*Chapter 12*

# Budgeting for Operations Management

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## Learning Objectives

- Identify the major elements of a financial planning and control system and explain the major purposes of budgeting.
- Define responsibility accounting, including cost, profit, and investment centers.
- Understand the role of flexible budgeting in planning and control.
- Identify the major human behavior factors that affect budgets and the budgeting process.
- Identify independent and dependent budget variables.
- Understand the basic format and calculation sequences necessary for preparation of budgets and supporting schedules.
- Prepare and format schedules for all elements of the master budget.

## Chapter Outline

## Introduction

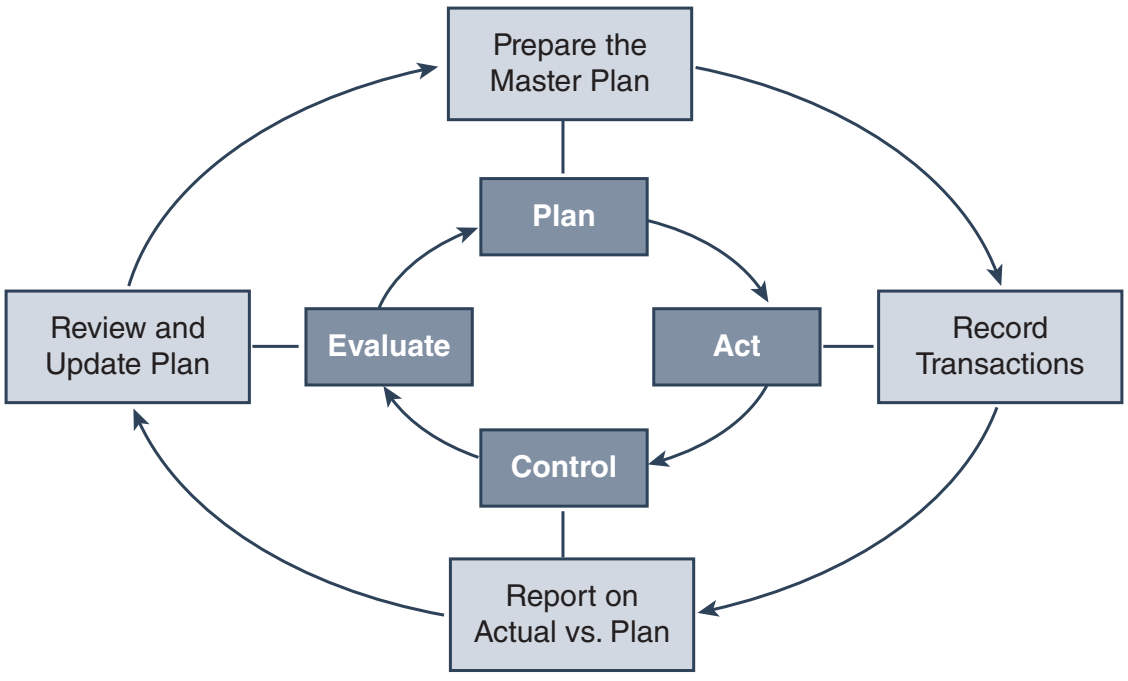
A simple concept is a key to budgeting: Planning is not deciding what to do in the future; it is deciding what to do now to assure a future. This chapter discusses concepts, tools, and processes used in a planning and control system, and illustrates an integrated master budget.

## 12.1 Budgeting: A Planning and Control System

Planning and control comprise an overall management system. **Planning** can be viewed as a framework within which managers anticipate future events, develop a plan of action, and estimate future revenues and costs. **Control** is the process of using feedback on actual operating results to compare to the plan, to evaluate performance in achieving the plans and goals, and to make changes. A **budget** is a plan showing what and how resources are to be used over a specified time period.

A plan, act, control, and evaluate cycle is shown in Figure 12.1. The master plan is prepared, decisions are made and actions taken, reports are prepared and analyzed, and the plan is reviewed and updated.

**Figure 12.1: The planning and control cycle**



A **mission statement** sets the purpose of the organization. **Goals and objectives** are statements about its future position and its long-term direction. They describe specific performance targets within certain timeframes. A profit goal might be, for example, to earn an annual 15% aftertax return on shareholders' equity or to generate sales of $1 billion by 2016. Once goals (direction and motivations) and objectives (quantified performance targets) are set, action plans can be defined. The budgeting process determines the inputs needed to achieve the forecast outputs.

A planning and control system includes tools, methods, and attitudes. The following set of common elements appears:

- Strategic planning process. This long-range planning effort defines the firm's mission (why the firm exists), the **long-range goals** (what level of achievement it expects), and a **strategic plan** (what markets, price policies, resource needs, and production capabilities the firm will have).
- Business plan and personal goal setting. Creating the annual business plan is the task of evaluating the firm's strengths, weaknesses, opportunities, and tactics to build firm-wide priorities for the coming year. Also, each manager develops a personal set of goals and a plan of achievements that are consistent with the firm's business plan.
- Planning process and timetable. A budgeting schedule includes when to start the process, submit budgets, and review and approve budgets at various management levels—who does what and when.
- Responsibility accounting system. This is a planning and control system that combines responsibility centers, control reports, and cost drivers.
- Reward or incentive system. Rewards can provide incentives for managers who achieve their unit's budget goals and/or MBO targets. Tying performance to compensation appears to be an increasingly common practice.
- Financial modeling. Ability to evaluate alternative or "what if" scenarios is now an expected part of any financial planning system. Simulation can test a plan to assess goal achievement and evaluate alternative actions.
- Participatory budgeting. It is assumed that every manager in the firm is involved in planning and control. Often, budget objectives are set at the executive level, but budgets are constructed from the bottom up—sometimes called "grass roots" budgeting.

A budget period may be a week, month, quarter, year, or longer. But normally, a master budget is for a year's activities and is divided into months or quarters. Long-term budgets may be for 5 or more years.

## 12.2 Responsibility Accounting

**Responsibility accounting** has no universal definition but does link authority and control. A key aspect of responsibility accounting is that managers prepare plans for their areas of responsibility and exert control over those activities by making decisions and evaluating results. A responsibility accounting system brings discipline to planning and control tasks. The same basic elements remain visible in the accounting systems of small firms as in the sophisticated planning systems of large, complex organizations. The basic elements of responsibility accounting are:

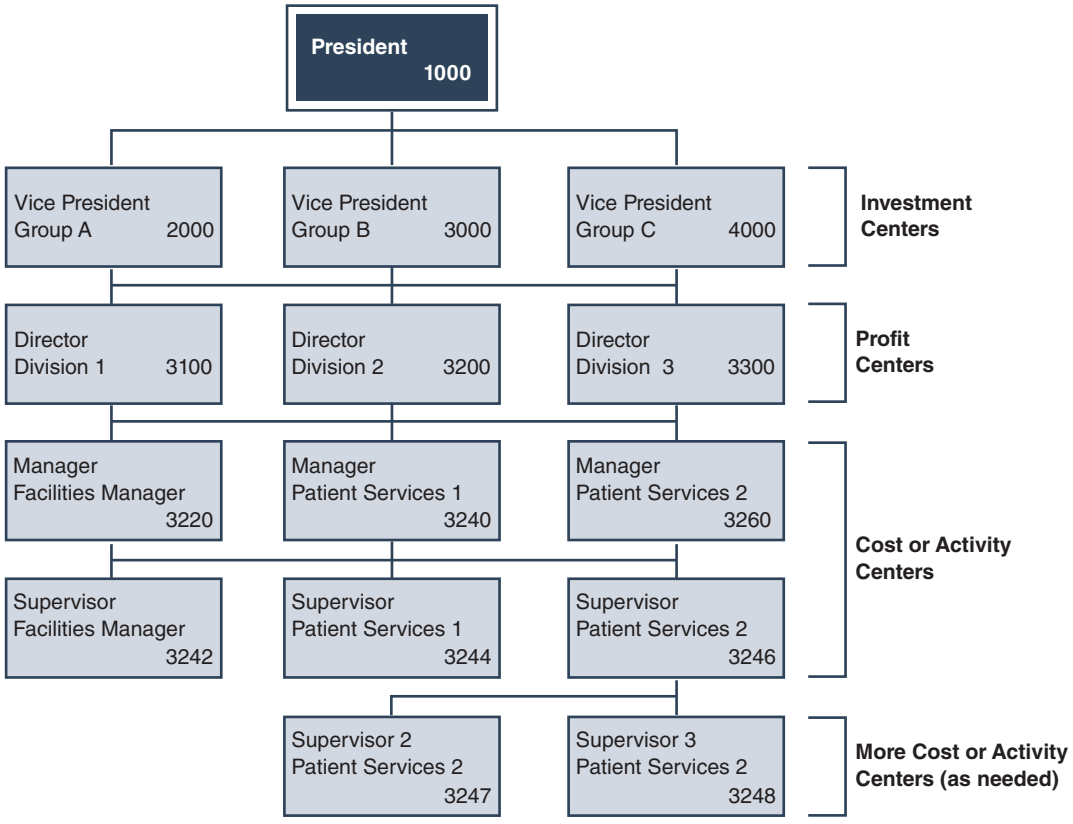
- Responsibility center designations—to segment the organization into small sets of similar activities.
- Control reports—to compare actual versus plan for expenses, revenues, and other financial and activity measures, such as cost drivers.
- Roll-up reporting capability—to summarize lower-level activities at higher levels along responsibility channels.

