12,800 customers, and an average check of $5.27; average cost per cover was $2.01. Determine the price and sales volume variances for sales revenue, and the cost and sales volume variances for the expense.

e. At a convention buffet, 450 customers are expected, and it is estimated that one waitress will be required for each 30 anticipated guests (for serving beverages). Basic wage rate is $7.25 an hour, and a minimum of four hours must be paid each waitress. No overtime is anticipated, but it might occur. Calculate the budgeted payroll cost for this function. After the event, payroll records indicate that a total of 64 hours were actually worked at a total actual labor cost of $453.12. Analyze total payroll for cost and quantity variances.

P9.10 An 80-room motel forecasts its average room rate to be $66.00 for next year at 75 percent occupancy. The rooms department has a fixed wage cost of $171,450. Variable wage cost for housekeeping is $7.50 an hour; it takes one-half hour to clean a room. Fringe benefits are 15 percent of total wages. Linen, laundry, supplies, and other direct costs are $2.50 per occupied room per day.

The motel also has a 50-seat, limited-menu snack bar. Breakfast revenue is derived solely from customers staying overnight in the motel. On average, 30 percent of occupied rooms are occupied by two persons and, on average, 80 percent of overnight guests will eat breakfast. Average breakfast check is $4.00. Lunch seat turnover is 1.0, with an average check of $6.50. The average dinner check is $9.50 and there are 1.25 seat turns for dinner. The snack bar is open 365 days a year for all three

meals. Direct costs for the snack bar are 75 percent of total snack bar revenue. Indirect costs for the motel are estimated at $578,800 for next year.

a. Calculate the budgeted net income of the motel for next year.

b. Assume that at the end of next year, actual revenue was on 21,700 rooms occupied at an average rate of $66.30; actual housekeeping wages (before employee fringe benefits) were $87,957. Analyze room revenue for price and sales volume variances and housekeeping wages for cost, quantity, and sales volume variances; assume it took 32 minutes to clean each room actually occupied (sold).

P9.11 You have been asked to help prepare the operating budget for a proposed new 100-room motel, with a 65-seat coffee shop, 75-seat dining room, and 90-seat cocktail lounge. The operating budget for the first year will be based on the following information:

Rooms Department
Occupancy is 60 percent with an average room rate of $63. Fixed wages for bellpeople, front-office employees, and other personnel attached to the rooms department are estimated at $326,900. In addition, for every 15 rooms occupied each day, one housekeeper will be required for an eight-hour shift at a rate of $6.50 an hour. Staff fringe benefits will be 12 percent of total wages. Linen and laundry costs will be 6 percent of total rooms' revenue. Supplies and other items will be 3 percent of total rooms' sales revenue.

Food Department
The dining room is open 6 days a week, 52 weeks a year for lunch and dinner only. Lunch seat turnover is 1.5, with an average food check of $8.00. Dinner seat turnover is 1.0, with an average food check of $14.00.

The coffee shop is open 7 days a week for all meal periods. Breakfast seat turnover is 1.0, with an average food check of $5.50. Lunch seat turnover is 1.5 with an average food check of $8.00. Dinner seat turnover is 0.75, with a $12.00 average food check. Coffee shop seat turnover for coffee breaks and snacks is 6.0 with an average check of $2.25.

The cocktail lounge serves an estimated 20 food orders per day, with an $8.50 average check. The lounge is closed on Sundays and certain holidays and only operates for 310 days during the year.

Total payroll costs, including fringe benefits in the food department, will be 45 percent of total food revenue. Other costs, variable as a percentage of total food revenue are:

Food cost	35%
Laundry and linen	2%
Supplies	5%
Other costs	2%

Beverage Department (310 operating days a year)

Each seat in the cocktail lounge is expected to generate $5,250 per year. In addition, the lounge will be credited with any alcoholic beverages served in the coffee shop and dining room. In the coffee shop, beverage revenue is estimated to be 15 percent of combined lunch and dinner food sales revenue, and in the dining room 25 percent of combined lunch and dinner food sales revenue. The beverage department operating costs are as follows:

■ Liquor cost is 32 percent of total beverage sales revenue.
■ Payroll and fringe benefits are 25 percent of total beverage revenue.
■ Supplies and other operating costs are 5 percent of total beverage sales revenue.