Strictly speaking, managers put more effort toward managing people who incur costs rather than actually controlling costs themselves. Controllable costs are tied to organizational structure, activities management, and performance assessment.

## Responsibility Centers

From a firm's perspective, planning and control focus on responsibility centers. A **responsibility center** is an organizational unit that has a specific manager with authority and control over spending, earning, or investing. Responsibility centers can be subdivided into three groups: cost centers (such as facilities management departments in a clinic or hospital setting), profit centers (such as patient care areas where revenues are generated), and investment centers (such as medical research departments where new medical treatments are developed). Figure 12.2 illustrates these responsibility centers.

### Figure 12.2: Responsibility centers: Investment, profit, and cost centers



A **cost center** is a responsibility center where control exists over incurring costs. Often, cost centers are defined by an organization chart and may be further subdivided into more cost centers if costs and activities can be better linked for cost determination and management purposes. A cost center is the smallest unit of an organization within which costs and activities are measured. Activity centers, discussed in Chapter 11, are like cost centers.

A **profit center** is a responsibility center where control exists over generating revenue and incurring its related costs. Often, specialty clinics organizations are examples of profit centers—with product revenues, cost of services, and marketing expenses. The term **revenue center** can be used in a case in which a manager has revenue responsibility but controls few expenses, such as in a regional business development office, where the manager has the responsibility to attract new contracts with health insurance companies.

An **investment center** is a responsibility center where control exists over costs, revenues, and investments in assets used or managed. Managers must have the authority to acquire or dispose of assets. Typically, divisions of large firms are considered to be investment centers and are viewed by top management essentially as separate business entities. In a hospital setting, for example, the addition of an outpatient surgery center could set up as an investment center.

## Identifying Cost Centers

In many cases, cost centers parallel the boxes on the organization chart. Figure 12.2 illustrates the link between a firm's organization and its cost center coding. Activity groupings should be studied before cost centers are defined. Logical groupings are often created by a numbering system—defining different parts of the organization, levels of management, and superior/subordinates links. For example, the first digit indicates a group; the second, a division; the third, a functional area; and the last digit provides even greater detail if needed.

Design of the cost system is critical. If activities are segmented too finely, too many cost centers are created, and key cost information is subdivided too finely. However, data aggregation and summarization start here, and a greater danger is losing important cost relationships if cost and activity detail are too summarized. Cost centers defined too broadly lose detail needed in later analyses, and this detail can be recreated only at great cost.

## Control Reports and Roll-Up Reporting

Control reports are prepared routinely for each cost center for a specific time period. Exhibit 12.1 is a cost center report from a facilities management department of a hospital. This is from Cost Center 3242 in Figure 12.2 and uses an account numbering system set up to detail the types of costs that will be tracked. This factory has nearly 40 cost centers and uses approximately 400 different expense accounts.

Several points should be made about the control report in Exhibit 12.1. The breakdown among controllable, semicontrollable, and allocated expenses is an excellent approach

to signal which costs and variances are the responsibility of that cost center's manager. Monthly and year-to-date comparisons of actual to budget costs report the current situation, annual trends, and magnitude and direction of variances from budget. Activity measures, including cost drivers that relate overhead costs to outputs, are reported at the bottom of the report.

## Exhibit 12.1: Example of a cost center control report

**Cost Center:** Facilities Management **Period:** September
**Cost Center No.:** 3242 **Supervisor:** Tatso Kannisoni

| | Monthly | | | Year-to-Date | | |
|---|---|---|---|---|---|---|
| | Actual | Budget | Fav./ (Unfav.) | Actual | Budget | Fav./ (Unfav.) |
| **6110 Total direct labor** | **23,465** | **24,192** | **727** | **206,211** | **209,520** | **3,309** |
| **6160 Total direct materials** | **79,560** | **80,000** | **440** | **712,344** | **715,000** | **2,656** |
| 6211 Machine setup | 3,703 | 3,424 | (279) | 29,920 | 30,608 | 688 |
| 6212 Downtime | 1,076 | 1,680 | 604 | 13,357 | 13,286 | (71) |
| 6215 Maintenance labor | 430 | 639 | 209 | 4,205 | 3,016 | (1,189) |
| 6245 Hourly overtime premium | 761 | 0 | (761) | 3,094 | 0 | (3,094) |
| 6271 Hourly fringe benefits | 11,222 | 12,000 | 778 | 106,112 | 103,506 | (2,606) |
| 6330 Repairs | 10,671 | 7,319 | (3,352) | 78,971 | 77,446 | (1,525) |
| 6441 Rework | 68 | 22 | (46) | 479 | 206 | (273) |
| 6443 Scrap | 1,247 | 1,242 | (5) | 8,730 | 13,827 | 5,097 |
| 6490 Miscellaneous expenses | 118 | 160 | 42 | 1,901 | 1,434 | (467) |
| **Total controllable o/h expenses** | **29,296** | **26,486** | **(2,810)** | **246,769** | **243,329** | **(3,440)** |
| 6220 Other indirect labor | 2,498 | 2,389 | (109) | 21,111 | 20,732 | (379) |
| 6260 Salaries | 2,107 | 2,045 | (62) | 16,914 | 18,105 | 1,191 |
| 6272 Salaried benefits | 424 | 518 | 94 | 4,138 | 4,812 | 674 |
| 6320 Repairs—equipment | 7,066 | 10,069 | 3,003 | 82,987 | 80,253 | (2,734) |
| 6420 Utilities | 337 | 139 | (198) | 2,564 | 3,888 | 1,324 |
| **Total semicontrollable o/h expenses** | **12,432** | **15,160** | **2,728** | **127,714** | **127,790** | **76** |
| 6510 Depreciation—building | 271 | 267 | (4) | 1,588 | 962 | (626) |
| 6520 Depreciation—equipment | 4,070 | 4,070 | 0 | 36,630 | 36,630 | 0 |
| 6540 Property taxes | 1,342 | 1,342 | 0 | 12,078 | 12,078 | 0 |
| 6780 Administrative allocations | 33,945 | 27,503 | (6,442) | 244,201 | 244,201 | (16,029) |
| **Total allocated o/h expenses** | **39,628** | **33,182** | **(6,446)** | **310,526** | **293,871** | **(16,655)** |
| **Total cost center overhead** | **81,356** | **74,828** | **(6,528)** | **685,009** | **664,990** | **(20,019)** |
| **Total cost center expenditures** | **184,381** | **179,020** | **(5,361)** | **1,603,564** | **1,589,510** | **(14,054)** |
| Activity measures: | | | Diff | | | Diff |
| Workers | 12.0 | 12.0 | 0.0 | 11.7 | 11.8 | 0.1 |
| Direct labor hours | 1,920.0 | 2,016.0 | 96.0 | 16,450.0 | 17,460.0 | 1,010.0 |
| Number of orders (000) | 179.7 | 175.0 | 4.7 | 1,563.0 | 1,575.0 | 12.0 |
| Operating machine hours | 1,145.0 | 1,209.6 | 64.6 | 10,419.0 | 10,476.0 | 57.0 |

The overall performance of supervisor Kannisoni in controllable and semicontrollable categories was close to budget for September. But because of an extra large administrative allocation in account 6780, the cost center's total overhead expenses appear to be about $6,000 over budget. While including allocated expenses may be useful for other purposes, it has little beneficial budget impact and violates a basic responsibility accounting rule: Account for what you control.

**Roll-up reporting** aggregates results for each higher management level. Middle and upper levels of management receive reports containing summarized results for all cost centers under their control. The report in Exhibit 12.1 is reviewed by supervisor Kannisoni and his superior. Results from this cost center are summarized at the next higher level—in the control report for the manufacturing manager in Cost Center 3240 from Figure 12.2. All cost centers in Division 2, Profit Center 3200, are summarized in the director's control report. Division 2 is then summarized in Group B vice-president's Investment Center 3000 control report, along with all divisions reporting to the Group B vice-president. All responsibility center reports are eventually summarized into one firm-wide control report for the president.

## 12.3 Why Budget?

Advantages of budgeting nearly always outweigh the costs and efforts required by the process. Although many reasons exist for budgeting, several key purposes are now discussed.

**Formalize the Planning Process**. Perhaps the foremost purpose of budgeting is to compel managers to think about the future. This forces them to set goals, consider future problem areas, and formulate strategies. Budgeting motivates managers to anticipate opportunities, problems, and actions, rather than to merely react.

**Create a Plan of Action**. The planning process brings together ideas, forecasts, resource availability, and financial realities to create a course of action to achieve the firm's goals and objectives. Build the plan, then use it!

**Create a Basis for Performance Evaluation**. Actual results lack meaning unless they are compared to some target or a budgeted number. A budget is a **benchmark** against which actual results are measured and managers' performances are evaluated. Significant variances between actual and planned require explanations and, often, corrective actions.

**Promote Continuous Improvement**. Redesigning processes, increasing productivity expectations, eliminating non-value-adding activities, and erasing quality problems are integral parts of planning for future performance. The budgeting system is where these improvement processes are quantified and locked into operating plans.

**Coordinate and Integrate Management's Efforts**. Budgeting processes open lines of communication within the organization: (1) up and down organizational lines of subordinates and supervisors and (2) across organizational lines to integrate functional tasks.

**Aid in Resource Allocation**. "We'll do it, if we get budget approval to hire another person." This is a typical comment about resources and budgets. Many resources are allocated during budget preparation time.

**Create an "Aura of Control**." The expression "in control" can mean many things; however, in a management sense, effective controls ensure that managers understand their authority, responsibilities, and limits. A budget system can serve as a fiscal disciplinarian or a "money cop."

**Motivate Managers and Employees Positively**. The motivational "good news" is:

- People who help to prepare budgets for their domain will have a commitment to the budget and take pride in achieving "our" plans.
- Through the budget, managers can see how their parts of the puzzle fit together to form a whole—the firm-wide plan.
- Promotions, raises, and incentives are based on job performance, which includes achieving budget targets, as well as quality goals.

Budgeting systems can promote improved teamwork, more involvement in process improvement, and greater goal congruency throughout the organization. If management, from the president down, treats budgets as important, each manager and employee will too.

## 12.4 Behavioral Side of Budgeting

While the goal is to motivate managers positively, budgeting can have a variety of impacts on people and organizations. Budgets have the potential of motivating workers to reach higher levels of efficiency and productivity or creating artificial barriers to progress.

### Top-Management Support

Intense top-management involvement in planning and control processes is correlated with budgeting success at middle and lower management levels. Nothing will destroy the effectiveness of the budgeting process more quickly than managers' perceptions that their superiors do not support the process. Top-management actions must cement the impression that a major commitment exists for planning and budget-related performance evaluations.

Demonstration of support involves at least five important steps. First, establish clearly delineated lines of authority and responsibility. Second, involve managers in the planning process. Third, set appropriate goals and objectives that can be easily translated into plans and actions at lower management levels. Fourth, review, critique, and approve budgets thoroughly. And fifth, follow up and review budget reports with the intent of encouraging budget updates and goal-oriented actions.

## Budget Slack

**Budget slack**, also called "padding the budget," occurs when managers intentionally request more resources than needed. If lower-level managers know from past experience that their budget requests will be cut by upper-level managers, the response is to inflate certain expenses or to "low-ball" revenue estimates. In turn, upper-level managers, knowing that lower-level managers pad their budgets, automatically raise estimated revenues and cut budgeted expenses. The result is a vicious circle of lack of trust and counterproductivity.

Another problem arises during budget downsizing when upper management requires all segments to cut expenses by some arbitrary percentage, say 10%. Managers may make noneconomic decisions or resort to gamesmanship for self-preservation, perhaps creating protective slack for the next cuts. This approach suffers from three weaknesses: (1) organizational differences are ignored, (2) specific resource reallocations needed to support the firm's long-run goals are obliterated, and (3) executive management is viewed as capricious and uncaring. In its defense, if everyone "shares" the pain of budget reductions, a feeling of "together we can solve the problem" can be encouraged.

The most effective weapon against "slack" and "across-the-board" budget cutting is a careful and rigorous review of budgets by line managers. To be effective, reviewers must know the inner workings of the activities reporting to them. Nonaccounting managers must be able to read and interpret budget data and control reports.

## Human Factors and Budget Stress

Budgets are bases for directing activities and establishing a discipline within an organization. The tightness of budgets necessarily depends on a number of factors, including the ability to predict future results for a given function, the manager's experience, and the closeness of supervision. Some people need close guidance and a "fear of God" approach, while others operate best with broad degrees of freedom. Supervisors and upper-level managers must make careful judgments about how tight budget standards should be for each manager. Remember, the objectives are to generate the greatest benefit from each manager's area of responsibility and to maximize goal achievement for the whole organization.

## Ethics of Budgeting

"Gamesmanship" often rears its head in budgeting. Budgets are future estimates. Management judgment is heavily involved. We expect ethical behavior, objective allocations of resources based on need and returns, and a managerial attitude of fairness and equity to permeate the organization. We have already mentioned the problem of budget slack—budgeting expenses too high or revenues too low to cover anticipated budget cuts. Other problems involve misstating to earn approval of projects, hiding overspending on one project by charging expenses to another project, blaming controllable budget variances on noncontrollable events, and pressuring subordinates, which encourages them to act unethically "to meet the budget." In the public sector where budgets are legislated, spending unused appropriations near the end of a fiscal year on nonessential or wasteful

activities to help justify budget requests for the next fiscal year is common and borders on unethical use of public funds.

Executive management must be alert to messages that the budget system sends to all employees. The discussions of "aura of control," top-management support, budget slack, and human factors all combine to highlight the importance of a structured control system with clear responsibilities and feedback. Planning and control systems can move a firm to a higher ethical plane and also create more dilemmas. Managers involved in the budget-setting process and in the control reporting process are the most effective weapons in upholding the integrity of the planning and control system.

## 12.5 Master Budget—An Overview

The annual budgeting effort is commonly called the **master budget** or, in some firms, the **profit plan** or financial plan. Although a master budget usually covers a 1-year period in detail, it may be prepared on a month-by-month basis for the year and may be extended in summary form for several years.

### Master Budget Components

Now we will review the master budget components. These include operating budgets, cash-flow forecast, project budgets, and forecast (pro forma) financial statements.

#### *Operating Budgets*

The **operating budget** is a formal document that in a healthcare environment starts with forecast of patient volume and converts it into a plan of action. Planned operating results are summarized in a cash-flow forecast and forecast financial statements. The day-to-day activities of any business are the interdependent parts of an operating cycle. The **operating cycle** is a circular sequence of events from purchasing on account, paying those bills, generating sales, and collecting cash for the sales. The cycle can be viewed as a "cash-to-cash" process. The cycle continuously repeats itself.