From the preceding information, prepare income statements for the first year of operating for each of the three departments. Then combine departmental contributory incomes into one figure and deduct the following undistributed, indirect costs to arrive at a budgeted income before depreciation, interest, and income tax. (In this problem, round all final numbers to the nearest dollar

Administrative and general	$156,800
Marketing	147,600
Utilities costs	58,900
Property operation & maintenance	52,400
Insurance	15,300
Property taxes	82,100

P9.12 You have the following guest-nights and meals-served figures for the past 12 months for the Inland Inn.

	Guest Nights	*Meals Served*
January	5,509	7,301
February	5,811	7,522
March	5,896	7,555
April	6,022	7,732
May	5,999	7,827
June	5,886	7,752
July	5,973	7,866
August	6,001	7,798
September	6,114	7,851
October	6,027	7,658
November	5,798	7,487
December	5,621	7,009

Use regression analysis to solve the hotel's equation $Y = a + bX$.

P9.13 The manager of the Hospitality Inn has developed regression analysis equations for forecasting the hotel's dining room sales volume based on the hotel's anticipated guest night count. The monthly equations (where *y* equals the forecast number of meals to be served, and *x* equals the number of hotel guests) are:

Breakfast:	$y = 750 + .82x$
Lunch:	$y = 900 + .15x$
Dinner:	$y = 1,200 + .42x$

The hotel has 100 rooms. Its occupancy in November is expected to be 70 percent, and its double occupancy rate is 40 percent.

The average meal checks are

Breakfast:	$ 5.25
Lunch:	$10.24
Dinner:	$15.78

Calculate the dining room's forecast meal period sales, both in number of guests and revenue dollars, for the month of November.

C A S E   9

a. As a step to preparation of the 4C Company's preliminary budget for year 2005, calculate the forecast revenue based on year 2004 actual results adjusted as follows: dinner seat turnover figures will not change (see Case 6). Note that at lunch the guest count figure will increase as a result of the advertising plan (Case 7). The average food check for lunch will increase by $0.60 while the average beverage check for lunch will increase by $0.20. For dinner, the average food check will increase by $0.55 while the average beverage check will increase by $0.40. No additional seats will be added in the restaurant, and operating days will remain the same. Calculate the total forecast sales revenue for food and beverages.

b. Complete the budgeted income statement for year 2005 with reference to Case 8 (for fixed and variable cost data) and the following additional information:

■ Food and beverage variable cost of sales percentages will remain as in year 2004 (Case 3).
■ Salaries and wages. First deduct Charlie's salary of $18,000 from the year 2004 total. Add the cost of the new employee to be hired as the result of the newspaper advertising (see Case 7). Apply a general across-the-board 4 percent increase for all employees (except Charlie) for year 2005. Then add on Charlie's salary, which is to be $35,000 and considered as a fixed cost next year.

■ Laundry variable cost percentage to sales revenue will remain unchanged.

■ Kitchen fuel. Fixed amount will increase by $400; the variable portion percentage to revenue will remain unchanged (Case 8).

■ China and tableware and glassware variable costs percentages to sales revenue will remain unchanged (Case 8).

■ Contract cleaning. A $600 increase is anticipated in year 2005.

■ Licenses. No change anticipated.

■ Other operating variable cost percentages to total sales revenue will not change (Case 8).

■ Administrative and general. A 5 percent increase should be budgeted for.

■ Marketing. The only increase will be the $3,000 to be spent on newspaper advertising (Case 7).

■ Utilities costs. The fixed cost is expected to rise by $2,000, and the variable portion percentage to revenue will be as before (Case 8).

■ Insurance. A 10 percent increase is expected.

■ Rent. As agreed with the building owner, rental expense is to increase by 10 percent, as was contracted for after the first year (Case 2).

■ Interest expense will decrease to $19,500.

■ Depreciation will continue to use the straight-line depreciation basis.

■ Income tax will be 22 percent of operating income (before tax).

c. Assume Charlie achieves the results in the year 2005 budget. Using the budgeted income statement for year 2005, compare it to the actual results for year 2004 (Case 2). Discuss the dollar and percent changes to cost of sales, operating expenses, operating income, and net income. Also use common-size analysis to compare the year 2005 budget and the year 2004 actual (Case 3). If Charlie achieves the year 2005 budget, will the operations be financially successful?