#### *Cash-Flow Forecast*

Cash-flow forecasting is a key to cash management. **Cash management** is planning and controlling cash balances over time. Often, three timeframes can be identified: long term, annual, and short term (which may be daily or weekly). Each fits into the firm's planning process.

#### *Project Budgets*

While much budgeting uses a 12-month timeframe to plan repetitive activities, a number of activities are project related and have **project budgets**. Examples include capital spending for new construction and equipment, research and development programs, and information systems development projects. Project costs are planned around resources and the project's time line. Project budgets, however, are integrated into annual plans as well.

### *Forecast (Pro Forma) Financial Statements*

Forecast balance sheets and income statements summarize the financial results from operating, cash-flow, and project budgets for managers. **Pro forma (or forecast) financial statements** are based on budgeting or estimated amounts that are presented in the same format as historical financial statements. Forecast income statements and balance sheets provide managers with information needed to judge how adequately the master plan achieves the firm's financial goals and objectives. Most financial goals are expressed as ratios of balance sheet and income statement numbers. The forecast financial data then become the basis for management's evaluation of actual results. Information from internal planning processes to be released to stockholders and others external to the firm is carefully structured, must meet external reporting requirements, and is called "financial forecasts" or "financial projections." If the healthcare facility is a nonprofit, these statements are shared with the board of trustees or board of directors.

## Budgeting in Service Organizations

A service organization often depends heavily on human resources. Planning personnel capacity and staffing levels is critical. In many service organizations, personnel expenses, which include salaries and benefits, account for well over 75% of all expenses. This is the case, for example, in hospital systems and medical clinics. Here personnel may be organized by type of service, skill, customer, or project. Staffing plans using headcounts may be more valuable for planning and control than dollar plans.

In complex organizations such as hospitals and banks, budgets develop around services provided. Forecasts of customer or patient work volumes, equipment used, support services required, and revenue generated are developed in responsibility centers and are combined vertically and linked horizontally. In financial institutions, for example, interest income from loans and investments is forecast along with interest expense paid on deposits, yet operating expenses for the people who make loans and get deposits require traditional expense budgeting.

## Budgeting in Nonprofit Organizations

Many nonprofit organizations operate similarly to merchandising and service firms. However, two characteristics of nonprofit organizations require special attention: (1) lack of clearly defined outputs and (2) fixed or legislated inputs or revenues. These commonly arise with governmental, educational, and philanthropic services. Budgets are determined by a legislative process with legal constraints placed on how much can be spent and what type of spending can be incurred. The outputs might be better fire protection, natural resource conservation, or national defense. In certain areas, workloads can be defined, such as in issuing drivers licenses or processing tax returns. Given the legislated revenue side, the budgeter's tasks are to work with managers to define desirable goals and outcomes, to allocate resources (people and dollars) to the programs that generate the greatest benefit, and to evaluate performance based on comparisons of predefined goals and results for given benchmarks.

## 12.6 The Starting Point and Beyond

The executive team meets to set goals, targets, and assumptions. If executives emphasize planning, updating budgets, and evaluating performances using budget comparisons, all managers see that financial planning and control are major parts of the "corporate culture." The controller sets the wheels in motion by providing time schedules, forecast support data, and forms. But given these basics, where is the starting point of the planning cycle? What is planned first?

### Finding the Controlling Constraint

The starting point of the budget effort should always be the most constraining variable. Generally, this is sales, or patient volume in a medical facility. Most managers work to generate more sales. But other constraining variables might be:

- patient capacity in a specialized area;
- floor space in a pharmacy or other retail store;
- physicians' time to see patients; and
- number of beds in a hospital or patient rooms in a clinic.

When a variable other than sales limits growth, it becomes the starting point for planning. But, for most firms, sales units or revenue is the limiting "resource." In a medical environment, sales numbers are generated by forecasting patients to be served and the fees to be generated.

### Patient Volume Forecasting

A realistic budget based on anticipated patient volume is the foundation of a master budget for a healthcare facility. The patient volume forecast is based on a variety of interlocking factors, such as pricing policy, economic outlook, industry conditions, advertising, historical patterns, and the firm's strategic market position. A patient volume forecast is built using data from many sources, including:

- analysis of historical trends to create a momentum forecast;
- grass-roots forecasts, by service and by patient by specialty or clinic managers;
- statistical analysis of patient volume and economic data; and
- market research analysis of promotion, sales efforts, and market share.

These approaches are not independent. More likely, all are involved in solving the forecasting problem. Each method tests the assumptions and the data of the others. The marketing plan and the patient volume forecast are interdependent.

### Independent and Dependent Variables

The planning assumptions, management inputs, product cost and price data, patient volume forecasts, and all the formula-driven relationships are called independent variables; they can be changed by the planner or budget analyst. Most remaining values in budgets

come from mathematical relationships, using the independent variables. These calculated values are called dependent variables. Independent variables are used to calculate dependent variables. For example, patient forecast, prices, and the percentage of patients to be served in the month are independent variables that can be combined to find cash collected, a dependent variable. In spreadsheet software logic, independent variables are constants or external inputs. The dependent variables are found by creating a cell formula.

"What if" changes to independent variables will allow alternative scenarios to be tested through modeling. The impacts of the changes can be seen on the dependent variables—for example, net income.

## Preparing and Formatting Budget Schedules

Budget preparation uses forecasts, planning assumptions, basic logical and mathematical relationships, and management experience and judgment. A few calculation guidelines help, such as:

- While budgeting does not follow debit and credit rules, a final test of the master budget is whether the forecast balance sheet balances.
- Budget relationships are defined quantitatively to allow the same formulas to be repeated in later time periods, such as in spreadsheet cell formulas.
- Ideally, initial planning assumptions, management inputs, and beginning values (the independent variables) should be sufficiently complete to calculate all other variables.
- Schedules should be prepared in the order of the sequential chain of events, such as the sales forecast, production plan, and then the purchases schedule.
- Time periods should be aligned by columns—month by month or quarter by quarter. This pattern allows repetitive calculations to be duplicated easily.
- Independent variables should be placed in an initial schedule for easy access when making "what if" changes for later analyses.

Structure and format simplify budget preparation. Frequently, data from one period are needed in the prior or next period. Or, data in one schedule are used in a following schedule. A structure keeps data and calculations organized.

Assume that:

1. Sales for the first 4 months of 20X5 are forecast to be $50,000, $60,000, $80,000, and $70,000, respectively.
2. Cost of patient services is forecast to be 60% of the revenues from patient services.
3. Beginning inventory is $18,000. Ending inventory is expected to be 40% of next month's cost of providing patient services.
4. Cash from patient services will be collected as follows: 60% in the month of sale and 40% in the month after the sale. Uncollectibles are ignored here.
5. Beginning accounts receivable is $40,000, all from December patient service revenues.

The format and data for cash receipts forecasting for 20X5's first quarter are:

| | January | February | March |
|---|---|---|---|
| Sales | $50,000 | $60,000 | $80,000 |
| Cash collections of receivable from: | | | |
| December sales ($40,000 receivables) | $40,000 | | |
| January sales ($50,000 × 0.6 and × 0.4) | 30,000 | $20,000 | |
| February sales ($60,000 × 0.6 and × 0.4) | | 36,000 | $24,000 |
| March sales ($80,000 × 0.6) | | | 48,000 |
| Total cash collected from sales | $70,000 | $56,000 | $72,000 |

The January column contains all data needed to find cash collections for January. The sales row provides the data to find cash collections for January, February, and March. This column/row format can be used in all master budget schedules.

The format and data for forecasting purchases for the first quarter are:

| | January | February | March | April |
|---|---|---|---|---|
| Sales | $50,000 | $60,000 | $80,000 | $70,000 |
| Cost of sales (60%) | 30,000 | 36,000 | 48,000 | 42,000 |
| Product needs: | | | | |
| Cost of sales | $30,000 | $36,000 | $48,000 | $42,000 |
| Ending inventory (40% of next month's cost of sales) | 14,400 | 19,200 | 16,800 | |
| Total needs | $44,400 | $55,200 | $64,800 | |
| Product available: | | | | |
| Less beginning inventory | 18,000 | 14,400 | 19,200 | |
| Required purchases | $26, 400 | $40,800 | $45,600 | |

As can be seen from the arrows, organizing data by columns and rows sets a repeating pattern for calculations. Also, an important pattern is established: Sales plus ending inventory set the total amount needed, while beginning inventory and purchases meet the need. In a medical facility, the costs of sales will likely be medical supplies, drugs, and other items needed to take care of patients.

## 12.7 Other Budgeting Techniques

So far we have discussed budgeting in terms of a master budget and its components. The concept of budgeting can incorporate other tools where needed.

### Flexible Budgeting

In Chapter 9, we introduced cost functions. We suggested that expense budgets can be based on a variable rate and a fixed amount of costs. By knowing the cost function, we can plan costs for any activity level within our relevant range. This is a **flexible budget**. Initially, when the master budget is prepared, an expected activity level is the basis for the expense budget.

For example, Fred Bleiberg provides local area delivery services of medical supplies. He is developing a home delivery service for local pharmacies to be called Your Favorite Medical Supplies. This would utilize the unused capacity in his delivery services. Activity is the number of deliveries. Following are expense items, which include variable, fixed, and semivariable behaviors.

| Expense Item | Fixed Expenses | Variable Expenses |
|---|---|---|
| Driver payments | | $1.50 per delivery |
| Supplies expense | | 0.15 |
| Added management expenses | $3,000 | |
| Depreciation expense | 1,000 | |
| Added communications expenses | 600 | 0.10 |
| Miscellaneous expenses | 400 | 0.05 |
| Totals | $5,000 | $1.80 per delivery |

The cost function is: $5,000 + ($1.80 × deliveries). Fred thought he would handle about 10,000 deliveries this year, but he only made 9,000. Exhibit 12.2 presents his original budget, a flexible budget for the actual 9,000 deliveries, and a comparison of his actual expenses to the adjusted budget. The original budget is based on 10,000 deliveries and, therefore, cannot be used to evaluate actual results. The flexible budget is based on the actual activity level: 9,000 deliveries. Remember: Fixed expenses are fixed, and variable expenses adjust to the actual activity level. For example, miscellaneous expenses are $400 plus 10,000 times $0.05, or $900, in the original budget, and are $400 plus 9,000 times $0.05, or $850, in the flexible budget. The manager is expected to spend no more than $850 for miscellaneous expenses, since only 9,000 deliveries were made.

## Exhibit 12.2: Flexible budgeting performance report for Your Favorite Medical Supplies

| | Original Expense Budget | Flexible Budget Based on Actual Deliveries | Actual Expenses | Budget Variances Fav. (Unfav.) |
|---|---|---|---|---|
| Variable expenses: | | | | |
| Driver payments | $15,000 | $13,500 | $14,050 | $(550) |
| Supplies expense | 1,500 | 1,350 | 1,300 | 50 |
| Fixed expenses: | | | | |
| Added management expenses | 3,000 | 3,000 | 3,100 | (100) |
| Depreciation | 1,000 | 1,000 | 1,000 | 0 |
| Semivariable expenses: | | | | |
| Added communication expenses | 1,600 | 1,500 | 1,900 | (400) |
| Miscellaneous expenses | 900 | 850 | 750 | 100 |
| Total expenses | $23,000 | $21,200 | $22,100 | $(900) |

Flexible budgeting can also be tied to applying overhead in product costing. In Chapter 11, we developed rates to apply facility overhead to products. Applied overhead was found by using the cost function and actual activity. Actual overhead minus applied overhead produces either an overapplied or underapplied overhead variance. (See the master budget example later in this chapter.) This variance includes any spending variance and any mismatch in applying fixed overhead. These variances are discussed in detail in Chapter 13.

## Project Budgeting

Project budgets are oriented to specific events or tasks and use time schedules to do annual operating budgets. Project budget examples include construction projects (such as a new wing on a hospital), information systems projects, engineering and design projects, fund-raising events, and government contracts.

Project management has been a source of many cost and time overruns. Many projects are unique, one-time efforts. Research projects often present another management dilemma: working in technologically unknown areas with no predictable output or timetable. Project budgets link stages and segments of work, timetables, deadlines or decision points, and spending authorizations. Actual costs are compared with budget time and dollar amounts to monitor the project periodically and at specific review points.

Two management concerns exist. How did we do? And what should we do now? The first is control oriented, and the second is planning oriented. One looks back at resources used, and the other looks forward to completing the project. As an example, assume that a systems development project is budgeted at $90,000 and should take 6 months to complete. It is now 3 months into the project, and $40,000 has been spent. The manager in charge estimates that it is one-third done and will take another 6 months and $80,000 to complete. How should the current status be evaluated? If the project is now one-third complete, the manager is over budget in both time and money as follows:

| | Performance to Date | | | Total Project | | |
|---|---|---|---|---|---|---|
| | Original Budget | | | | | |
| | Original Budget | Resources Used to Date | For Portion Completed | Budget Overrun to Date | Revised Projected Budget | Projected Budget Overrun |
| Costs | $90,000 | $40,000 | $30,000 | ($10,000) | $120,000 | ($30,000) |
| Time | 6 months | 3 months | 2 months | (1 month) | 9 months | (3 months) |

Using the original budget, at this point the project is a month behind schedule and overspent by $10,000. If the total project budget is revised for time and dollars, the project will be $30,000 and 3 months over budget. Careful monitoring of project status (costs and accomplishment) is needed to meet time and dollar targets.

## Probabilistic Budgeting

Probabilities reflect the likelihood that certain business conditions will occur. When risk exists that a particular variable may move within a range of values, probabilistic expressions of those outcomes help the budget to be more realistic. The sensitivity of profits to changes in variables, such as sales volume and prices, can be tested, and then management can focus on sensitive variables.

Eric Paul, controller of YA Hospital Group, can calculate **expected values** of sales, costs, and any other budgeted variable from probabilities assigned by senior managers in marketing, patient care, and other areas. Assume, for example, that YA plans to offer a service year for $20 a patient, with a variable cost of $14. Probability estimates have been made for three sales volume levels.

| | Sales Volume (Units) | | Probabilities | | Expected Value (Units) |
|---|---|---|---|---|---|
| Conservative | 150,000 | × | 0.20 | = | 30,000 |
| Most likely | 200,000 | × | 0.70 | = | 140,000 |
| Optimistic | 250,000 | × | 0.10 | = | 25,000 |
| | | | 1.00 | | |
| Expected sales volume (units) | | | | | 195,000 |

The calculation of expected contribution margin is as follows:

| | |
|---|---|
| Expected sales (195,000 patients x $20) | $3,900,000 |
| Expected variable costs (195,000 patients x $14) | 2,730,000 |
| Expected contribution margin | $1,170,000 |

Price, volume, variable cost, fixed costs, and many other variables can be assigned probabilities in many combinations reflecting the levels of uncertainty. Past experience coupled with a careful analysis of the future can serve as a basis for establishing probability estimates. Admittedly, probability estimates will not be precise, but they should represent the best inputs managers can generate and be more accurate than rough approximations or intuitive estimates.

## 12.8 A Master Budget Example

To illustrate the master budget sequence of planning activity and schedule formats, an example is presented. The firm is Johnson's Medical Clinic, which is a small medical clinic that provides medical services to patients with private insurance coverage, as well as patients with coverage from Medicare and Medicaid. It also services patients who are self-pay. Each year, Johnson's prepares a master budget on a quarterly basis.

### Annual Goals and Planning Assumptions

Johnson's begins its planning process with a meeting organized by the controller at a local resort each August. All managers discuss their areas of responsibility and present strengths, opportunities, problems, and last year's results. Financial and operating goals for the next year are set, and planning guidelines are agreed upon.

**Planning Assumptions**. Certain data and relationships are needed to begin the planning process. These **planning assumptions** include beginning balances, patient supplies and revenue, **operating assumptions**, and **financing assumptions**.

**Operating and Financing Assumptions**. A variety of planning details are needed to prepare budget schedules. Most come from past experience, estimates of beginning balances, and patient volume forecasts for the next year.

### Patient Volume Forecast

The patient volume forecast is a key independent variable. Calculations for this forecast must differentiate patient volume by the source of payer, since revenues will differ based on the insurance or governmental entity that will pay the bill.

Schedule 1: Patient Volume Forecast

| Patient Type | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total |
|---|---|---|---|---|---|
| Medicare | $200,000 | $200,000 | $200,000 | $200,000 | $ 800,000 |
| Medicaid | 75,000 | 75,000 | 75,000 | 75,000 | 290,000 |
| Private insurance | 200,000 | 200,000 | 200,000 | 200,000 | 800,000 |
| Self-pay | 25,000 | 25,000 | 25,000 | 25,000 | 100,000 |
| Total revenue | $500,000 | $500,000 | $500,000 | $500,000 | $2,000,000 |

## Patient Supplies

Another key variable is patient supplies. Each medical specialty will track the supplies it uses historically and develop an average supply expense per patient. This average supply expense per patient would be used to develop a budget estimate based on patient volume. To keep this example simple, we just include three supply categories for Johnson's, including medications, patient care supplies, and sterilization. A medical clinic would likely break these categories down into greater detail.

Schedule 2: Patient Supplies

| Patient Supplies | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total |
|---|---|---|---|---|---|
| Medications | $50,000 | $50,000 | $50,000 | $50,000 | $200,000 |
| Patient care Supplies | 25,000 | 25,000 | 25,000 | 25,000 | 100,000 |
| Sterilization | 5,000 | 5,000 | 5,000 | 5,000 | 20,000 |
| Total expenses | $80,000 | $80,000 | $80,000 | $80,000 | $320,000 |

## Direct Labor Costs

The third key variable would be direct labor costs. In this example, to keep things simple, we will use just physicians and nurses. In a medical clinic there could be others providing direct patients services, such as physician assistants, nurse practitioners and various types of aides.

Schedule 3: Direct Labor Costs

| Labor Type | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total |
|---|---|---|---|---|---|
| Physicians | $200,000 | $200,000 | $200,000 | $200,000 | $ 800,000 |
| Nurses | 75,000 | 75,000 | 75,000 | 75,000 | 300,000 |
| Total direct labor | $275,000 | $275,000 | $275,000 | $275,000 | $1,100,000 |

## Overhead Costs

Every medical facility will have costs not directly attributable to patient care, such as utilities, rents, basic building supplies, administrative costs, and other fixed overhead costs. If there is budgeting within the clinic by service specialty, an overhead rate would be established and charged to each specialty's individual budget. To keep things simple, we are going to assume that Johnson's does not allocate its overhead expenses to each service specialty. That may be done in a major hospital or clinic, but is not usually done in smaller clinics.

Schedule 4: Overhead Costs

| Overhead Costs | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total |
|---|---|---|---|---|---|
| Supplies | $10,000 | $10,000 | $10,000 | $10,000 | $ 40,000 |
| Administrative | 25,000 | 25,000 | 25,000 | 25,000 | 100,000 |
| Utilities | 25,000 | 25,000 | 25,000 | 25,000 | 100,000 |
| Rent | 25,000 | 25,000 | 25,000 | 25,000 | 100,000 |
| Total overhead costs | $85,000 | $85,000 | $85,000 | $85,000 | $340,000 |

## Cash-Flow Forecasts

Now that all operating budgets are in place, the time for summarizing has arrived. The first summary is the preparation of the cash-flow forecast. Nearly every schedule impacts cash. The basic structure is to list receipts and disbursements, sum to a cash balance, and show any planned investing or borrowing activities. In Schedule 5, a source document for each cash-flow item is cited.

Schedule 5: Cash-flow Forecast

| | Source | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Total |
|---|---|---|---|---|---|---|
| **Cash Inflows:** | | | | | | |
| Patient revenues | Schedule 1 | $500,000 | $500,000 | $500,000 | $ 500,000 | $2,000,000 |
| Total cash inflows | | $500,000 | $500,000 | $500,000 | $ 500,000 | $2,000,000 |
| **Cash Outflows:** | | | | | | |
| Patient supplies | Schedule 2 | $ 80,000 | $ 80,000 | $ 80,000 | $ 80,000 | $ 320,000 |
| Direct labor payroll | Schedule 3 | 275,000 | 275,000 | 275,000 | 275,000 | 1,100,000 |
| Overhead | Schedule 4 | 85,000 | 85,000 | 85,000 | 85,000 | 340,000 |
| Total cash outflows | | $440,000 | $440,000 | $440,000 | $ 440,000 | $1,760,000 |
| Cash inflows minus outflows | | $ 60,000 | $ 60,000 | $ 60,000 | $ 60,000 | $ 240,000 |

### *Master Budget Summary*

Several observations should be made about the master budget example. The budget should be tested for reasonableness, including:

- a review of the reasonableness of critical independent variables (most often the patient volume forecast) as a key evaluation step;
- a sensitivity analysis to determine whether small changes in key variables will cause major changes in profitability or cash flows;
- "what if" analyses to determine whether a better combination of resource inputs could produce a stronger plan;
- a budget review and approval by each manager involved in the planning effort; and
- an analysis to determine whether the management's goals and objectives are realized.

Many iterations may be needed to arrive at a budget that managers can accept, meets management's goals, and pushes the firm toward its long-range goals.

## Case Study: Chester & Wayne

Chester & Wayne operates medical clinics in the Appalachian region. Mr. Chester, CEO, has asked your assistance in preparing cash-flow information for the last 3 months of this year. Selected accounts from an interim balance sheet dated September 30 have the following balances:

| | | | |
|---|---|---|---|
| Cash | $ 142,000 | Accounts payable | $354,155 |
| Marketable securities | 200,000 | Other payables | 53,200 |
| Accounts receivable | 1,012,500 | | |
| Inventories | 150,388 | | |

Mr. Wayne, CFO, provides you with the following information based on experience and management policy. All sales are credit sales and are billed the last day of the month of sale. Patients or insurers paying within 10 days of the billing date may take a 2% cash discount. Forty percent of the sales is paid within the discount period in the month following billing. An additional 25% pays in the same month but does not receive the cash discount. Thirty percent is collected in the second month after billing; the remainder is uncollectible. Additional cash of $24,000 is expected in October from renting unused warehouse space.

Sixty percent of all purchases, selling and administrative expenses, and advertising expenses is paid in the month incurred. The remainder is paid in the following month. Ending inventory is set at 25% of the next month's budgeted cost of goods sold. The company's gross profit averages 30% of sales for the month. Selling and administrative expenses follow the formula of 5% of the current month's sales plus $75,000, which includes depreciation of $5,000. Advertising expenses are budgeted at 3% of sales.

***(continued)***

## Case Study: Chester & Wayne *(continued)*

Actual and budgeted sales information is as follows:

| **Actual:** | | **Budgeted:** | |
|---|---|---|---|
| August | $750,000 | October | $826,800 |
| September | 787,500 | November | 868,200 |
| | | December | 911,600 |
| | | January | 930,000 |

The company will acquire equipment costing $250,000 cash in November. Dividends of $45,000 will be paid in December.

The company would like to maintain a minimum cash balance at the end of each month of $120,000. Any excess amounts go first to repayment of short-term borrowings and then to investment in marketable securities. When cash is needed to reach the minimum balance, the company policy is to sell marketable securities before borrowing.

### Case Study Exercises

1. Prepare a cash budget for each month of the fourth quarter and for the quarter in total. Prepare supporting schedules as needed. (Round all budget schedule amounts to the nearest dollar.)
2. You meet with Mr. Chester and Mr. Wayne to present your findings and happen to bring along your PC with the budget model software. They are worried about your findings in part (1). They have obviously been arguing over certain assumptions you were given.

    a. Mr. Wayne thinks that the gross margin may shrink to 27.5% because of higher purchase prices. He is concerned about what impact this will have on borrowings. Comment.
    b. Mr. Chester thinks that "stock outs" occur too frequently and wants to see the impact of increasing inventory levels to 30% and 40% of next quarter's sales on their total investment. Comment on these changes.
    c. Mr. Wayne wants to discontinue the cash discount for prompt payment. He thinks that maybe collections of an additional 20% of sales will be delayed from the month of billing to the next month. Mr. Chester says, "That's ridiculous! We should increase the discount to 3%. Twenty percent more would be collected in the current month to get the higher discount." Comment on the cash-flow impacts.

## Key Terms

**benchmark** A comparison of operations, costs, or productivity with world-class performers.

**budget** A plan showing how resources are to be acquired and used over a specific time period.

**budget slack** Excess resources built into the budget over the amount necessary to achieve the planned goals and objectives.

**cash management** Planning and controlling the levels of cash balances over a specific time period.

**control** The process of comparing actual results with budgeted levels of performance in directing an organization.

**cost center** A responsibility center where control exists over incurring costs.

**expected value** The average value of a variable that has had probabilities assigned to different values for that variable.

**financing assumptions** Budgeting assumptions in which the independent variables consist of borrowing details, cash policies, taxes, dividends, and beginning balance sheet figures.

**flexible budget** A budget based on a formula that expresses the budgeted costs at any activity level within the relevant range.

**goals and objectives** Specific performance targets that provide a quantitative and time framework for achievement within any environmental constraints facing the organization.

**investment center** A responsibility center where control exists over costs, revenues, and investments in assets used or managed.

**long-range goals** Statements about the desired position of the organization in the extended future or about the direction important variables should take in determining the long-run destiny of the organization.

**master budget** An integrated plan that combines the operating budget, financial budget, and any project budgets.

**mission statement** The statement of purpose of the organization.

**operating assumptions** Budgeting assumptions that consist of percentages, specific budgeted amounts for certain accounts, and any other constant needed in calculations.

**operating budget** A formal document that summarizes the expected results of an organization's revenue and expense transactions for a future period.

**operating cycle** A circular sequence of events from purchasing on account to paying those bills with cash collected from sales.

**planning** The process of formulating short-term and long-term goals and objectives, predicting potential results under alternative ways of achieving them, and deciding how to attain the desired results.

**planning assumptions** Management assertions about the future that are used as a given in the budgeting process.

**pro forma (or forecast) financial statements** Financial statements based on budgeted or estimated amounts that are presented in the same format as historical financial statements.

**profit center** A responsibility center where control exists over both the incurrence of costs and the generation of revenues.

**profit plan** A term used to describe the master budget of an organization, reflecting the primary focus of the master budget—the management of revenues and expenses.

**project budget** A budget oriented to a specific event rather than a time period.

**responsibility accounting** A system where managers prepare plans for their areas of responsibility and exert control over those activities by making decisions and evaluating results.

**responsibility center** Any unit of an organization where control over incurrence of cost, revenue, or investment is found.

**revenue center** A responsibility center where control exists over the generation of revenues.

**roll-up reporting** Summarizes lower-level activities when reporting to higher levels along the responsibility channel.

**strategic plan** The process of deciding on organizational goals and strategies to achieve them.

## Review Questions

The following questions relate to several issues raised in the chapter. Test your knowledge of these issues by selecting the best answer. (The odd-numbered answers appear in the answer appendix.)

1. Identify and explain at least five purposes of budgeting.

2. What are the similarities and differences among an activity center, a cost center, a profit center, and an investment center?

3. What is the difference between an independent variable and a dependent variable in the budgeting process? Give three examples of each.

4. For what kinds of business activities are project budgets useful?

5. Why are the human behavioral concerns important in budgeting? Identify and explain the concerns.

6. From the master budget example, identify the independent variables. Which schedules contain only dependent variables?

7. Explain why preparing the cash-flow forecast requires that all operating and project budget schedules be completed first.

## Exercises

1. **Cost, profit, or investment center.** The list below describes a variety of business situations:

   (1) the pharmacy department of a hospital.
   (2) an x-ray department of a hospital. The patient fees are all determined by the corporate office.
   (3) the janitorial department of an office furniture manufacturer.
   (4) the marketing department of a hospital.
   (5) the purchasing department for a medical facility.

(6) the outpatient surgery department of a hospital or medical clinic.
(7) the technical support department for a hospital.

a. For each business segment, indicate how it is most likely to be organized: as a cost center, a profit center, or an investment center. State any additional assumptions you feel are necessary to clarify a situation.

2. **Estimated cash payments**. Jaret's Medical Supplies is preparing its cash budget for the month of November. The following information is available about its operation:

| | |
|---|---|
| November beginning inventory | $18,000 |
| Estimated November cost of goods sold | 90,000 |
| Estimated November ending inventory | 16,000 |
| Estimated November payments for purchases made prior to November | 21,000 |
| Estimated November payments for purchases made in November | 80% |

a. What are the estimated cash payments in November for Jaret's Medical Supplies?

3. **Cash forecasting**. Hampshire Clinic, located in Manchester, United Kingdom, prepared the following sales budget for the first six months:

| | January | February | March | April | May | June |
|---|---|---|---|---|---|---|
| Sales units | 6,000 | 7,000 | 7,500 | 8,500 | 7,800 | 8,300 |

Consult fees are £20 each. Twenty percent of sales is for cash, and the remainder is on account. The firm forecasts collection of fees on account to be 60% in the month of sale with the remainder collected in the next month. Beginning receivables at January 1 is £40,000.

a. Find the forecast cash receipts for each month.
b. If more customers use credit cards, causing cash sales to increase to 40% of total sales, by how much is cash increased in the second quarter?

4. **Budgeted purchases and cash payments**. Cumberland Medical Supplies sells incontinence products for $10, and the purchase cost is $6 per package. The firm keeps an inventory of 40% of next month's forecast sales. Each month, it pays suppliers 70% of the current month's purchases, and the remainder is paid in the following month. The first quarter's sales budget is:

| | January | February | March | April | May |
|---|---|---|---|---|---|
| Sales | $6,000 | $4,000 | $3,000 | $6,000 | $1,000 |

a. Calculate Cumberland's budgeted purchases per month through April.
b. Show Cumberland's cash payments to suppliers per month from February through April.

5. **Control costs**. P.W.'s Medical Equipment operates a repair shop on Mayfield Road. PeeWee, the owner, has calculated his overhead costs per year to be $10,000 plus $10 per unit repaired. In late 20X4, he prepared a budget for repairing 500 units in 20X5. He actually repaired 550 units in 20X5 and spent $15,200 for overhead expenses.

   Comment on each of the following statements about 20X5 activities.

   a. His cost function is ($10,000/500) + $10, or $30 per unit.
   b. His spending was $300 under his adjusted budget; therefore, he did control costs well.
   c. His original budget for 20X5 (prepared in late 20X4) was $15,500.
   d. His spending was $200 over his original budget; therefore, he did not control costs well.

6. **Thoughts about budgeting**. Comment briefly on the following quotes about budgeting from a financial planning textbook:

   a. "One major criticism of budgeting is that it is used as a 'cost reduction' tool rather than a 'cost control' tool. The objective of the budget is to control costs at an efficient level of operation."
   b. "There are generally three benefits from allowing employees to participate in developing the budget: (1) Employees tend to accept the budget as their own plan of action. (2) Participation tends to increase morale among employees and toward management. (3) Employee cohesiveness is increased, and productivity will also increase if dictated by the group norm."
   c. "Even though budgets are quantitative tools, considerable emotion is connected to budgeting. The individual in control often sees the budget as a means of getting things done. People being controlled often have feelings of anxiety because their success and promotion are tied directly to the budget."

7. **Prepare a budget schedule**. JRS Medical Supplies is preparing a budget for the second quarter of the current calendar year. The March ending inventory of medical supplies was $106,000, which was higher than expected. The company prefers to carry ending inventory amounting to the expected sales volume of the next 2 months. Purchases of merchandise are paid half in the month of purchase and half in the month following purchase, and the balance due on accounts payable at the end of March was $24,000. Budgeted sales are as follows:

| | | | |
|---|---|---|---|
| April | $50,000 | July | $72,000 |
| May | 48,000 | August | 56,000 |
| June | 60,000 | September | 60,000 |

   a. Assume that a 25% gross profit margin is budgeted. Prepare a budget schedule that shows the following for April, May, and June:
      (1) cost of goods sold.
      (2) purchases required.
      (3) cash payments for merchandise.

   b. Assume that the accounts receivable balance on April 1 was $35,000, and that three-fourths of all customers pay in the month of sale and one-fourth in the month following the sale. Prepare a budget showing the cash receipts from accounts receivable for April, May, and June.

8. **Dividend payments**. Marcy Lynn is preparing a budget of cash receipts and disbursements for Lynn Clinics. Some sales are for cash, and the remainder is billed on a contract basis. Sales for April to August are:

| | Cash Sales | Billed Sales | Total Sales |
|---|---|---|---|
| April | $65,000 | $40,000 | $105,000 |
| May | 72,000 | 46,000 | 118,000 |
| June | 84,000 | 68,000 | 152,000 |
| July | 88,000 | 72,000 | 160,000 |
| August | 86,000 | 70,000 | 156,000 |

Of the billed patient fees, 65% is collected during the month of sale; the other 35% is collected the next month.

Medical supplies amounting to 75% of sales must be paid during the month of sales. Monthly operating costs are $24,000. The cash balance at May 1 amounted to $7,000. If the cash balance is over $20,000 on August 31, Marcy and the other shareholders will receive the excess as dividends.

a. Prepare a budget of cash receipts and disbursements for each month, May to August, inclusive (use of spreadsheet software is recommended).
b. Compute the amount, if any, that can be paid in dividends at the end of August.
c. What is the impact on possible dividend payments in the following situations?

   (1) "What if" competitive pressures cause food costs to increase to 80% of sales?
   (2) "What if" collections of billed sales slow to 50% in the month of sale and 50% in the next month?

## Problems

1. **Average occupancy percentage.** The Pleasant Respite Care is a low-priced, temporary care facility for dependent patients in Winslow, Arizona, along Interstate 40. It has 50 rooms, each with two double beds. The rates are $18 for one person, $10 for the second person, and $3 each for the third and fourth persons. Rollaway beds are available for $2 per night.

   During April, the facility manager expects an 80% occupancy rate. Past experience suggests that 20% of the rooms rented will be to only one person, 20% to two persons, 30% to three persons, and 20% to four persons. Ten percent will have five persons and use rollaway beds.

   Laundry costs average $1.00 per person per night. Cleaning workers earn $6.00 per hour, and it takes 30 minutes to clean each room. Other variable operating costs (utilities, for example) are $4 per occupied room per night. Maintenance and grounds personnel costs are about $1,500 per month. Two clerks each have a salary of $1,200 per month. Depreciation is $2,000 per month. Other cash fixed expenses are $3,500 per month.

***Instructions***

a. Prepare a budgeted income statement for April.
b. Suggest an average occupancy percentage needed to break even if the average number of people staying in a room is three.

2. **Cost forecasting**. In the Hurwitz Hospital Corporation, an advertising project is forecast to cost $100,000, generate $200,000 in additional variable contribution margin, and take 6 months to complete.

   It is now 4 months into the project, and $60,000 has been spent. Hurwitz estimates that it is one-third done and that it will take another 8 months and $100,000 to complete the project. Current estimates now show that the forecast additional variable contribution margin will be $160,000. Hurwitz is at a "go" or "no go" point on this project.

   ***Instructions***

   a. How does Hurwitz report the project relative to the budget?
   b. How does Hurwitz report this project in its "plan of action," if approved for continuation?
   c. Should the project be "canned" or continued at this "go" or "no go" point? Explain.

3. **Cash flow**. Gartner Medical Equipment Company is planning to expand beyond the industrial market of its medical equipment to electric wheelchairs. The president, Bruce Gartner, estimates that the company must invest $1,800,000 in new equipment up front. He wants to know how much cash flow can be provided by operations next year to apply toward acquiring the equipment and how much of the cost will have to be financed.

   His sales staff estimates revenue next year at $8,500,000. However, if economic conditions deteriorate, sales revenue may be only $6,500,000.

   Cost of goods sold has historically been 70% of revenue. A possibility exists that the company will have to absorb cost increases that cannot be passed along to customers. In this case, the cost of goods sold will be 80% of revenue. With sales down to $6,500,000, the cost of goods sold will definitely be 80% of revenue. Probabilities of occurrence have been estimated for each of three alternatives as follows:

| Operating Revenues and Cost of Goods Sold | Expenses | Probabilities |
|---|---|---|
| Sales at $8,500,00, cost of goods sold at 70% | $1,050,000 | 30% |
| Sales at $8,500,000, cost of goods sold at 80% | $1,200,000 | 50% |
| Sales at $6,500,000, cost of goods sold at 80% | $1,100,000 | 20% |

   Depreciation of $280,000 is included in operating expenses under each alternative, and depreciation of $350,000 is included in cost of goods sold for each alternative. Income taxes are estimated at 40% of income before income taxes.

   In making the transition, equipment will be sold for $600,000, net of income taxes. A payment of $350,000 must be made on long-term notes payable. Bruce wants dividends of $300,000 to be paid under each alternative.

***Instructions***

a. What is the "worst case" cash-flow scenario that Bruce could face?
b. Prepare a statement to show the forecast cash flow provided by operations under each assumption and the expected value of cash flows.
c. Continue the forecast statement to show how much additional cash will be needed to finance the new project after considering the information given. Show the impact of all three assumptions on expected cash flows.

4. **Cash budget**. Dennis Christopher, a member of the board of directors of Ivan Clinics, is concerned about the ability of the company to repay a loan in the amount of $250,000 that matures on June 30, 20X5. In addition to the principal of the loan, the company must pay interest of $50,000.

   The cash balance at January 1, 20X5, is $82,000. Sales for December 20X4 through June 20X5 are budgeted as follows:

| | Net Sales |
|---|---|
| December 20X4 | $236,000 |
| January 20X5 | 137,000 |
| February | 142,000 |
| March | 182,000 |
| April | 170,000 |
| May | 156,000 |
| June | 148,000 |

   Cash sales each month are equal to approximately 30% of net sales. Collections on accounts receivable are expected as follows:

   (1) 60% collected during the month of sale.
   (2) 40% collected in the following month.

   Total cash disbursements are estimated at $115,000 each month.

***Instructions***

a. Prepare a cash budget for each month and in total for the 6 months of 20X5 (use of spreadsheet software is recommended).
b. Will the company be able to pay the loan with interest and still maintain a cash balance of no less than $60,000 on June 30? Explain.
c. If actual sales are 10% lower than the forecast each month, while cash expenses drop by only $5,000 per month, what will happen to the company's ability to pay off the loan and keep the cash balance at the desired level?
d. If the sales and expenses fall as in Part (c) and collections patterns change to 40% collected in the current month and 60% in the following month, what will happen to the company's cash situation?

5. **Budget**. The production manager of Riley Medical Supplies maintains an inventory of materials equal to production needs for the next month because of the possibility of delays in shipments from his Korean supplier. Each unit takes 4 pounds of materials, which cost $3 per pound. The target for finished goods inventory is 20% of the following month's sales. Budgeted sales in units for the first five months of 20X5 are:

| Month | Budgeted Sales | Month | Budgeted Sales |
|---|---|---|---|
| January | $12,000 | April | $16,000 |
| February | 16,000 | May | 20,000 |
| March | 15,000 | | |

On December 31, 20X4, 60,000 pounds of materials and 3,000 units of finished goods were on hand.

***Instructions***

a. Prepare a budget for production in units and a budget for purchases in pounds and dollars for the first 3 months of 20X5.